

ABSTRACT BOOK 2017



Mind&BrainTM
57th International Neuropsychiatric Congress

Main Themes | **Recent advances in
neuroimaging &
treatment**

Depression
Eating disorders
Personality disorders

neuroanalysis

Multiple sclerosis
Dementia
Stroke

24th - 27th May 2017
Hotel Park Plaza Histria
Pula, Croatia

www.pula-cong.com
www.materiamedica.hr

57th INTERNATIONAL NEUROPSYCHIATRIC CONGRESS

Pula, Croatia

MAY 24-27, 2017

ISSN 2469-5748

www.pula-cong.com/abstract-book-2017/

ABSTRACT BOOK 2017

57th INTERNATIONAL NEUROPSYCHIATRIC CONGRESS

Pula, Croatia

MAY 24-27, 2017

ISSN 2459-5748

www.pula-cong.com/abstract-book-2017/

This meeting is endorsed by
WORLD FEDERATION OF NEUROLOGY



EUROPEAN ACADEMY OF NEUROLOGY

EUROPEAN STROKE ORGANISATION



Co-organizers

DEPARTMENT OF MEDICAL SCIENCES - CROATIAN ACADEMY OF SCIENCES AND ARTS



CENTRAL AND EASTERN EUROPEAN STROKE SOCIETY



The meeting will be accredited according to the Regulations of Croatian Medical Chamber.

The MIND & BRAIN - 57th International Neuropsychiatric Congress

under the High Patronage of the President of Republic of Croatia

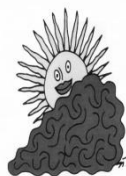
Her Excellency **Mrs. Kolinda Grabar-Kitarović**

Organizers

INTERNATIONAL INSTITUTE FOR BRAIN HEALTH



SOCIETY FOR NEUROPSYCHIATRY



Co-organizers

DEPARTMENT OF MEDICAL SCIENCES - CROATIAN ACADEMY OF SCIENCES AND ARTS

CENTRAL AND EASTERN EUROPEAN STROKE SOCIETY

Supporting organizations

WORLD FEDERATION OF NEUROLOGY

EUROPEAN ACADEMY OF NEUROLOGY

EUROPEAN STROKE ORGANISATION

WFN, APPLIED RESEARCH GROUP

ON THE ORGANISATION AND DELIVERY OF CARE

EUROPEAN PSYCHIATRIC ASSOCIATION

STROKE ALLIANCE FOR EUROPE

CROATIAN STROKE SOCIETY

Date & Venue

May 24-27, 2017

Pula, Croatia

Publisher

International Institute for Brain Health

Ulica grada Vukovara 271/4
Zagreb, Croatia

Editors

Vida Demarin, MD, PhD, FAAN, FAHA, FESO
Fellow of Croatian Academy of Sciences and Arts
Professor of Neurology
INPC Secretary General

Hrvoje Budinčević, MD, PhD.

Scientific reviewers

Battistin Leontino Bechter Karl Benedetti Francesco Czlonkowska Anna Niederkorn Kurt

Proofreader

Sandra Morović

Design & Layout

International Institute for Brain Health

Printing was completed in May 2017. © International Institute for Brain Health, Zagreb, 2017.
No part of the publication may be reproduced in any form or by any publication,
without the prior written consent of the publisher.

ISSN 2469-5748

Abstract Book (International Neuropsychiatric Congress. Online)

Abbreviation: Abstr. book (Intern. Neuropsychiatr. Congr., Online)

inpc2017@gmail.com

www.pula-cong.com

South East European Society for Neurology and Psychiatry

MIND & BRAIN - International Neuropsychiatric Congress

KURATORIUM

SECRETARY GENERAL:

Vida Demarin, Zagreb

HONORARY PRESIDENT:

Boško Barac, Zagreb

Founding Honorary Members

H. Bertha, Graz	G. Grinschgl, Graz	P. Kartin, Ljubljana	H. Lechner, Graz
R. Lopašić, Zagreb	F. Marguth, München	N. Peršić, Zagreb	J. Ristić, Beograd
A. Rosenzweig, Zagreb	W. Scheid, Köln	O. Stochdorf, München	G. Huber, Bonn

Honorary Members

D. Fontanari, Venezia	F. Gerstenbrand, Vienna	J. Kugler, München	G. Lanner, Klagenfurt
V. Muačević, Zagreb	B. Neundörfer, Erlangen	C.M. Poser, Boston	A. Stammer, Köln

Board of Trustees

B. Barac, Zagreb	L. Battistin, Padova	K. Bechter, Günzburg	F. Benedetti, Milan
V. Caso, Perugia	M. Cuturic, Columbia	A. Czlonkowska, Warsaw	A. Danilov, Russia
V. Demarin, Zagreb	F. Fazekas, Graz	V. Folnegović-Šmalc, Zagreb	V. Jukić, Zagreb
H. P. Kapfhammer, Graz	G. E. Klein, Graz	V. Kostić, Beograd	E. S. Koutsouraki, Thessaloniki
Z. Lacković, Zagreb	S. Loga, Sarajevo	Đ. Ljubičić, Rijeka	N. Müller, München
K. Niederkorn, Graz	E. Ott, Graz	F. Paladin, Venice	T. Pogačnik, Ljubljana
T. S. Prevec, Ljubljana	M. Relja, Zagreb	O. Sinanović, Tuzla	B. Tsygankov, Russia
V. Šerić, Zagreb	E. Uhl, Klagenfurt	L. Vécsei, Szeged	D. B. Vodusek, Ljubljana

Scientific Advisory Board

A. Alajbegović, Sarajevo	Z. Ambler, Pilsen	S. Butković Soldo, Osijek	C. Carollo, Padova
R. Erkwow, Erfurt	R. Fahlbusch, Erlangen	H. Katschnig, Wien	J. Klosterkötter, Köln
H. Sass, Aachen	L. Toresini, Portogruaro	L. Tuškan-Mohar, Rijeka	M. Wender, Poznan

Core Organizing Committee

V. Demarin, Zagreb	N. Bogdanović, Stockholm	I. Kostović, Zagreb	K. Bechter, Günzburg
K. Niederkorn, Graz	D. Marčinko, Zagreb	S. Matačić, Zagreb	V. Bašić Kes, Zagreb
V. Vuletić, Rijeka	M. Bošnjak Pašić, Zagreb	I. Šain, Pula	A. Glasnović, Zagreb
H. Budinčević, Zagreb	N. Beck, Opatija	P. Črnac, Zagreb	F. Đerke, Zagreb

Local Organizing Committee

D. Breški, Pula	D. Janko Labinac, Pula	L. Jerin, Pula	D. Marković, Pula
I. Šain, Pula	L. Peteh Labinac, Pula	L. Radolović-Prenc, Pula	F. I. Silconi, Pula

Secretary General: **Vida Demarin, MD, PhD, FAAN, FAHA, FESO, FEAN**, Fellow of Croatian Academy of Sciences and Arts, Professor of Neurology, E-mail: vida.demarin@gmail.com

INPC Office in Graz: **Kurt Niederkorn, MD, Ph.D.** Univ. Professor of Neurology, E-mail: kurt.niederkorn@medunigraz.at

Alps Adria Office: **Leontino Battistin, MD, Ph.D.** Professor of Neurology, E-mail: segr.neurologia@unipd.it

Honorary President: **Boško Barac, MD, Ph.D.** Professor of Neurology (ret), E-mail: bosko.barac@gmail.com

CONTENTS

MIND & BRAIN – 57th INTERNATIONAL NEUROPSYCHIATRIC CONGRESS

PROGRAM	12
ACADEMIC LECTURES	16
Paško Rakić (New Haven, USA): Neuronal migration: Relevance to neuropsychiatric disorders	16
Mark Solms (Cape Town, South Africa): The scientific standing of psychoanalysis	17
MAIN THEMES LECTURES	18
Nenad Bogdanović (Stockholm, Sweden): Imaging in the early assessment of dementia disorders	18
Miloš Ikononović (Pittsburgh, USA): Validation of Amyloid and Tau PET in AD and Non-AD Dementias: Clinical-Pathological Correlations	19
Norbert Müller (München, Germany): Immune based treatments of Alzheimers disease	20
Jean-Marc Burgunder (Bern, Switzerland): Molecular mechanisms in Huntington’s disease: the path to therapy	21
Miroslav Čturić (Columbia, USA): Huntington's disease: current trends	22
Vladimira Vuletić (Rijeka, Croatia): Parkinson's disease dementia.....	23
Darko Chudy (Zagreb, Croatia): Deep brain stimulation as a therapy for neurologic and psychiatric disease – new insights	24
Dunja Gorup, Marina Dobrivojević, Siniša Škokić, Dora Polšek, Anton Glasnović, Dinko Mitrečić, Jasna Križ (Quebec, Canada), Srećko Gajović (Zagreb, Croatia): Preclinical neuroimaging of animal stroke models	25
Vida Demarin (Zagreb, Croatia): Contemporary approach to stroke prevention.....	26
Dijana Zadravec, Vladimir Kalousek, Mia Smoljan (Zagreb, Croatia): Recent advances in neuroimaging and neurointervention in acute stroke	27
Nenad Bogdanović (Stockholm, Sweden): Vascular cognitive impairment.....	28
Sandra Morović (Zagreb, Croatia): The role of arterial stiffness in assessment of cognitive decline.....	29
Hrvoje Budinčević (Zagreb, Croatia): Direct oral anticoagulants in secondary stroke prevention.....	30
Josip Ljevak (Zagreb, Croatia): Direct oral anticoagulants and neurovascular complications – can we do more? 31	
Christian Enzinger (Graz, Austria): Neuroimaging and multiple sclerosis	32
Anton Glasnović, Srećko Gajović, Danka Grčević, Vida Demarin (Zagreb, Croatia): Immunologic Processes In Multiple Sclerosis – The Newest Insights	33
Vanja Bašić-Kes (Zagreb, Croatia): New trends in the treatment of multiple sclerosis	34
Marija Bošnjak Pašić (Zagreb, Croatia): Multiple sclerosis and pregnancy.....	35
Osman Sinanović (Tuzla, BiH): Dysphagia in neurologic disorders	36
Marina Nakić (New Haven, USA): Advances in neuroimaging and impact on psychiatric practice.....	37
Francesco Benedetti (Milan, Italy): Immune tolerance and neuroinflammation in chronic depression: bridging the gap between psychiatric and neurodegenerative diseases	38
Boris Tsygankov, Irina Makhortova, Oleg Shiryaev (Moscow, Russia): Night eating syndrome in patients with anxiety and depression	39

Hemmo Drexhage (Rotterdam, Netherlands): T-cell defects and pro-inflammatory monocytes/macrophages are “drugable” key elements of mood disorders	40
Stanislav Matačić (Zagreb, Croatia): Some thoughts about depression, “the disease of 21 st century”– a psychodynamic approach	41
Darko Marčinko (Zagreb, Croatia): Depression and suicidality in personality and eating disorders	42
Alma Mihaljević Peleš, Maja Bajs Janović (Zagreb, Croatia): Indications for electroconvulsive therapy in mood disorders	43
Martin Brüne (Bochum, Germany): Nonverbal interaction of patients with borderline personality disorder	44
LECTURES.....	45
10TH INTERNATIONAL EPILEPSY SYMPOSIUM IN PULA	45
Vida Demarin (Zagreb, Croatia): Past 10 years – Epilepsy Symposia in Pula	45
Maja Jurin (Zagreb, Croatia): Novel models of therapy for children with epilepsy	46
Ivan Bielen (Zagreb, Croatia): Public health importance of epilepsy in Croatia	47
Hrvoje Hećimović (Zagreb, Croatia): Significant developments in adult epilepsy in Croatia over past 10 years..	48
YOUNG PSYCHIATRISTS: THE ROLE OF PSYCHOLOGICAL FACTORS IN PSYCHOPHARMACOTHERAPY	49
Darko Marčinko, Vesna Medjedović Marčinko, Mladenko Šumić (Zagreb, Croatia): Psychodynamic of psychopharmacotherapy	49
Bjanka Vuksan-Ćusa, Marina Šagud, Nenad Jakšić, Mladenko Šumić (Zagreb, Croatia): Bipolar disorder and borderline personality disorder-comorbidity, multimorbidity or overlapping	50
Antonia Nikolina Domokuš (Popovača, Croatia), Vedran Bilić, Darko Marčinko (Zagreb, Croatia): Case report (with supervision)	51
6TH PSYCHOPATHOLOGY SUMMER SCHOOL.....	52
Johannes Schröder (Heidelberg, Germany): Cerebral correlates of cognitive reserve.....	52
Dorothee Bernheim Anna Buchheim, Alexander Lischke, Manuela Gander, Mathias Becker, Renate Mentel, Harald Freyberger, Martin Lotze (Ulm, Germany): Neural correlates of attachment in borderline patients at the beginning of DBT therapy: An fMRI study.....	53
Martin Brüne (Bochum, Germany): Mentalisation based group therapy as an add-on to dialectical behavior therapy in borderline patients.....	54
Francesco Benedetti (Milan, Italy): Chronotherapy in affective disorders	55
Norbert Müller (Munich, Germany): Differential diagnosis :Tourette-syndrome versus PANDAS-syndrome	56
Karl Bechter (Günzburg, Germany): Focusing on important aspects in psychotherapy:experience guided thoughts	57
Margherita Bechi (Milan, Italy): Exploring functioning in schizophrenia: implications for treatment	58
STROKE SYMPOSIUM E.Bernd Ringelstein (Münster, Germany): Hunting for stroke mimics and chameleons.	59
Anita Arsovska, Zoran Arsovski (Skopje, Macedonia): Cerebral venous thrombosis: etiology, symptoms, diagnosis and treatment	60
Marjan Zaletel (Ljubljana, Slovenia): Antiphospholipid antibodies, a possible etiologic factor for cerebrovascular events in younger adult patients	61

Matija Zupan, Bojana Žvan (Ljubljana, Slovenia): Impact of leukoaraiosis on the endothelial function	62
NEUROSCIENCE SYMPOSIUM - NEUROBIOLOGIC BASIS OF COGNITIVE DEVELOPMENT	63
Ivica Kostović (Zagreb, Croatia): Development of “wiring” specific for the human fetal brain.....	63
Zdravko Petanjek, Dora Sedmak, Ana Hladnik, Domagoj Džaja, Ivana Bičanić, Sanja Darmopil (Zagreb, Croatia): Plasticity of microcircuitry during protracted development of human associative cortex	64
Goran Sedmak, Željka Krsnik (Zagreb, Croatia): Gene expression in the developing and adult human brain: relevance for brain disorders.....	65
NEUROSCIENCE AND NEUROPSYCHIATRY IN SOCIETY –STUDENT SYMPOSIUM.....	66
Filip Đerke, Luka Filipović Grčić (Zagreb, Croatia): Healthy Brain Project – promoting mental health in school children.....	66
Melinda Šefčić (Zagreb, Croatia): The aestheticization and rehumanization of public space: art as therapy	68
Tea Majer, Marta Okružnik, Marija Heffer (Osijek, Croatia): Brain awareness week - our experience.....	69
Christina Isabell. Jukić, Maša Lovrović (Rijeka, Croatia): Student congress of neuroscience- NeuRi	71
6th SYMPOSIUM ON INTERFACE PROVIDERS IN NEUROREHABILITATION	72
Snježana Rucner (Zagreb, Croatia): The importance of music in everyday life.....	72
JOINT MEETING WITH ALPS-ADRIA NEUROSCIENCE SECTION AND CENTRAL AND EASTERN EUROPEAN STROKE SOCIETY AND WFN APPLIED RESEARCH GROUP ON THE ORGANIZATION AND DELIVERY OF CARE.....	73
Matea Fogec (Zagreb, Croatia): Searching for collectors: an examination of their profiles and behavior within Croatia	73
Karl Bechter (Günzburg, Germany): Achieving remission of therapy resistant psychosis by immune treatments- single case analyses	74
Azra Alajbegović, Salem Alajbegović (Sarajevo, BiH): Use of cannabis in the therapy of neurological diseases	75
Hrvoje Budinčević (Zagreb, Croatia): ESO-EAST project and stroke registries.....	76
WORKSHOPS	77
Anton Glasnović. Vida Demarin (Zagreb, Croatia): How to plan a research in clinical setting.....	77
Igor Mošič (Rijeka, Croatia): Beyond wants – stress-relief mind training.....	78
POSTERS PSYCHIATRY.....	79
1. INFLAMMATORY MARKERS ARE ASSOCIATED WITH VOLUMETRIC GRAY MATTER MEASURES IN BIPOLAR DISORDER Veronica Aggio, Sara Poletti, Sara Di Toro, Davide Ghiglino, Cristina Colombo, Roberto Furlan, Francesco Benedetti	79
2. EXPLORING THEORY OF MIND IN SCHIZOPHRENIA: DIFFERENCES BETWEEN “POOR”, “FAIR” MENTALISERS AND CONTROLS Giulia Agostoni, Margherita Bechi, Marta Bosia, Mariachiara Buonocore, Roberto Cavallaro	79
3. THE ROLE OF BIOLOGICAL AND SOCIOCULTURAL FACTORS IN EATING DISORDERS Marina. Artemieva, Boris Tsygankov, Roman Souleimanov, Ivan Danilin, Anastasia Lazukova, Elena Kislova.....	80
4. CHILD-PARENT RELATIONS AS A FACTOR IN THE FORMATION OF EMPATHY IN CHILDREN WITH MINIMAL DYSFUNCTION Tatiana Arakelyants, Zhanna Gardanova.....	80

5. PSYCHIATRIC MANIFESTATIONS OF NEUROSYPHILIS IN EARLY STAGE OF INFECTION - CASE REPORT Andreja Celofiga, Jure Koprivšek	81
6. ANXIETY IN PSORIASIS PATIENTS Ivan Danilin, Zofia Niewozinska, Marina Artemieva, Roman Souleimanov, Anastasia Lazukova, Irina Korsunskaya	81
7. PROPORTIONAL ANALYSIS OF THE COPING STRATDGIES AND DEFENSE MECHANISM IN PROSTATE CANCER PATIENTS COMPARED WITH PATIENTS IN OTHER CANCERS AND HEALTH PEOPLE Zhanna Gardanova, Anton Chernov, Iskander Abdullin	82
8. PSYCHOLOGICAL CORRECTION OF PSYCHO-EMOTIONAL STATES IN PREGNANT WOMEN WITH HYPERTENSIVE COMPLICATIONS Zhanna Gardanova, Dmitry Hritinin, Kseniia Anisimova.....	83
9. EXCITATORY AMINO ACID TRANSPORTERS 1 (EAAT1) AFFECTS CORTICOLIMBIC CIRCUITRY DURING IMPLICIT PROCESSING OF NEGATIVE STIMULI IN BIPOLAR DISORDER Davide Ghiglino, Sara Poletti, Francesco Benedetti.....	83
10. NEUROSCIENCE AND PSYCHOANALYSIS ON DICHOTOMY PSYCHE/SOMA Alen Greš, Ljubomir Radovančević, Ivica Šain	84
11. ANONYMOUS FEEDBACK FROM THE FIRST YEAR MEDICAL STUDENTS AT THE FACULTY OF MEDICINE IN RIJEKA ABOUT THE “COMMUNICATION MODEL FOR HEALTHCARE PROFESSIONALS” WORKSHOP Suzana Janković, Igor Mošič	84
12. STUDY OF METABOLIC SYNDROME AND ITS CLINICAL CORRELATES IN PATIENTS SUFFERING FROM SCHIZOPHRENIA”- AN INDIAN STUDY Vishwanath Lalugol, Shivananda Jena	85
13. PSYCHOTHERAPY IN EVERYDAY PSYCHIATRIC TREATMENT Jadran Morović	85
14. TRYPTOPHAN CATABOLISM AFFECTS THE NEURAL CORRELATES OF MOOD-CONGRUENT PROCESSING BIASES IN BIPOLAR DEPRESSION Martina Riberto, Benedetta Vai , Francesco Benedetti... 86	86
15. THE PHENOMENOLOGICAL ANALYSIS OF IMPAIRED AGE SELF-CONSCIOUSNESS IN LATENT SCHIZOPHRENIA Roman. Suleymanov, Marina Artemieva, Ivan Danilin, Anastasia Lazukova, Tatiana Varnakova.....	86
16. BRAIN PATHOLOGY IN MENTAL DISORDERS CAUSED BY THE USE OF OPIOIDS (NEUROIMAGING ASPECTS) Dmitriy Tarumov, Igor Zhelezniak, Vladislav Shamrey	87
17. EMOTIONAL INTELLIGENCE. IMPLICATIONS FOR ELDERLY PSYCHIATRY Fabio Tassi, Franco Babici, Antonino Riolo.....	88
18. A ROLE OF GUT-MICROBIOTA-BRAIN AXIS IN THE PATHOGENESIS OF PSYCHIATRIC ILLNESS Luka Turkalj, Emina Horvat Velić	88
19. ATTITUDES OF DOCTORS ON SPECIALIZATION CONTRACTS Ivan Vukoja, Ivana Šmit, Ada Barić Grgurević, Lana Videc Penavić, Željko Blažinkov, Ana Gverić Grginić, Jakov Ivković, Luka Vučemilo, Ivan Lerotić, Ivan Raguž, Ranka Serventi Seiwert, Marija Perić, Krešimir Luetić	88
20. ME AGAINST MYSELF: A YOUNG PATIENT WITH RECURRENT EPISODES OF ANTI-NMDA RECEPTOR ENCEPHALITIS: CASE REPORT Tracey Wing, Rochelle Kinson	89
POSTERS NEUROLOGY	90
21. CEREBRAL VENOUS SINUS THROMBOSIS WITH HAEMORRHAGIC TRANSFORMATION AND ULCERATIVE COLITIS IN A 19 YEAR OLD FEMALE PATIENT Anita Arsovska, Frosina Stojkovska, Irena Djorceva, Marija Babunovska, Jasmina Mitrevska-Velkov	90

22. IMPACT OF BODY MASS INDEX AND WRIST CIRCUMFERENCE ON CARPAL TUNNEL SYNDROME Dražen Ažman, Milan Bitunjac, Pero Hrabač, Lidija Šapina, Marija Ratković, Vida Demarin ...	90
23. BILATERAL ARTERIAL THORACIC OUTLET SYNDROME IN 20-YEAR-OLD WOMAN Milan Bitunjac, Marija Čandrlić, Dražen Ažman, Martina Galić, Gordana Lojen, Marija Ratković	91
24. INTIMA MEDIA THICKNESS AND CORONARY ARTERY BYPASS GRAFTING SURGERY Hrvoje Budinčević, Mijo Meter, Petra Črnac, Krešimir Kordić, Luka Marjanović, Edvard Galić, Vida Demarin.....	91
25. GUILLAIN-BARRE SYNDROME: CLINICAL EXPERIENCE FROM DEPARTMENT OF NEUROLOGY, TUZLA, BOSNIA AND HERZEGOVINA Alena Burgić, Sanela Zukić, Nermina Pirić, Adnan Burina, Jasmin Kulenović, Renata Hodžić, Goran Kojić, Osman Sinanović	92
26. A CASE OF CEREBRAL VASCULITIS IN A 58-YEAR-OLD PATIENT PRESENTING WITH ACUTE STROKE Marija Čandrlić, Milan Bitunjac, Dražen Ažman, Martina Galić	92
27. DON'T IGNORE THE POSTSTROKE DEPRESSION! Ljiljana Čengić	93
28. A SPONTANEOUS CAROTID ARTERY DISSECTION IN A BALLET DANCER: A CASE REPORT Petra Črnac, Mijo Meter, Marija Sedlić, Marina Milošević, Hrvoje Budinčević	93
29. GENDER DIFFERENCES IN RECURRENT STROKE AMONG PATIENTS WITH ATRIAL FIBRILLATION RECEIVING ANTICOAGULANTS Petra Črnac, Marina Milošević, Marija Sedlić, Hrvoje Budinčević	94
30. ROLE OF SPEECH-LANGUAGE PATHOLOGIST AFTER A STROKE Iva Maria Demarin	94
31. A THERAPEUTIC POST-STROKE CHALLENGE: CHRONIC THERAPY-RESISTANT DEPRESSIVE-ANXIOUS SYMPTOMATOLOGY – A CASE REPORT Irena Đorčeva, Anita Arsovska, Branislav Stefanovski	95
32. RANKL/RANK/OPG axis is deregulated in MS patients at clinical onset Anton Glasnović, Maristela Stojić, Lidija Dežmalj, Dominik Romić, Nino Tičinović, Vladimira Vuletić, Danka Grčević	95
33. THE SOCIAL CONTEXT OF ALZHEIMER'S DISEASE Željka Josipović – Jelić, Ivana Šoljan	96
34. BOTULINUM TOXIN IN THE TREATMENT OF NEUROLOGICAL DISORDERS: 10 YEARS EXPERIENCE FROM UNIVERSITY CLINICAL CENTER TUZLA DEPARTMENT OF NEUROLOGY DEPARTMENT, TUZLA, BOSNIA AND HERZEGOVINA Jasmin Kulenović, Sanela Zukić, Muhamed Lepuzanović, Alena Burgić, Amila Brkić, Goran Kojić, Nihad Tinjić, Adnan Burina, Osman Sinanović	96
35. DIFFERENCE OF THE SLEEP FRAGMENTATION ACCORDING TO AGES IN PATIENTS WITH OBSTRUCTIVE SLEEP APNEA Jin-Seong Lee, Jong-Won Kim.....	97
36. MYASTHENIA GRAVIS AND EPILEPSY: CASE REPORT Muhamed Lepuzanović, Jasmin Kulenović, Alena Burgić, Sanela Zukić, Adnan Burina, Osman Sinanović	97
37. ACUTE MYOCARDIAL INFARCTION FOLLOWING THROMBOLYTIC THERAPY FOR ACUTE ISCHEMIC STROKE Maria Mirabela Manea, Dorin Dragos, Ana Maria. Dobri, Emanuel Stoica, Adrian Bucsa, Ioana Marinica, Sorin Tuta	97
38. PERICALLOSAL LIPOMA: A CASE REPORT Tomislav Pavlović, Sanja Trtica, Marina Milošević, Hrvoje Budinčević	98
39. MILLER FISHER SYNDROME IN CHILDREN -CASE REPORT Dobrinka Petković, Borislav Vuković .	98
40. ARTERY OF PERCHERON INFARCTION IN A 47-YEAR-OLD MALE: A CASE REPORT Marija Sedlić, Petra Črnac, Tomislav Pavlović, Franka Jelavić Kojić, Hrvoje Budinčević	99

41. DYSLIPIDEMIA IN SUBCLINICAL HYPOTHYROIDISM REQUIRES ASSESSMENT OF SMALL DENSE LOW DENSITY LIPOPROTEIN CHOLESTEROL (SDLDL-C) Maida Seferovic Saric, Miljenka-Jelena Jurasic, Slavica Sovic, Bojana Kranjcec, Sanja Kovacic, Andrijana Bogoje Raspopović, Vida Demarin ..	99
42. DYSPHAGIA DISORDERS IN NEUROLOGICAL DISEASES: EXPERIENCE FROM UNIVERSITY CLINICAL CENTER DEPARTMENT OF NEUROLOGY, TUZLA, BOSNIA AND HERZEGOVINA Mirna Selimbašić, Amila Brkić, Osman Sinanović	100
43. EPIDEMIOLOGY OF PHARMACOLOGICAL TREATMENT OF MULTIPLE SCLEROSIS IN CROATIA Josip Sremec, Jelena Košćak, Pero Draganić, Sanja Tomasović	100
44. “THE WITCH” THAT STOLE COGNITION Zoran. Tomić, Matija Sošić, Olivio Perković, Vladimira Vuletić	101
45. MILLER FISHER SYNDROME IN ADULTS: A CASE REPORT Ivana Vuković, Borislav Vuković, Dobrinka Petković.....	101
46. TWO YEARS OUTCOME OF POST-STROKE WRITING AND READING DISORDERS Sanela Zukić, Osman Sinanović, Lejla Zonić.....	101
SPONSORS AND SUPPORTERS.....	103

PROGRAM

Wednesday, May 24th

15:00-18:00 **NEUROPSYCHOANALYSIS WORKSHOP**
Bianca Istriana Hall Mark Solms (Cape Town, South Africa)

16:00-18:00 **10TH INTERNATIONAL EPILEPSY SYMPOSIUM IN PULA**
Belica Hall Chairperson: Hrvoje Hećimović (Zagreb, Croatia)
 V. Demarin (Zagreb, Croatia): Past 10 years – Epilepsy Symposia in Pula
 M. Jurin (Zagreb, Croatia): Novel models of therapy for children with epilepsy
 I. Bielen (Zagreb, Croatia): Public health importance of epilepsy in Croatia
 H. Hećimović (Zagreb, Croatia): Significant developments in adult epilepsy in Croatia over past 10 years

18:00-19:00 **LIFELINES SATELLITE SYMPOSIUM**
 G. Thorvardsson (Reykjavik, Iceland): EEG meets cloud computing

19:00-20:00 **ACADEMIC LECTURE**
Ulika Hall P. Rakic (New Haven, USA): Neuronal migration: Relevance to neuropsychiatric disorders

Thursday, May 25th

08:30-09:00 **OPENING CEREMONY**
Ulika Hall

09:00-09:30 **OPENING LECTURE**
Ulika Hall M. Solms (Cape Town, South Africa): The scientific standing of psychoanalysis

09:30-12:00 **MAIN THEME – DEMENTIA**
Ulika Hall Chairpersons: N. Bogdanović (Stockholm, Sweden), N. Müller (München, Germany)
 N. Bogdanović (Stockholm, Sweden): Imaging in the early assessment of dementia disorders
 M. Ikonomovic (Pittsburgh, USA): Validation of amyloid and tau PET in AD and non-AD dementias: clinical-pathological correlations
 N. Müller (Munich, Germany): Immune based treatments of Alzheimers disease
 J.M. Burgunder (Bern, Switzerland): Molecular mechanisms in Huntington's disease: the path to therapy
 M. Čturić (Columbia, USA): Huntington's disease: current trends
 V. Vuletić (Rijeka, Croatia): Parkinson's disease dementia
 D. Chudy (Zagreb, Croatia): Deep brain stimulation as a therapy for neurologic and psychiatric disease – New insights

12:00-13:00 **ABBVIE SATELLITE SYMPOSIUM – 200 YEARS OF PARKINSON'S DISEASE**
Ulika Hall Z. Pirtovšek (Ljubljana, Croatia): Before and after James Parkinson: Many faces of Parkinsonism
 V. Vuletić (Rijeka, Croatia): Modern concept of treating Parkinson's disease

12:00-13:30 **YOUNG PSYCHIATRISTS: THE ROLE OF PSYCHOLOGICAL FACTORS IN PSYCHOPHARMACOTHERAPY**
Bianca Istriana Hall Chairpersons: V. Bilić (Zagreb, Croatia), D. Marčinko (Zagreb, Croatia)
 D. Marčinko (Zagreb, Croatia): Psychodynamic of psychopharmacotherapy
 B. Vuksan Ćusa (Zagreb, Croatia): Bipolar disorder and borderline personality disorder-comorbidity, multimorbidity or overlapping
 A. N. Domokuš (Popovača, Croatia): Case report (with supervision)
 Discussion

13:00-14:30 **LUNCH**

14:30-17:15 **MAIN THEME - STROKE**
Ulika Hall Chairpersons: V. Demarin (Zagreb, Croatia), K. Niederkorn (Graz, Austria)
 S. Gajović (Zagreb, Croatia): Preclinical neuroimaging of animal stroke models
 V. Demarin (Zagreb, Croatia): Contemporary approach to stroke prevention
 D. Zadravec (Zagreb, Croatia): Recent advances in neuroimaging and neurointervention in acute stroke

Program

K. Niederkorn (Graz, Austria) : Critical issues in endovascular stroke treatment
 N. Bogdanović (Stockholm, Sweden): Vascular cognitive impairment
 S. Morović (Zagreb, Croatia): The role of arterial stiffness in assessment of cognitive decline
 H. Budinčević (Zagreb, Croatia): Direct oral anticoagulants in secondary stroke prevention
 J. Ljevak (Zagreb, Croatia): Direct oral anticoagulants and neurovascular complications – can we do more ?

14:30-17:00
Bianca Istriana Hall

6TH PSYCHOPATHOLOGY SUMMER SCHOOL
 Chairpersons: K. Bechter (Günzburg, Germany) & M. Brüne (Bochum, Germany)

J.Schröder (Heidelberg, Germany): Cerebral correlates of cognitive reserve
 D. Bernheim (Ulm, Germany): Neural correlates of attachment in borderline patients at the beginning of DBT therapy: An fMRI study
 M. Brüne (Bochum, Germany): Mentalisation based group therapy as an add-on to dialectical behavior therapy in borderline patients
 F. Benedetti (Milan, Italy): Chronotherapy in affective disorders
 N. Müller (Munich, Germany): Differential diagnosis: Tourette-syndrome versus PANDAS-syndrome
 K. Bechter (Günzburg, Germany): Focusing on important aspects in psychotherapy: Experience guided thoughts
 M. Bechi (Milan, Italy): Exploring functioning in schizophrenia: implications for treatment

17:15-18:00
Ulika Hall

MOLEAC SATELITTE SYMPOSIUM
 V. Demarin (Zagreb, Croatia): Enhancing Recovery After Stroke – NeuroAid

17:15-18:00
Belica Hall

WORKSHOP: HOW TO WRITE AND READ PAPERS
 Anton Glasnović (Zagreb, Croatia): How to plan a research in clinical setting

18:00-19:30
Ulika Hall

POSTER SESSION
 Chairpersons: K. Bechter (Günzburg, Germany), N. Bogdanovic (Stockholm, Sweden), K. Niederkorn (Graz, Austria), I. Šain (Pula, Croatia)

Friday, May 26th

09:00-12:00
Ulika Hall

MAIN THEME – NEUROLOGY & PSYCHIATRY
 Chairpersons: O. Sinanovic (Tuzla, BIH), C. Enzinger (Graz, Austria)

C. Enzinger (Graz, Austria): Neuroimaging and multiple sclerosis
 A. Glasnović (Zagreb, Croatia): Immunologic processes in multiple sclerosis – The newest insights
 V. Bašić-Kes (Zagreb, Croatia): New trends in the treatment of multiple sclerosis
 M. Bošnjak Pašić (Zagreb, Croatia): Multiple sclerosis and pregnancy
 O. Sinanović (Tuzla, BIH): Dysphagia in neurologic disorders
 M. Nakić (Yale, USA): Advances in neuroimaging and impact on psychiatric practice
 F. Benedetti (Milan, Italy): Immune tolerance and neuroinflammation in chronic depression: bridging the gap between psychiatric and neurodegenerative diseases
 B. Tsygankov (Moscow, Russia): Night eating syndrome in patients with anxiety and depression.
 H. Drexhage (Rotterdam, Netherlands): T-cell defects and pro-inflammatory monocytes/macrophages are “drugable” key elements of mood disorders

12:00-13:00
Ulika Hall

LUNDBECK SATELLITE SYMPOSIUM
 M. Bajs Janović (Zagreb, Croatia): Depresija je više od poremećaja raspoloženja: put ka funkcionalnom oporavku bolesnika
 V. Ferreri (Rijeka, Croatia): Brintellix u svakodnevnoj kliničkoj praksi
 Rasprava

12:00-13:00
Belica Hall

WORKSHOP: BEYOND WANTS – STRESS-RELIEF MIND TRAINING
 Chairperson: I. Mošič (Rijeka, Croatia)

13:00-14:30

LUNCH

14:30-16:30
Ulika Hall

MAIN THEME - PSYCHIATRY
 Chairpersons: M. Brüne (Bochun, Germany), D. Marčinko (Zagreb, Croatia)

S. Matačić (Zagreb, Croatia): Some thoughts about depression, „the disease of 21st century“ – a psychodynamic approach
 D. Marčinko (Zagreb, Croatia): Depression and suicidality in personality and eating disorders

Program

M. Bajs Janović (Zagreb, Croatia): Indications for electroconvulsive therapy in mood disorders
 M.Brüne (Bochum, Germany): Nonverbal interaction of patients with borderline personality disorder
 M.Z.Dernovšek (Ljubljana, Slovenia): Psychoeducation on depression, anxiety disorders and stress related disorders in community health centers in Slovenia

14:30-16:30

Bianca Istriana Hall

STROKE SYMPOSIUM

Chairpersons: GE. Klein (Graz, Austria), G. Lanner (Graz, Austria)

EB Ringelstein (Münster, Germany): Hunting for stroke mimics and chameleons
 K. Niederkorn (Graz, Austria): Silent brain infarctions – update
 T. Gatttringer (Graz, Austria): Rare stroke cases
 A. Arsovska (Skopje, Macedonia): Cerebral venous thrombosis: etiology, symptoms, diagnosis and treatment
 M. Zaletel (Ljubljana, Slovenia): Antiphospholipid antibodies, a possible etiologic factor for cerebrovascular events in younger adult patients.
 B. Žvan (Ljubljana, Slovenia): Impact of leukoaraiosis on the endothelial function

14:30-16:30

Belica Hall

NEUROSCIENCE SYMPOSIUM: NEUROBIOLOGIC BASIS OF COGNITIVE DEVELOPMENT

Chairperson: I. Kostović (Zagreb)

I.Kostović (Zagreb, Croatia): Development of “wiring” specific for the human fetal brain
 M. Judaš (Zagreb, Croatia): Human brain development in the framework of life-history theory
 Z. Petanjek (Zagreb, Croatia): Plasticity of microcircuitry during protracted development of human associative cortex
 Ž. Krsnik (Zagreb, Croatia): Gene expression in the developing and adult human brain: relevance for brain disorders

16:30-17:30

Bianca Istriana Hall

MEDIS SATELITE SYMPOSIUM: PRIKAZ KLINIČKE UČINKOVITOSTI LIJEKA TECFIDERA, PRIKAZI PACIJENATA

V. Bašić Kes & M. Bošnjak Pašić

16:30-17:45

Belica Hall

NEUROSCIENCE AND NEUROPSYCHIATRY IN SOCIETY – STUDENT SYMPOSIUM

Chairpersons: F. Đerke (Zagreb, Croatia), A. Juginović (Split, Croatia)

F. Đerke (Zagreb, Croatia): Healthy Brain Project – Promoting mental health in school children
 M. Šefčić (Zagreb, Croatia) Art as Therapy: The aestheticization and rehumanization of public space
 T. Majer (Osijek, Croatia): Brain awareness week - our experience
 A. Juginović (Split, Croatia): Student Society for neuroscience NeuroSplit: a brief story of a great future
 C.I. Jukić (Rijeka, Croatia): Student congress of neuroscience- NeuRi

17:30-18:15

Bianca Istriana Hall

SAFE SATELITE SYMPOSIUM

I. Milojević (Ćuprija, Serbia): Burden of stroke report
 A. Arsovska (Skopje, Macedonia): The role and characteristics of Stroke support organizations - voice of patients in Central and Eastern Europe

18:15-19:30

Bianca Istriana Hall

6TH SYMPOSIUM ON INTERFACE PROVIDERS IN NEUROREHABILITATION

Chairpersons: N. Beck (Zagreb, Croatia), P. Verschure (Barcelona, Spain)

P. Verschure (Barcelona, Spain): Rehabilitation gaming system: Science grounded, virtual reality delivered stroke rehabilitation
 I. Gligorijević (Belgrade, Serbia): Mobile brain recordings - a matter of presence and future
 N. Beck (Zagreb, Croatia): Peak performance in sports and anti ageing for the mind -individualised neurofeedback
 S. Rucner (Zagreb, Croatia): The importance of music in everyday life

19:30-20:30

Bianchera Hall

KURATORIUM MEETING

Saturday, May 27th

09:00-10:00

Ulrika Hall

BEST POSTERS AWARDS PRESENTATIONS

Chairpersons: Vida Demarin (Zagreb, Croatia), Francesco Benedetti (Milan, Italy)

10:00-12:00

Ulrika Hall

JOINT MEETING WITH ALPS-ADRIA NEUROSCIENCE SECTION AND CENTRAL AND EASTERN EUROPEAN STROKE SOCIETY AND WFN APPLIED RESEARCH GROUP ON THE ORGANIZATION AND DELIVERY OF CARE

Chairpersons: Leontino Battistin (Padova, Italy), Vida Demarin (Zagreb, Croatia).

M. Fogec (Zagreb, Croatia): Searching for collectors: an examination of their profiles and behavior within Croatia
 K. Bechter (Günzburg, Germany): Achieving remission of therapy resistant psychosis by immune treatments-single

Program

case analyses

E. Titianova (Sofia, Bulgaria): Folk wisdom and scientific discoveries

A. Alajbegović (Sarajevo, BiH): Use of cannabis in the therapy of neurological diseases

H. Budinčević (Zagreb, Croatia): ESO-EAST project and stroke registries

ACADEMIC LECTURES

Paško Rakić (New Haven, USA): Neuronal migration: Relevance to neuropsychiatric disorders

The pattern and function of synaptic connection in the cerebral cortex is initially defined by their areal, laminar and columnar position, which is acquired by their active migration from multiple sites of origin before birth. New experimental approaches enable investigation of the cellular mechanisms and role of specific genes, non-coding regulatory elements and signaling molecules that control neuronal production, phenotypic fate, rate of migration and guidance to the proper final position. We found that disruption or even a slight slowing of the rate of neuronal production and migration by either genetic or environmental factors can induce gross heterotopias as well as subtle neuronal malposition that, depending on the timing, may eventually cause a variety of developmental and intellectual disabilities.

Mark Solms (Cape Town, South Africa): The scientific standing of psychoanalysis

The talk will summarise the core scientific of psychoanalysis and rebuts the prejudice that it is not 'evidenc-based'. Prof Solms will address these questions: (A) How does the emotional mind work, in health and disease? ; (B) Therefore, what does psychoanalytic treatment aim to achieve?; (C) How effective is it?

MAIN THEMES LECTURES**Nenad Bogdanović (Stockholm, Sweden): Imaging in the early assessment of dementia disorders**

Alzheimer's disease (AD) is the most common cause of dementia, yet diagnostic uncertainty may remain after a comprehensive evaluation by a dementia expert. Clinical criteria alone not infrequently fail to determine an AD etiology, against postmortem examination, as defined by amyloid- β plaques and neurofibrillary tangles. Establishing that mild cognitive impairment (MCI) is due to AD is even more difficult, given more heterogeneous causes of MCI, and a longitudinal assessment is often required. To help address these challenges, positron emission tomography (PET) radiotracers have been developed, to detect fibrillary aggregates of amyloid- β in neuritic plaques, *in vivo*. The Food and Drug Administration has approved three amyloid-PET radiotracers for clinical use. The emergence of beta-amyloid PET, while primarily still in a research context, is raising complex questions for both the individual and the family, as well as for their physicians and medical professionals, surrounding the diagnostic process for AD and associated disorders. There are particular questions concerning, what beta-amyloid-PET is, what it shows, and what it means in terms of diagnosing AD. It is important to stress that beta-amyloid PET results will not constitute, and are not equivalent to, a clinical diagnosis of AD dementia. Imaging is only one tool among many, such as neuropsychological testing, other imaging tests, and cerebrospinal fluid analysis that clinicians may use thoughtfully in the complex diagnosis of dementia. When the cause of MCI or dementia remains unexplained after a traditional clinical evaluation, brain beta-amyloid PET imaging in conjunction with this evaluation can help in reaching a diagnosis. It may increase the certainty that AD may be the underlying cause of the MCI or dementia. A negative beta-amyloid PET image could be used to diminish the chance that AD is the cause of an individual's symptoms. In some circumstances, beta-amyloid PET imaging can be considered when an individual a) complains of persistent or progressive unexplained and/or atypical memory problems, b) confusion with a history and cognitive testing that support diagnoses of either dementia or mild cognitive impairment, c) meets the criteria for possible Alzheimer's, but has an unusual clinical presentation and d) has progressive dementia and is relatively young at disease onset (< 65 years). On the other hand beta-amyloid PET imaging is not appropriate in the clinic: a) as a means of determining the severity of dementia, b) when requested solely based on a family history of dementia or c) presence of other risk factors for AD, such as the APOE-e4 gene. The brain beta-amyloid PET imaging appropriate use criteria suggested by **Alzheimer's Association** are currently a subject of intensive discussion: 1) As a substitute for genetic testing for mutations that cause AD and 2) For nonmedical reasons, such as insurance and legal or employment decisions.

Miloš Ikonović (Pittsburgh, USA): Validation of Amyloid and Tau PET in AD and Non-AD Dementias: Clinical-Pathological Correlations

Introduction/Objectives: Alzheimer's disease (AD) is characterized neuropathologically by extracellular deposits of amyloid- β (A β) peptides and intracellular neurofibrillary tangles (NFT) of over-phosphorylated Tau protein. Advancements in PET imaging allow for detection of pathology in living patients and have the potential to aid clinical diagnosis. Imaging studies indicate high specificity and sensitivity of amyloid PET ligands for detection of fibrillar A β pathology, however relative contributions of different types of A β deposits is not clear and several studies indicated that amyloid PET may detect diffuse plaques (DP) in addition to neuritic plaques (NP). Moreover, imaging-to-autopsy validation studies of Tau-selective PET ligands are lacking.

Methods: We evaluated amyloid PET ligands Pittsburgh Compound-B (PiB) and Flutemetamol (Vizamyl) as well as tau PET ligand Flortaucipir (formerly AV-1451/T-807) using their fluorescent derivatives in postmortem brain tissues from subjects with AD, non-AD dementias, and cognitively normal subjects. Postmortem brain tissues were also obtained from subjects who underwent amyloid and Tau PET imaging and later came to autopsy, allowing for microscopic analyses and quantitative biochemical measures for region-matched imaging-to-neuropathology correlation analyses.

Results: PiB and Flutemetamol histofluorescence and PET measures correlated strongly with immunohistochemical and biochemical (quantitative ELISA and in vitro binding assays) measurements of A β , with no detection of Tau-positive classic NFT. The strongest signal corresponded to high frequencies of NP and CAA, however areas with predominant DP also showed high PiB and Flutemetamol signal. In AD brains we observed good correspondence of Flortaucipir PET retention signal with measures of p-Tau pathology and brain concentrations; however a significant correlation was also observed with amyloid pathology. In contrast to AD, the fluorescent derivatives of amyloid and Tau PET ligands did not interact with pathology in non-AD tauopathy cases.

Conclusions: The detection of both DP and NP with PiB and Vizamyl could explain several false-positive results reported in amyloid PET validation studies which relied on NP as the gold standard for neuropathology. Thus, PiB and Flutemetamol PET may correlate better with NIA-AA 2012 neuropathology criteria that incorporate both CERAD (NP) and Thal phases (all types of A β plaques). Associations of Flortaucipir with PiB and measures of A β could be related to substantial co-distribution of Tau and A β pathology in AD brains, particularly in areas most severely affected. The value of Flortaucipir for detection of pathology in non-AD tauopathies is questionable. Thus Tau PET imaging ligands require further evaluation.

Norbert Müller (München, Germany): Immune based treatments of Alzheimers disease

The pathogenetic mechanisms of Alzheimer's disease (AD) are up to now only partly understood. There is no doubt that 'immunosenescence', the aging of the (healthy) immune system, leads to impaired immune function and that aging is the main risk factor for AD. Also beyond doubt is that neuroinflammation plays a key role in the pathophysiology of the disease. However, whether inflammation is an underlying cause or a resulting condition in AD remains unresolved. At higher ages, communication in the peripheral and CNS immune systems, including both the initiation of the immune process and the down-regulation of inflammation, are impaired; this impaired communication might be one of the main factors contributing to the immune pathology of AD. The innate and adaptive immune systems (T- and B-cells) have been shown to be upregulated in aging and AD. Mounting evidence indicates that microglia activation contributes to neuronal damage in neurodegenerative diseases, but beneficial aspects of microglia activation have also been identified. The purpose of this contribution is to highlight new insights into the detrimental and beneficial role of neuroinflammation in AD. In this regard, we discuss the limitations and advantages of the protective effects of non-steroidal anti-inflammatory drugs (NSAIDs) and anti-inflammatory treatment options and identify possible future implications for AD therapy that might result from this underlying neuroinflammation.

Jean-Marc Burgunder (Bern, Switzerland): Molecular mechanisms in Huntington's disease: the path to therapy

Huntington's disease is a monogenetic disorder with variable age at onset but a clear presymptomatic phase with a window of opportunity for the development of disease modifying strategies. CAG triplet elongation in the Huntingtin gene leads to an impairment and loss of the numerous cellular functions of the protein, and to an accumulation in the form of intracellular aggregation forming after a process of abnormal protein conformation. These molecular events are followed by cellular changes with cell death. The long presymptomatic period offers a great window of opportunity to explore and apply therapies, which would delay onset and modify the course of the disorders. This might include protein lowering strategies, mitochondrial rescue, modification of protein and small molecule cytoplasmatic trafficking, neuron-glia interaction and synaptic function.

Miroslav Čuturić (Columbia, USA): Huntington's disease: current trends

Huntington's disease (HD) is a neurodegenerative disorder with autosomal-dominant inheritance and complete penetrance. The illness usually emerges in mid-life and is characterized by relentless cognitive, motor and psychiatric deterioration. The genetic defect is caused by CAG trinucleotide expansion on the short arm of chromosome 4, resulting in production of an expanded polyglutamine region in the mutant huntingtin protein. The exact mechanism by which mutant huntingtin protein promotes neurodegeneration is not fully elucidated. Current treatment of HD involves a multi-disciplinary clinic approach that addresses not only symptoms of the disease in affected individuals but also attends to the complex needs within families burdened by HD. For several years tetrabenazine was the only medication US FDA approved for treatment of HD. On April 3, 2017, a new compound, deutetrabenazine received US FDA approval for treatment of chorea in HD. Emerging experimental treatment strategies are focusing on gene therapy through the use of micro RNA, antisense oligonucleotides, gene editing, modulator genes and nanotechnology. Particular research interest is devoted to identification of potential biomarkers that would enable evaluation of the therapies before clinical onset of the disease. As a single gene disorder with a defined pathogenic protein, HD has a unique position among other neurodegenerative disorders. With respect to research and drug development, HD can serve as a model for other trinucleotide repeat disorders, protein aggregation disorders, as well as dementias, psychiatric and movement disorders. Academic affiliation of HD clinics, networking and collaboration with national and international HD organizations further enhance the process of providing care to HD patients and their families.

Vladimira Vuletić (Rijeka, Croatia): Parkinson's disease dementia

Dementia is a frequent but often unrecognized problem in advanced stages of Parkinson disease (PD). Usually, PD is considered as mostly a motor disease, but nonmotor symptoms are influencing the quality of life the most and they are the most important reason for institutionalization of PD patients.

The point prevalence of dementia in PD patients is around 30% and around 10% of a PD population will develop dementia per year. Risk factors studied so far are: higher age, more severe parkinsonism, in particular rigidity, postural instability and gait disturbance, and mild cognitive impairment at baseline; and also male gender, education, depression, visual hallucinations can influence on that. There are a lot of different biomarker studies (from laboratory to novel structural and functional imaging techniques) trying to predict pre-dementia stages of cognitive impairment in PD, when we can try with researching of some neuroprotective treatments. We know about limbic and cortical spread of Lewy pathology. There are known role of low cerebrospinal fluid levels of amyloid- β 42, the APOE* ϵ 4 allele, *GBA* mutations and *SCNA* mutation. Dementia can be seen in familial forms of PD such as PARK1 and PARK8.

Existing cognitive enhancing medications have some effect in PD dementia, but there is no known neuroprotective treatment for dementia in PD patients. There are a lot of studies showing that cognitive training and exercises can help.

Darko Chudy (Zagreb, Croatia): Deep brain stimulation as a therapy for neurologic and psychiatric disease – new insights

Deep brain stimulation became a widely accepted therapy for movement disorders after the group of neurologist and neurosurgeon from Grenoble published paper in 1993. which present the use of subthalamic nuclei stimulation in Parkinson disease patients. Others present that even more successful is use of DBS in globus pallidum pars interna, in young patients with primary dystonia and nowadays it become the therapy of choice for such a patients. Nowadays DBS is evidence based therapy which dramatically improve the quality of life in patients with Parkinson disease, essential tremor and dystonia. In the past the DBS was used as a pain therapy for patients with chronic incurable pain. In recent neurological literature we can find attempts to use the DBS in other neurological and psychiatric disease like epilepsy, cluster headache, Gill de la Tourette syndrome, Alzheimer disease, obsessive compulsive disorder, disorder of consciousness and even in anorexia nervosa, aggressive behaviour and homosexuality. Further studies of DBS indications became not only the matter of interest of medical community but also public, ethical, political, economical and even religious authorities.

Dunja Gorup, Marina Dobrivojević, Siniša Škokić, Dora Polšek, Anton Glasnović, Dinko Mitrečić, Jasna Križ (Quebec, Canada), Srećko Gajović (Zagreb, Croatia): Preclinical neuroimaging of animal stroke models

The brain repair after damage, in particular after ischemic brain lesion due to the stroke, involves a row of interconnected events mediated by neuroinflammation and including plasticity, active removal of damaged cells by apoptosis, and possible addition of new cells through neuroregeneration. The brain repair is limited, as confirmed by the clinical experiences, and neuroprotective and neuroreparative therapeutic strategies are highly needed. The preclinical selection of new brain therapies relies on representative animal models. The appropriate monitoring of brain damage consequences and repair processes in the animal models is crucial in the evaluation of new therapeutic approaches. The *in vivo* small animal imaging modalities are considered as a major addition to preclinical setting enabling the monitoring of molecular processes in the living animals. The preclinical imaging setup in our facility, Laboratory for Regenerative Neuroscience a.k.a. GlowLab, includes magnetic resonance imaging (MRI) for small animals, and optical imaging modality represented by bioluminescence imaging (BLI).

As a model for ischemic stroke, we are using medial cerebral artery occlusion in the mouse brain. To visualize molecular events related to the activity of Tlr2, Gap43, and Casp3 in the brain *in vivo* bioluminescent imaging was applied. Imaging was performed by IVIS Spectrum Pre-clinical In Vivo Imaging System (Perkin Elmer, US) in living animals genetically modified to carry luciferase reporter by recording the emitted light from the brain. The ischemic lesion was monitored by T2 MRI modality by Bruker BioSpec 70/20 USR with 7T magnetic field.

Tlr2 expression corresponded to the neuroinflammation being highly upregulated after stroke, with a peak after 2 day. Gap43 expression provided insight in axonal outgrowth and repair after stroke, reaching a peak roughly a week after the damage. The presence of apoptosis related CASP3 in the brain was visualized by application of caged luciferin, DEVD-aminoluciferin, which was released by caspase enzymatic activity. The presence of caspase was shown in the subset of Gap43 expressing cells. In these cells, CASP3 activity increased after ischemic lesion, suggesting that CASP3 and GAP43 might be part of a common molecular pathway involved in early stress response after stroke.

Monitoring inflammation, repair, and apoptosis by bioluminescent imaging in the living animals allows to analyze brain repair after stroke, but as well to design and preclinical test innovative therapies needed for the treatment of brain diseases.

Acknowledgments: The study was supported by EU FP7 grant GlowBrain (REGPOT-2012-CT2012-316120).

Vida Demarin (Zagreb, Croatia): Contemporary approach to stroke prevention

According to recently published new studies more than 90% of the stroke burden is attributable to modifiable risk factors and achieving control of behavioral and metabolic factors could avert more than ¾ of the global stroke burden. Air pollution has emerged as a significant contributor to global stroke burden, especially in low-income and middle-income countries. The results of other major studies show the importance of lifestyle changes, especially nutrition, with emphasis on Mediterranean diet, importance of fruits and vegetables in diet, and regular physical activity.

The importance of early detection and treatment of risk factors: arterial hypertension, diabetes mellitus, hyperlipidemia, cardiac causes, smoking, excessive drinking of alcohol and stress, to mention just those most frequent, has been proved. Recent studies have shown that urgent diagnosis and treatment of patients with TIA is indispensable to prevent the onset of a new TIA or stroke. Significant stenosis of carotid arteries should be managed within two weeks after stroke onset, as most of the stroke recurrences occur in the first few weeks. New oral anticoagulant drugs that have been shown to have similar or improved efficacy to warfarin in recent studies have opened up new and unexpected possibilities for stroke prevention in patients with heart disease, especially in patients with atrial fibrillation and could significantly reduce the frequency of unwanted events when combined with other medicines needed by the patient.

Dijana Zadavec, Vladimir Kalousek, Mia Smoljan (Zagreb, Croatia): Recent advances in neuroimaging and neurointervention in acute stroke

Introduction/Objectives: Mechanical thrombectomy is the newest interventional radiology accomplishment in acute ischemic stroke treatment, which should be performed within six hours of symptoms onset. Main imaging techniques used in radiological diagnostic algorithm are non-contrast-enhanced multislice computed tomography (MSCT), MSCT angiography (MSCTA) and MSCT perfusion (MSCTP). Magnetic resonance imaging can exceptionally be used with wake-up strokes and posterior circulation ischemia symptoms. MSCT determines localization and extent of brain ischemic changes using Alberta Stroke Program Early CT Score (ASPECTS). Minimally invasive MSCTA gives information about obstruction localization, thrombi or emboli length and status of intracranial collateral and extracranial circulation. MSCTP enables differentiation between irreversible and reversible brain tissue changes, i.e. between the infarct core and the penumbra. Patients with small infarct core, bigger penumbra and good collateral circulation are the best mechanical thrombectomy candidates.

Participants, Materials/Methods: Around 50 mechanical thrombectomies have been made in University Hospital Centre Sestre milosrdnice. Brain MSCT and MSCTA, along with prior neurological examination, select the mechanical thrombectomy candidates. For ASPECTS, middle cerebral artery (MCA) territory is divided into 10 regions and radiologic signs of ischemia subtract 1 point from the total of 10 points. Patients with high ASPECTS (8-10) are ideal candidates for mechanical thrombectomy. The procedure is performed in general anesthesia with blood pressure monitoring and systemic heparinization. After the thrombus aspiration, control digital subtraction angiography is performed.

Results: Our patients can be divided into 3 categories. A few patients' neurological status fully recovered with no imaging signs of ischemia. Around 50% of patients showed neurologic improvement compared to before treatment, but with remaining smaller neurological deficits and smaller ischemic areas on brain MSCT. Finally, less than 50% of patients had severe neurological deficits and bigger ischemic lesions on brain MSCT. Rare cases had postprocedural complications or fatal outcome.

Conclusions: Our current results confirm the progress of acute ischemic stroke treatment due to interventional neuroradiology progressive development. Mechanical thrombectomy is performed in two centers in Croatia at the moment. Experiences in Croatia and some other European countries show that organising a national network for acute ischemic stroke management is needed.

Nenad Bogdanović (Stockholm, Sweden): Vascular cognitive impairment

Cognitive impairment and strokes are the most common manifestation of cerebrovascular disease. Regardless of mechanism that lead to cerebrovascular disease, vascular cognitive impairment refers to all forms of cognitive disorder associated with cerebrovascular disease. It incorporates the diverse forms of cognitive deficits from mild cognitive impairment to dementia. In principle, vascular cognitive impairment can be triggered by any of the multiple causes of clinical stroke. The morphological correlate to vascular cognitive impairment ranges from a role of microinfarcts, microhemorrhages, strategic white matter tracts, loss of microstructural tissue integrity, and secondary neurodegeneration. Injuries due to the vascular events are characterized by loss of structural and functional connectivity and, hence, affect the functional networks within the brain. Vascular cognitive impairment is common both in stroke and in stroke-free patients who are presenting to dementia clinics. It is very common in elderly people that vascular pathology frequently coexists with neurodegenerative pathology, resulting in mixed forms of mild cognitive impairment or dementia. A pure vascular dementia is recognized as the second/third most common form of dementia after Alzheimer's disease and Lewy Body dementia, and there is increasing awareness that targeting vascular risk may help to prevent vascular dementia, and even modify the clinical picture of the Alzheimer type. Targeting multiple risk factors and domains in parallel, is a very comprehensive approach in multicomponent intervention. In FINGER trial (Finnish Geriatric Intervention Study to Prevent Cognitive Impairment and Disability) individuals exposed to the 2-year course of multidomain intervention (nutritional advice, exercise, cognitive training, and vascular risk monitoring) had better cognitive outcomes than persons getting a general health advice. Management of VCI is as of MCI and dementia and include the treatment of comorbidities, including psychological and behavioural symptoms, providing information and support to the patient and caregivers and maximizing independence. Pathological evidence for a cholinergic deficit in VCI has prompted randomized controlled trials with choline esterase inhibitors and memantine in patients with VCI/VD. Among the several trials there was a significant benefit for cognition in three with donepezil, but despite the small effect on cognition, donepezil is recommended by experts for the first choice in treatment.

Sandra Morović (Zagreb, Croatia): The role of arterial stiffness in assessment of cognitive decline

Cognitive impairment is still considered as a normal side effect of aging in general population.

Greater population life expectancy leads to increased incidence of cognitive impairment cases, making this one of the most important medical and social problems worldwide. Therefore, prevention of cognitive impairment is an imperative. Dementia includes a heterogeneous group of disorders, the most common being Alzheimer dementia (AD) and vascular dementia (VD). Most cardiovascular risk factors, such as hypertension, diabetes mellitus, hypercholesterolemia, atrial fibrillation, and smoking are not exclusively risk factors for VD, but also for AD. Early changes of the blood vessel wall can be detected by early ultrasound screening methods which allow us to detect changes before the disease becomes clinically evident. Intracranial hemodynamics can be assessed by Transcranial Doppler Sonography (TCD), functional TCD with various functional tests, and TCD detection of cerebral emboli. Extracranial circulation, carotid and vertebral arteries, can be assessed by means of color Doppler flow imaging (CDFI). Novel ultrasound technology enables us non-invasive, bedside detection of early vascular changes such as arterial stiffness, measurement of the intima-media thickness (IMT), pulse-wave velocity, or endothelial dysfunction in order to obtain information necessary to closer determine the relation between vascular status and disease development, so that the evolution of CVD could be prevented or at least postponed. Early disease detection enables on-time management of vascular risk factors, and can postpone or even reverse disease progression.

Hrvoje Budinčević (Zagreb, Croatia): Direct oral anticoagulants in secondary stroke prevention

Atrial fibrillation is well known risk factor for ischemic stroke. . Since 1950s oral anticoagulant therapy with vitamin K antagonists (warfarin) was introduced into clinical practice, and it is has been a gold standard for secondary prevention of cardioembolic stroke. In the last few years its role in stroke prevention in patients with nonvalvular atrial fibrillation has been weakened because of development and presence of direct oral anticoagulants (direct thrombin inhibitors and direct inhibitors of factor Xa). The aspirin is the gold standard of prevention of non-cardioembolic stroke, but it seems lost the role in primary stroke prevention in patients with non-valvular atrial fibrillation. Its role in secondary stroke prevention of cardioembolic stroke prevention is still present especially in the case of acute stroke – before introduction of the oral anticoagulant therapy, then in patients who require dual or triple antithrombotic therapy and in patients who refuse or have contraindication for anticoagulant therapy. warfarin has still a leading role in stroke prevention and treatment in patients with valvular atrial fibrillation, atrial fibrillation and severe renal impairment, acute myocardial infarction with mural thrombus, cerebral venous thrombosis and acquired or inherited hypercoagulability states. The current dilemmas regarding choosing the appropriate antithrombotic therapy in secondary stroke prevention in patients with atrial fibrillation will be discussed.

Josip Ljevak (Zagreb, Croatia): Direct oral anticoagulants and neurovascular complications – can we do more?

Direct oral anticoagulants (DOACs) have become a routine first choice therapy for stroke prevention in non-valvular atrial fibrillation (NVAF). While providing superior or at least non-inferior efficacy compared to well controlled warfarin, these group of drugs provide additional safety and are by far simpler for patients. However, even with these comparative advantages over warfarin, which were confirmed by randomized studies and real world evidence, there has been certain hesitation when prescribing these drugs, mainly due to lack of specific antidote. This raised questions about patient safety regarding possible haemorrhage when treated with DOACS, as well as urgent treatment without haemorrhage, but requiring haemostasis. Dabigatran is currently only DOAC with approved and available specific antidote (idarucizumab). Given intravenously it specifically and quickly reverses anticoagulant effect of dabigatran, with no procoagulant effect. Anti-Xa antidote is still in trial phase, and these drugs to this date have no specific antidote available. In the context of neurovascular complications, availability of idarucizumab gives an opportunity to treat patients under dabigatran therapy with every kind of neurological treatment. In this way, all modalities of reperfusion therapy for acute ischemic stroke patients are feasible and possible. Similarly, patients with intracerebral haemorrhage can be antagonized, thus reducing volume of haematoma, and reducing mortality rates.

Christian Enzinger (Graz, Austria): Neuroimaging and multiple sclerosis

Besides its established role in obtaining an early diagnosis of Multiple Sclerosis (MS), the high sensitivity of magnetic resonance imaging (MRI) of the brain allows assessing the amount of focal MS-related tissue changes. In clinical practice, this information is commonly used to inform therapeutic decisions in early stages of MS, as it captures preceding tissue damage and may predict future disease activity. However, relapsing-remitting MS constitutes a heterogenous disease, both from a pathological and clinical perspective. The long-standing course of disease and often subclinical accumulation of tissue changes without overt clinical relapses make it further difficult to judge disease activity merely on clinical grounds. Together, this calls for biomarkers that allow detecting the dynamic changes in the pathological processes involved in MS over shorter periods of time. In this context, repeated MRI of the brain provides an important tool and consequently information on disease activity derived from MRI has also been integrated in recent redefinitions of MS phenotypes. With the increasing availability of more efficacious disease modifying drugs, also new questions arise regarding the value of MRI in monitoring adequate treatment response, and in the detection of opportunistic infections and paradoxical reactions. Having expertise both in clinical neurology and neuroimaging, the speaker will focus on the current and future role of such MRI markers in clinical practice.

Anton Glasnović, Srećko Gajović, Danka Grčević, Vida Demarin (Zagreb, Croatia): Immunologic Processes In Multiple Sclerosis – The Newest Insights

Multiple sclerosis (MS), as the most common autoimmune disease of central nervous system, and its pathogenesis, still have a long way to go when it comes to explaining exact mechanisms that lead to neuroinflammation and consecutive neurological impairment. But some new evidences arise in this vast and complex field of research. One of the hot topics today is the role of microglial cells and their pathological activation in the beginning of the disease, as well as blood-brain-barrier impairment not long after the possible trigger has activated the disease. Still, that trigger is not known, but some speculations arise, mainly directing toward environmental agents and genetic causes. Nevertheless, autoimmunity and cytokine/chemokine array is still the field which occupies most of the researches today. Few new axes have been proposed which have impact on neuroinflammation in MS, as well as activating the autoimmune reaction. These can be possible targets in diminishing the disease progression, and possibly its onset, and there are lots of hopes that in the future, by understanding these mechanisms, we can turn MS into just one of the chronic diseases with excellent prognosis.

Vanja Bašić-Kes (Zagreb, Croatia): New trends in the treatment of multiple sclerosis

Multiple sclerosis (MS) is an inflammatory autoimmune disorder of the central nervous system. It is also the most common chronic neurologic disease in adults between 20 and 50 years of age with a peak onset of MS in the early thirties. Women are affected approximately twice as often as men. MS is characterized by heterogeneous clinical expression, an unpredictable course and a variable prognosis. The natural history of MS suggests that there are different patterns of disease course. In relapsing-remitting MS (RRMS), patients have acute exacerbations with full or partial recovery; this presentation is observed in the majority of MS patients (80–85%). Approximately 65–70% of RRMS patients experience gradual accumulation of disability and fewer relapses later in their disease, which evolves into a secondary progressive MS (SPMS) stage characterized by less inflammatory and more pronounced neurodegenerative features. In primary progressive MS (PPMS), patients experience progression of disability from onset. In progressive relapsing MS (PRMS) occurring in approximately 5% of patients with MS, the disability progression starts from the onset of the disease and is associated with occasional relapses. The Diagnostic Criteria for MS have been modified with the 2010 revised version of McDonald Criteria. Implementation of these Diagnostic Criteria allows for an earlier diagnosis of MS, with equivalent or improved specificity and sensitivity compared to the previous revision. With the 2010 revision of McDonald's Diagnostic Criteria, CIS patients with clinical and/or MRI signs of dissemination in space and MRI signs of dissemination in time are now diagnosed with relapsing MS. Current medical practice encourages early intervention with disease-modifying treatments, with the intent of optimizing long-term clinical outcomes. Key objectives in the management of MS are reducing the rate of relapses and preventing or at least delaying disease progression. Most of the disease modifying drugs approved for MS has to be administered by injection or infusion. Recently, new disease modifying drugs administered orally have been approved for RMS. Currently, there are several disease modifying therapies (DMTs) approved in at least one country for the treatment of MS. The following injectable drugs have been approved for the treatment of MS: Interferon (IFN) β -1a, IFN β -1a, IFN β -1b, pegylated IFN β -1a, glatiramer acetate, natalizumab, alemtuzumab, ocrelizumab. A new treatments represents monoclonal antibodies rituximab and ofatumumab that are under investigation, but with adaptable infection as side effects of these treatments, for example progressive multifocal leukoencephalopathy. Additional injectable drugs are currently in late-stage development for the treatment of RMS, including daclizumab, and secukinumab. Several oral drugs have been approved for MS: fingolimod, teriflunomide, dimethyl fumarate. Oral drugs currently in late-stage development for the treatment of RRMS include laquinimod and a sphingosine 1-phosphate (S1P) receptor modulator, RCP1063. Siponimod, another S1P₁ receptor modulator, is currently being developed for the treatment of SPMS, and ponesimod, another selective modulator of the S1P₁ is currently investigated for the RRMS treatment. Additional medications may be added to control symptoms such as pain, bladder or bowel problems, difficulty with movement, or depression and be managed with medications and rehabilitation.

Marija Bošnjak Pašić (Zagreb, Croatia): Multiple sclerosis and pregnancy

This article reviews the current understanding of the interactions between multiple sclerosis (MS) and pregnancy, and implications for reproductive counseling. This is a key topic in MS because the typical patient is a young woman of childbearing age. The influence of pregnancy on the course of MS has long been controversial; until the end of 1990s, women with MS were discouraged from having children owing to a biased belief that pregnancy would worsen the disease course. Since the first large prospective study in 1998, counselling of women with MS has changed radically, and many patients have attained their desire of motherhood.

Now it has been known for some time that MS disease activity markedly reduces during the last trimester of pregnancy, then markedly increases in the 3 months postpartum before returning to the prepregnancy baseline. High relapse rate or disability before pregnancy, as well as a relapse during pregnancy, have been associated with increased risk for postpartum attacks. Long-term disease progression is not worsened with pregnancy in patients with relapsing MS. Although many disease-modifying drugs have come to market in the past two decades, when used during pregnancy and lactation, their beneficial effects on the course of MS have to be balanced with fears concerning potential risks to the fetus or child.

We could consider having three classes of DMDs, separated according to their potential pregnancy-associated risk and fetal outcome. The first class of drugs can be continued until pregnancy begins: these drugs include glatiramer acetate, β interferons, and possibly natalizumab, though the safety data on natalizumab is scarce. Once pregnancy is detected, treatment discontinuation needs to be discussed, with evaluation of the individual risks and benefits. The second comprises drugs that should be stopped for several weeks to months before trying to become pregnant, and for which active contraception during the washout period is warranted: alemtuzumab, fingolimod, mitoxantrone and teriflunomide. The possibility of switching to a safer drug until pregnancy begins can be discussed. The third class contains new drugs, such as dimethyl fumarate, for which currently available safety data are insufficient and so should be stopped before conception.

Osman Sinanović (Tuzla, BIH): Dysphagia in neurologic disorders

Difficulty swallowing (dysphagia) means it takes more time and effort to move food or liquid from a mouth to a stomach. Dysphagia may also be associated with pain. In some cases, swallowing may be impossible. Swallowing is complex, and a number of conditions can interfere with this process. Sometimes the cause of dysphagia can't be identified. Neurogenic dysphagia results from sensorimotor impairment of the oral and pharyngeal phases of swallowing due to a neurologic disorder. The symptoms of neurogenic dysphagia include: drooling, difficulty initiating swallowing, nasal regurgitation, difficulty managing secretions, choke/cough episodes while feeding, and food sticking in the throat. If unrecognized and untreated, neurogenic dysphagia can lead to dehydration, malnutrition, and respiratory complications (1-2). The intricate mechanism of swallowing can be divided into three phases: oral, pharyngeal, and esophageal. Dysphagia is a disruption in the swallowing process, which include difficulty in transporting (or a lack of transporting) a food or liquid bolus from the mouth through the pharynx and esophagus into the stomach. Causes of disruptions in the swallowing process can be divided into superior (oropharyngeal) and inferior (esophageal). Neurologic dysphagia may be caused by a disruption in different parts of the central nervous system (supranuclear level, level of motor and sensory nuclei taking part in swallowing process, peripheral nerves level and a pathology of muscle cells and spindles) or neuromuscular and muscular disorders. (3-4).

The many causes of neurogenic dysphagia include: stroke (middle cerebral artery territory stroke, lateral and medial medullary syndrome), pseudobulbar palsy, head trauma, Parkinson's disease, multisystem atrophy, multiple sclerosis, motor neuron disease, myasthenia gravis, oculopharyngeal muscular dystrophy. Dysphagia is a very common feature of neurological disorders. It has been reported to affect 22–65% of patients with acute stroke (5,6) 36% of symptomatic patients with Parkinson's disease (7), and more than 30% of those with multiple sclerosis (8). Aspiration is one of the most critical signs of oropharyngeal dysphagia, and may lead to chest infection, malnutrition, prolonged hospital stay and mortality (9). Approximately one-third of patients with dysphagia develop pneumonia requiring treatment (10-12). To ensure safe, high quality care, it is desirable that the identification and management of dysphagia is incorporated in an appropriate risk management policy as part of clinical governance arrangements.

Clinical screening is important to identify patients who aspirate from the overall population with oropharyngeal dysphagia and to initiate early referral for diagnosis and treatment to minimize health risks. Videofluoroscopic (VF) evaluation is often considered the gold standard for assessing dysphagia (13). This technique provides dynamic imaging of the swallowing function by visualizing the bolus during the process of swallowing. Adding a contrast material such as barium sulphate allows the bolus to be followed as it travels through the alimentary tract (14). However, the radiation exposure in VF makes frequent test repetitions inappropriate. Fiberoptic endoscopic evaluation of swallowing (FEES) is safe and well tolerated, and has been found to be just as valuable as VF in diagnosing dysphagia (13,15,16). FEES examination requires the transnasal passage of a flexible laryngoscope into the hypopharynx, whereupon food and liquid can be presented and the swallowing activity can be videotaped (Murray 1999b). It does, however, require a skilled operator and specialized equipment. The complexity of symptoms and lack of specificity of the underlying disease that causes dysphagia necessitate a multidisciplinary approach, in which patient management and therapeutic options are discussed. Within this multidisciplinary team, nurses have an important role in assessing dysphagia, observing symptoms and reactions, using methods to relieve it and evaluating the effects. In fact, impaired swallowing is a nursing diagnosis accepted by the North American Nursing Diagnosis Association (17). Therefore, a feasible method for screening is needed that can easily be used by nurses to decide whether a patient can be given anything by mouth and to minimize unnecessary restriction of oral intake.

Treatment of neurogenic dysphagia involves treatment of the underlying neurologic disorder (if possible), swallowing therapy (if oral feeding is reasonably safe to attempt) and gastrostomy (if oral feeding is unsafe or inadequate). Neurologic dysphagia rehabilitation is difficult, long-lasting and often falling far short of expected results. Primary it should include neurologic cause treatment if it is possible. Studies in stroke suggest that gastrostomy insertion provides the easiest and most effective feeding route. The timing of insertion in patients with a progressive disease is difficult. It may be interpreted by the patient only as a sign of the end stages of the disease rather than a device which may enhance quality of life. If the patient faces inevitable bulbar failure and accompanying deficits, particularly respiratory, earlier rather than later PEG (percutaneous endoscopic gastrostomy) insertion must be preferable, providing that this is compatible with the person's wishes. Patients may find that a limited oral intake remains enjoyable even when they do not depend on it to maintain nutrition.

Marina Nakić (New Haven, USA): Advances in neuroimaging and impact on psychiatric practice

The past several decades have witnessed a tremendous expansion in the technological ability to visualize the structure and functioning of the living human brain, providing an unprecedented opportunity to examine the neurobiological underpinnings of mental disorders. This presentation will focus on summarizing the main neuroimaging findings in the major psychiatric disorders and the different methodological approaches that have been used to study them, as well as on advantages and challenges related to use of neuroimaging techniques in the forensic psychiatric context.

Francesco Benedetti (Milan, Italy): Immune tolerance and neuroinflammation in chronic depression: bridging the gap between psychiatric and neurodegenerative diseases

In a series of experiments in patients with Bipolar Disorder, we showed that depression and suicide associates with: (1) lower grey matter volumes in prefrontal cortex, a phenotype counteracted by long-term lithium salts administration; (2) gene variants affecting serotonergic neurotransmission and the machinery of the biological clock, interacting among themselves and both affecting measures of integrity of white matter tracts, a phenotype associated with non-response to antidepressants and with chronic cognitive deficits and again corrected by lithium; (3) higher exposure to stress, which also correlates with worse brain structural integrity.

Our most recent studies focus on biomarkers of cell-mediated immune activation and inflammation that influence neuronal activity and brain homeostasis, supporting the role of an M1-like pro-inflammatory state in the pathogenesis of brain damage in BD. We showed that (a) inflammation-related cytokines and growth factor levels inversely associate with diffusion-tensor imaging measures related to the integrity of myelin sheaths; (b) the balance between Th17 and T regulatory cells correlated with fractional anisotropy, radial and mean diffusivity in fiber tracts contributing to the functional integrity of the brain, supporting a possible role for T cells in shaping brain structure and function; (c) Pro-inflammatory compounds reflecting an M-1 like pro-inflammatory state of monocytes/macrophages are associated with a poor response to antidepressant treatment in bipolar depression, fostering chronicity; (d) levels of Stem Cell Factor, involved in neuron-neuron and neuron-(micro)glia interactions and fostering neuronal growth and an anti-inflammatory milieu, associate with antidepressant response and with functional and structural MRI measures in cortical areas that are involved in the cognitive generation and control of affect.

Neuro-immune dysregulation and inflammation have been proposed as pathogenetic mechanisms in neurodegenerative diseases, and could underpin the neuroprogression observed in BD. Beyond the mainstay lithium treatment, targeting these neuro-immune mechanisms could stop neuroprogression and chronicity in patients with BD.

Boris Tsygankov, Irina Makhortova, Oleg Shiryayev (Moscow, Russia): Night eating syndrome in patients with anxiety and depression

Introduction: Night eating syndrome (NES) can be defined as a phase delay of daily food intake due to disorder of circadian rhythms. Presence of NES reduces effectiveness of weight loss programs and increases frequency of comorbidity with anxiety, depression and other non-psychotic psychiatric disorders. The objective of the investigation was to evaluate prevalence of NES in non-psychotic psychiatric disorders.

Participants and methods: Participants were recruited from outpatients who reported symptoms of non-psychotic psychiatric disorders (anxiety, low mood, sleep disturbances, apathy, cognitive difficulties, etc.). In total, 163 (male and female) psychiatric outpatients participated in the study. Results were controlled by comparison to a population of students of Voronezh State Medical University (n=227, male and female). Groups were comparable by age. After setting main diagnosis all participants were screened with Night Eating Questionnaire (NEQ) for presence of NES. After assessment all subjects, who gathered more than 20 scores were invited for therapeutic interview with psychiatrist for diagnostic validation according to the criteria. Out of clinical group 3 patients refused to take part in the interview, out of control group all participants agreed to be assessed.

Results: 24,53% of outpatients were screened positive for NES. They complained of increased appetite in evening and night, difficulties in controlling amount of food taken, guilt after food intake and morning anorexia. After therapeutic assessment 20,86% were validated with diagnostic criteria. In control group 8,81% of patients were screened positive for NES and 7,9% were validated. Prevalence of NES was significantly higher in clinical group ($p<0,05$).

Conclusion: Prevalence of NES among psychiatric outpatients was assessed as 20,86 %. This is significantly higher than NES prevalence in control group.

Hemmo Drexhage (Rotterdam, Netherlands): T-cell defects and pro-inflammatory monocytes/macrophages are “drugable” key elements of mood disorders

Both cohort studies as well as epidemiological studies show that mood disorders occur more frequently together with autoimmune diseases and a proneness to infections in patients and their family members. This suggests a common inborn immune aberrancy underlying autoimmune disease, infection liability and mood disorders.

Hypothesis:

T cell defects and pro-inflammatory monocytes/macrophages are key elements of mood disorders, since these immune cellular aberrancies are also key elements for infection proneness and autoimmunity.

Methods:

To test in the EU-funded MOODINFLAME/PSYCHAID projects the cohorts of major depressive disorder (MDD) and bipolar disorder (BD) patients for T cell defects and pro-inflammatory monocytes.

To relate these immune aberrancies to treatment response.

Results:

1. In the cohorts of MDD patients we found T cell defects (Th2, Th17 cells and T regulatory cell defects) starting modestly at 20-30 years of age and aggravating during aging. With aggravating T regulatory cell defects a pro-inflammatory state of monocytes became apparent, which was particularly seen in patients aged >30 years.
 - a. Patients with minimal T cell defects and an absent pro-inflammatory state of monocytes responded well to an SSRI alone,
 - b. Patients with T cell defects and a clear pro-inflammatory state of their monocytes responded well to the combination of an SSRI and an anti-inflammatory agent (COX-2 inhibitor),
 - c. A minority of 25% of patients with the highest pro-inflammatory state did not respond to the combination.
2. In the cohorts of BD patients we found already at teenage time (before the outbreak of depressive/manic symptoms) reduced numbers of total T cells, T regulator cells and pro-inflammatory monocytes/macrophages. These immune abnormalities normalized during aging (apart from the reduction in total T cells) with even an overshoot in Th2 and Th17 cells in BD patients over 40 years of age.

Conclusion and Discussion

The different dynamic patterns of the development of T cell defects in MDD and BD enable to make a laboratory based distinction between the two mood disorders.

Since Th17 cells and macrophages (microglia in the brain) are essential for growth and development of the hippocampus and the white matter integrity between frontal brain-hippocampus during development and aging, T cell defects and a pro-inflammatory state of the monocyte/macrophage system most likely negatively influence the development of brain structures essential for stress handling.

The T cell defects and the pro-inflammatory state of monocytes/macrophages are new drug targets in mood disorder treatment (e.g. T cell enforcing strategies).

Main Theme Lectures

Stanislav Matačić (Zagreb, Croatia): Some thoughts about depression, “the disease of 21st century”– a psychodynamic approach

It is almost a common language phrase that so-called "depression" is a disease of 21st century. On the other hand, there is a opinion that this "diagnosis" is too often and so widely used that it doesn't have meaning at all, or can mean many things in our happiness seeking society. Indeed, when the patient tells us in the clinical setting that he or she is depressed, the one and only right question would be: "What does it mean to you?". In a short essay I would like to share some of my thoughts as a clinician with the psychodynamic background about so-called "epidemics of depression", about three-partite etiology of mental disorders: bio-psycho-social, and finally depression in the context of psychodynamic developmental frame. A clinical vignette will be added.

Darko Marčinko (Zagreb, Croatia): Depression and suicidality in personality and eating disorders

Suicidal patients are hard to treat, regarding both, psychopharmacotherapy and psychotherapy. Our team has studying suicidality last years, mainly in the field of neurobiology and psychotherapy. One of the main factors for suicidal prevention is area of intersubjectivity. The idea of this presentation is to find common points and establishing useful exchanges between psychological approach and psychopharmacotherapy. A number of questioners addressed the issue of a psychiatrist's technique when faced with the different levels of communication of the chronically suicidal patients. Mentalizing in treatment of patients with personality and eating disorders is based on a growing body of evidence that points to mentalizing as the key to resilience (the ability to adapt successfully to adversity, challenges, and stress). By promoting resilience, mentalizing promotes coping with vulnerabilities, frequently presented in these patients. Patients with personality disorders have a problems in mentalizing in the face of trauma and negative stress resulting in increasing of symptoms. In series of book published by Medicinska naklada (Suicidology, 2011; Narcissistic Personality Disorder: Diagnostic Contribution, 2013; Eating Disorders: From Understanding to Treatment, 2013; From Violence to Dialogue, 2014; Mourning, 2014; Personality Disorders: Real People, Real Problems, 2015; Psychoanalytic Models of Communications, 2016; Hysteria, 2017), our team emphasized the link between psychopathology of personality with different and difficult personality and eating disorders patients.

Alma Mihaljević Peleš, Maja Bajs Janović (Zagreb, Croatia): Indications for electroconvulsive therapy in mood disorders

Electroconvulsive therapy (ECT) has been considered as a treatment option for depression, catatonia, suicidality, psychosis and mania. Generally, criteria vary among different clinical practices around the world regarding indication, diagnose, gender, age, duration of treatment before ECT, outcomes and attitudes. Treatment resistance has recently been recognized as an important clinical problem that could also be considered for ECT, regardless of diagnose. ECT has been controversial still due to the lack of controlled clinical trials but also historical negative image. For over 30 year, ECT has been administered for the patients at the Department of Psychiatry at the KBC Zagreb. Our recent study has showed predominance of the treatment resistance as the general criteria for ECT, in mood disorders and psychosis. Studies on ECT indications and outcome could provide further insight on efficacy of the treatment, and possible improvements in clinical assessment on eligible patients who could benefit from the ECT treatment.

Martin Brüne (Bochum, Germany): Nonverbal interaction of patients with borderline personality disorder

Objectives: Borderline Personality Disorder (BPD) is a severe psychiatric condition that is characterized by interpersonal dysfunction, emotional instability, impulsivity and risk-taking behaviour. Recent research has focused on the role of oxytocin in BPD, with mixed results as regards the processing of social information.

Methods: In a double-blind randomized placebo-controlled study, 15 BPD patients and 15 controls participated in a clinical interview, where two interviews under oxytocin or placebo were conducted one week apart. The interviews were videotaped and participants' nonverbal behaviour was evaluated using the Ethological Coding System for Interviews. Childhood trauma was examined using the Childhood Trauma Questionnaire.

Results: Affiliative behaviour was attenuated in patients with BPD compared to controls. Interestingly, only psychologically unaffected participants displayed more affiliation under oxytocin, but only at T1. No such difference between the two time points emerged in the BPD group. Oxytocin also seemed to reduce flight behaviour when given at T1 compared to placebo, but this effect was not specific to the BPD group. The oxytocin responses was unrelated to patients' history of childhood trauma.

Conclusions: Patients with BPD express less affiliation during clinical interviews than controls. Moreover, patients are less responsive to oxytocin with regard to their nonverbal expression of affiliation. A "prosocial" and anxiety-reducing effect of oxytocin seems to occur solely on first encounter with an unknown interviewer, which is abolished upon second contact.

LECTURES

10TH INTERNATIONAL EPILEPSY SYMPOSIUM IN PULA

Vida Demarin (Zagreb, Croatia): Past 10 years – Epilepsy Symposia in Pula

This year in Pula we host our 57th International Neuropsychiatric Congress with many new speakers and presentations. This is the longest running Congress in the region where top scholars are met to discuss recent developments in neurology and psychiatry. For the past 10 years, just before the official opening of the Congress, we organize the Pula International Epilepsy Symposium. For ten years we supported development of novel approach to epilepsy patients from the first line treatment to the patients that are resistant to pharmacotherapy and that can be offered epilepsy surgery. A team from the University Hospital Centre “Sestre milosrdnice” in Zagreb focused on preoperative diagnostic and better diagnosis of people of epilepsy and continuously shared with us their results.

In our presentations and discussions we invited an international experts from the region and from abroad. It is a pleasure of the Congress and me personally to support 10th anniversary of the Pula International Symposium in Epilepsy, as this is an important area of neurology where many patients, from children and adolescents to the adults can achieve seizure freedom and improved quality of life.

Maja Jurin (Zagreb, Croatia): Novel models of therapy for children with epilepsy

Common treatment of epilepsy starts with one antiepileptic drug (AED) of the first choice which depends on seizures type and/or epileptic syndrome.

The dose of the chosen drug is increased until the seizures are stopped or until the side effects of medication appear. If the good control of the seizures fails with the first drug another drug is introduced without decreasing the dose of the first drug. Only after the full therapeutic effect of the second drug is achieved the first AED can be gradually reduced and excluded. The recurrent seizures inspite of rational use of two adequate AEDs confirm the diagnose of the pharmacoresistant epilepsy. The combination of two or more AEDs should be avoided although the politherapy is excused in the case of uncontrolled epilepsy.

Epilepsy surgery (ES) is still one of the novel models of therapy for children with epilepsy when maximal tolerable dose could not prevent the seizures. On the other hand, some of those epilepsy patients controlled with AEDs suffer adverse side effects that limit their quality of life. The accurate localization of the epileptic focus as well as the favourable cost - benefit ratio of the ES guarantee the success of the neurosurgical treatment. Approximately 1% of the population has epilepsy and 30-40% of adults in this group and 1/5 of ill children will not be completely cured by medications. Therefore, the selection of such patients for ES, especially children has become MUST in last 30 years. Minimum criteria to determine medical intractability are failure of at least two AEDs of the first choice in monotherapy to control the seizures. The results of ES are better in children than in adults as well as in the small mesiotemporal lesions.

The novel model of epilepsy treatment is by all means gamma-knife stereotactic radiosurgery (SRS) especially for small lesions in the eloquent areas which are unattainable for ES. The precision of brain SRS results in the minimal damage to healthy tissues surrounding the target. Today the research is done in novel methods of epilepsy treatment by deep brain stimulation (DBS) of thalamus or cerebellum and in repetitive magnetic stimulations (RMS) of the hippocampus with high frequency deep or subdural electrodes.

Vagus nerve stimulation (VNS) is another novel model of epilepsy therapy designed to prevent the seizures by sending regular mild pulses of electric energy to the brain via the vagus nerve. VNS device is known as a „pacemaker for the brain“. While the 50% of adult epilepsy patients with VNS reduce the number of seizures the experience with children is poorer.

Finally, the ketogenic diet is a high-fat, adequate protein and low carbohydrate diet that is primarily used to treat difficult to control (refractory) epilepsy in children. The diet forces the body to burn fats rather than glucose.

We present the results of the ES in two our patients with drug resistant symptomatic epilepsy. The first patient had left frontal cortical dysplasia type IIA, right hemiparesis and difficulties in the psychomotor development. Congenital infarction of the right arteria cerebri media (ACM) and atrophy of the right cerebral hemisphere, left hemiparesis and cognitive disturbances due to long AED therapy were found in the second patient. Both of them will be presented through history data and by the results of the diagnostic procedures performed in University Hospital Center Zagreb and at Schon Klinik in Vogtareuth in Germany where both patients underwent ES.

Ivan Bielen (Zagreb, Croatia): Public health importance of epilepsy in Croatia

According to WHO statistics, approximately 50 million people worldwide have epilepsy, making it one of the most common neurological diseases globally. It is more frequent in low- and middle-income countries, but differences in prevalence and incidence estimates are also dependent on used methodologies. In the population study performed in Croatia, when active epilepsy was defined as epilepsy with at least one seizure in the previous 5 years, the prevalence rate was about 5/1000, which is in keeping with findings from other European countries.

As reported by Agency for Medicinal Products and Medicinal Devices of Croatia, the cost of antiepileptic drugs in Croatia in 2015 was euro 11,3 million, which is more than cost of interferon therapy, almost double more than antiparkinson drugs, and about 8 times more than cost of antidementive drugs. According to a review published in *Epilepsia* in 2007, the cost of antiepileptic drugs in European Union countries was estimated as 3% of the total expenditure for epilepsy, and the total cost per case was euro 2,000-11,500.

One epidemiological study of preschool children with epilepsy in Croatia showed one or more impairments in 56% children; most frequent were motor impairments (47%), speech impairments (42%) and different grades of mental retardation (40%), which necessitates different aspects of therapy and habilitation in specialised services and institutions. In adults with epilepsy nearly 1/3 is occupationally disabled, and unemployment rate is almost 2,5 higher than in other occupationally abled population. Inability to get driving licence is a great problem for people with epilepsy, and liberalization in legislation in Croatia had a consequence of better compliance with current regulations.

Psychological and social consequences of epilepsy also could have a public health implications. For instance, in one study assessment with the Beck Depression Inventory showed that about 1/3 of patients had recent depressive symptoms. One other study showed that about one half of patients visiting epilepsy services felt stigmatized. Performed in this context, one recent study in Croatia demonstrated that using term "epileptic" can evoke more negative attitudes toward a persons with epilepsy and this seems to be especially true for more intimate life domains, like cohabitation or marriage.

In conclusion, epilepsy poses a substantial burden for Croatian health system, which is most visible through economic parameters, but other nonfinancial aspects should not be neglected.

Lectures

Hrvoje Hećimović (Zagreb, Croatia): Significant developments in adult epilepsy in Croatia over past 10 years

Epilepsy is the most common chronic neurological disorder, almost equally affecting men and women with the prevalence shifting to older age. In 70% of the patients, etiology of epilepsy is unclear despite modern techniques such as epilepsy protocol MRI, FDG-PET, and MEG.

We try to achieve in 60% of patients a complete seizure freedom and stop seizures with antiepileptic medications. In the past 10 years we finally focused on 30-40% of epilepsy patients that are pharmacoresistant to antiepileptic drugs. The most significant step to start treating pharmacoresistant epilepsy patients was establishment of a specific center with all necessary means to treat these patients. The Zagreb Epilepsy Center, established in 2005 and opened by a lecture from Prof. L. Sander from the Neurological Institute in Queen Square in London, has been a leading center in presurgical evaluation and offering epilepsy surgeries. The main reason for our nationwide and European recognition was an optimal education of our colleagues in the best epilepsy centers abroad.

Offering a high standard diagnostic, such as patients selection and preoperative video/EEG long term monitoring (H. Hećimović), epilepsy protocol MRI (D. Bedek), neuropsychological evaluation (S. Galić), F¹⁸ FDG-PET (S. Divošević) and epilepsy neurosurgery (T. Sajko). With regular meetings and optimal patient selection for neurosurgical treatment of epilepsy patients, we achieved 82% of seizure freedom (Engle class I) in more than 60 surgically treated epilepsy patients. These data resulted in invitation to join E-pilepsy a 13-nation project funded by the EU to treat patients with pharmacoresistant epilepsy. These results started a process of offering epilepsy surgeries in other regional centers and hopefully soon to children with epilepsy.

Since 10 years ago, we have annual Epilepsy Symposia in Pula to present our work with kind invitation by Prof. Vida Demarin.

YOUNG PSYCHIATRISTS: THE ROLE OF PSYCHOLOGICAL FACTORS IN PSYCHOPHARMACOTHERAPY

Darko Marčinko, Vesna Medjedović Marčinko, Mladenko Šumić (Zagreb, Croatia): Psychodynamic of psychopharmacotherapy

The complex inter-relationship between external and internal reality, a source of interest and controversy in psychiatry, has come to the foreground more prominently in the context of more integrative understanding of psychopharmacotherapy. The one of the psychodynamic explanation for patients'being difficult is related to their perceived lack of mentalizing (reflective) capacities. Lack of mentalizing capacity implies disturbed view of psychopharmacotherapy. Therapeutic relationship and optimal alliance offers the frame for acceptance of psychiatric drugs as positive and useful for personality and eating disorder patients. Mentalization and intersubjectivity theories have direct implications for clinical practice, and that the notion of the third is particularly useful in understanding what happens in the patient-doctor relationship. Psychiatrist prescribing psychopharmacotherapy needs to recognize differences between inner and outer realities of difficult patients. Mentalizing is the basis of optimal and sustaining relationships. A key notion underlying the concept of mentalizing and psychopharmacotherapy is providing secure base inside therapeutic relationship and alliance as a basis for improved mentalizing in patients with history of disturbed mentalizing with important persons. Secure attachment (good therapeutic relationship) leads to the improvement of mentalizing which lead to better compliance regarding psychopharmacotherapy.

Lectures

Bjanka Vuksan-Ćusa, Marina Šagud, Nenad Jakšić, Mladenko Šumić (Zagreb, Croatia): Bipolar disorder and borderline personality disorder-comorbidity, multimorbidity or overlapping

Differentiation of the bipolar disorders (BPs) from borderline personality disorder (BPD) is a common diagnostic dilemma, particularly when phenomenological features such as impulsivity and emotional dysregulation are common to each condition. Cross-sectionally, periods of emotional dysregulation in patients with BPD can resemble hypomania, leading to misdiagnosis, while inter-episode residual symptoms in those with a BP condition, including chronic dysphoria can also compromise diagnosis. Differentiating bipolar I (BP I) disorder from BPD is likely to be less problematic, reflecting the severity and frequent psychotic nature of manic symptoms – although those with a BPD may also experience brief psychotic states. Differentiation is less clear in discriminating bipolar II (BP II) disorder from BPD, Empirical studies and reviews have generated many indicative variables differentiating BPD and BP, including age of onset phenomenological differences of depressive and elevated mood states, family history, illness course, self-identity, quality of relationships and mood state contextual changes. Less clearly discriminating variables include suicidality and deliberate self-harm, childhood trauma, personality factors, psychotic symptoms, comorbid symptoms, neuropsychological deficits, neuroimaging findings and treatment response.

Lectures

Antonia Nikolina Domokuš (Popovača, Croatia), Vedran Bilić, Darko Marčinko (Zagreb, Croatia): Case report (with supervision)

Diagnostic and therapeutic dilemmas in a young patient In this case report we present a 23-year old woman in group psychotherapy treatment in our clinic, with borderline personality disorder, bipolar disorder, and eating disorder symptoms. In her adolescence (16 years) being under psychotherapy treatment, she presented mood fluctuations, frequent depressive episodes of varying duration and intensity, had a tendency to self-harm, episodes of bulimia, series of phobic fears, and an instable self-image. Apart with psychiatric drugs, the patient was treated with individual and group psychotherapy. During her treatment, an ambivalent attitude towards therapy persists, and the regressive defense mechanisms, mood fluctuations, resistance to the dynamic intervention arising from a sense of fear and shame have been observed. Here we emphasize the clinical importance of recognizing both bipolar disorder and borderline personality disorder (BPD) in patients seeking treatment and presenting difficulties in group psychoanalytical treatment.

6TH PSYCHOPATHOLOGY SUMMER SCHOOL**Johannes Schröder (Heidelberg, Germany): Cerebral correlates of cognitive reserve**

Cognitive reserve is a hypothetical concept to explain putative compensatory effects which mitigate the consequences of brain changes. Basically, cognitive reserve refers to the longstanding clinical observation that given brain changes may lead to behavioral deficits at various degrees and can be operationalized by educational or occupational achievement. Neuroimaging studies have sought to identify the cerebral correlates of cognitive reserve by comparing brain changes between patients suffering from Alzheimer's disease (AD) with a high vs. a low cognitive reserve. Typically, patients with a high reserve show more pronounced cerebral changes than those with a low reserve. The respective differences do not only apply for brain sites which are hypothesized to be directly involved in declarative memory or other functions typically compromised in AD but also extend to the frontal cortices. These effects of cognitive reserve can also be demonstrated in bilingual patients who generally have a greater reserve than monolinguals. Taken together, these results support the assumption that cognitive reserve enhances compensation of brain changes in AD. According to a number of functional neuroimaging studies this effect may be in part attributed to the beneficial effects ("economization" of brain function) of learning on cerebral activation. Interestingly, these cerebral correlates of cognitive reserve cannot be explained by school education alone but refer to other, yet unknown, factors. These findings call for a better, i.e. more precise measure of cognitive reserve as recently proposed by our group. From a clinical standpoint, cognitive reserve has the potential to facilitate our understanding of brain changes and their behavioral consequences and the development of intervention programs.

Dorothee Bernheim Anna Buchheim, Alexander Lischke, Manuela Gander, Mathias Becker, Renate Mentel, Harald Freyberger, Martin Lotze (Ulm, Germany): Neural correlates of attachment in borderline patients at the beginning of DBT therapy: An fMRI study

Objectives: Attachment characteristics play a key role in understanding borderline-specific problems.

Methods: In this pilot study we examined, in a first step, the neuronal correlates of attachment representation in 26 female patients with borderline personality disorder (BPD) and 26 female healthy control subjects (HC), using the Adult Attachment Projective Picture System (AAP). In the fMRI-adapted version of AAP, all participants were shown standardized pictures of AAP, furthermore they were presented neutral as well as personalized sentences of their own AAP-narratives. In a second step, we measured the neuronal correlates of attachment representation in the same way exclusively for the BPD-patients after a 1-year outpatient dialectical behavior therapy (DBT).

Results: As expected, BPD-patients showed a predominance of disorganized/unresolved attachment representation compared to healthy subjects. First results showed differences between BPD-patients and HC in neuronal processing for monadic pictures of AAP, implying feelings of abandonment and loss.

Conclusion: The investigation of (neuronal) attachment representation of the BPD-patients seems to be helpful to be able to derive treatment implications, especially in the field of regulation of feelings, such as abandonment and loss.

Lectures

Martin Brüne (Bochum, Germany): Mentalisation based group therapy as an add-on to dialectical behavior therapy in borderline patients

Objectives: The term “Borderline Personality Disorder” (BPD) concerns a disorder that, among other features, is characterised by emotional instability and interpersonal dysfunction. Dialectical Behavior Therapy (DBT) is the most widely accepted psychotherapy for BPD, and has been shown to be highly effective in reducing self-harm and improving emotion regulation. Interpersonal difficulties, however, may perhaps better respond to other approaches such as Mentalization-based Treatment (MBT).

Methods: In a pilot study we sought to examine the effectiveness of MBT in an in-patient sample with BPD, given adjunct to DBT, compared to DBT alone. Mentalization was assessed using a novel cartoon-based task.

Results: Both DBT alone and DBT plus MBT were highly effective in reducing symptom severity. The combination of DBT and MBT was superior in reducing fearful attachment and in improving affective mentalizing.

Conclusions: MBT in combination with DBT may improve some aspects relevant to social interaction and attachment security, though the exact mechanisms that led to these changes remain to be targeted in future studies.

Lectures

Francesco Benedetti (Milan, Italy): Chronotherapy in affective disorders

Psychiatric chronotherapeutics is the controlled exposure to environmental stimuli that act on biological rhythms in order to achieve therapeutic effects in the treatment of psychiatric conditions. In recent years some techniques (light therapy and wake therapy, in the form of total or partial sleep deprivation, or sleep phase advance) have passed the experimental phase and reached the status of affordable interventions for the everyday clinical practice. These techniques target the same brain neurotransmitter systems and the same brain areas as do antidepressant drugs, and should be administered under careful medical supervision. Their effects are rapid and transient, but can be stabilised by combining techniques among themselves or together with common drug treatments, such as lithium salts.

Antidepressant chronotherapeutics targets the broadly defined depressive syndrome, with response and relapse rates similar to those obtained with antidepressant drugs, and good results are obtained in difficult-to-treat conditions such as acutely suicidal bipolar depression. Chronotherapeutics offers then a benign alternative to more radical treatments for severe depression on psychiatric wards, giving to the patients similar rates of response but with the advantage of rapidity of onset and lack of side effects, and it has been proven to be feasible and effective in outpatient settings.

Learning objectives:

- Indications, efficacy, safety, side effects of the treatment protocols to administer chronotherapeutics
- Very basic principles of their mechanism of action

Norbert Müller (Munich, Germany): Differential diagnosis :Tourette-syndrome versus PANDAS-syndrome

PANDAS (Pediatric Autoimmune Neuropsychiatric Disorders Associated with Streptococcal Infection) is a disease related to streptococcal infection and tics and/or obsessive-compulsive symptoms (OCD-symptoms). The exact pathogenic mechanisms are still unclear. In parallel to the pathophysiological model of Sydenham's Chorea a pivotal role for autoantibodies has been postulated. However, not only an autoimmune process, but also acute and chronic infections triggering the exacerbation of tics and OCD were observed.

In Tourette's syndrome (TS) signs of acute or chronic infections were observed, too. As both, acute infections with A-beta-hemolytic streptococcus (GABHS) and poststreptococcal inflammation have been reported in TS, it was proposed that the PANDAS concept covers at least a subgroup of childhood/adolescent TS. However, increased streptococcal antibodies and signs of inflammation have been observed also in adult TS patients. That means streptococcal infection in tic disorders or OCD symptoms is not restricted to children or adolescents. Also infections with *Borellia burgdorferi*, acute or chronic infections with *Mycoplasma pneumoniae* and viral infections have been described to trigger tic exacerbations. The infectious background of tics seems not restricted to streptococci. Recently significantly more positive IgG antibody titers against *Chlamydia trachomatis* in TS patients compared to healthy controls and a trend to higher antibody titers of *Toxoplasma gondii* in TS patients were reported. Both pathogens can invade the brain parenchyma. For streptococci, however, the mechanism provoking CNS symptoms is better elucidated compared to other pathogens.

The role of autoantibodies against neuronal structures in TS is still discussed controversially and the causality is not proven, but it could be one possible pathophysiological model for tics and OCD symptoms. Considering the background of a possible role of infections in TS, another important hypothesis is the existence of a common underlying altered immune status that provokes an insufficient clearing from infectious agents and triggers in turn TS onset or worsening of tics.

Since at least PANDAS is established in the literature as a disorder showing psychiatric symptoms due to an infection-triggered immune process, it might be a model for further research on the interface of infection, the immune system, and psychiatric disorders, especially since therapeutic approaches based on immunomodulation such as immunoglobulins and plasmapheresis provide a benefit for the patients.

Lectures

Karl Bechter (Günzburg, Germany): Focusing on important aspects in psychotherapy:experience guided thoughts

On a background of Neo- Freudian Tiefenpsychologie, evolutionary informed psychology and psychopathology, and cognitive behavioural therapy aspects the approach to the patient is highlighted from personal experience. Major principles to achieve insights into maladaptive behaviours and emotions with the patient are formulated. This principles are in more detail outlined with a clinical example. The therapists role, especially the major things to be done or not, is addressed.

Lectures

Margherita Bechi (Milan, Italy): Exploring functioning in schizophrenia: implications for treatment

Impairment in daily functioning still represents a major treatment issue in schizophrenia and a more in-depth knowledge of underlying constructs is crucial for interventions to translate into better outcomes. Social and neurocognitive functions are severely impaired in patients with schizophrenia and directly influence daily functioning. Neurocognition refers to information acquisition and processing, while social cognition represents the interface between emotional and cognitive processing. Given their role on functional outcome, the treatment of both social and neurocognitive deficits has been a focus of research in the past decade. Currently, a consensus has been reached on the effectiveness of cognitive remediation programs to improve neurocognition, as well as of several social cognitive interventions to enhance targeted domains. Combined rehabilitation programs, integrating both cognitive remediation and social cognitive interventions, have been developed with the hypothesis that a synergic approach may optimize outcomes. Data from these studies showed that a greater impact of combined treatments on daily functioning, although there is still an high heterogeneity. We recently investigated factors influencing both functional capacity and real-life behaviour in a sample of outpatients with chronic schizophrenia. We reported a divergence between the two constructs of functioning and their underlying components, highlighting the need to target both dimensions through individualized sequential rehabilitation programs in order to optimize functional outcome.

STROKE SYMPOSIUM**E.Bernd Ringelstein (Münster, Germany): Hunting for stroke mimics and chameleons.**

Stroke „mimics“ account for up to 20 – 30% of all patients with suspected stroke or TIA. Mimics pretend to be strokes, but are not. More rare but similar are patients called „chameleons“. They pretend not to be strokes, but finally turn out to be. Frequent differential diagnoses are cerebral trauma, focal epilepsy, complicated migraine, focal metabolic brain disorders like hypoglycemia, functional (i.e. psychogenic) disorders, and a myriad of rare diseases sometimes presenting with features of acute stroke. The accurate recognition of true strokes and their differentiation from mimics and chameleons is very important for therapeutic decision making and must be achieved within a tough time window, mainly in order to identify candidates for thrombolysis or mechanical thrombectomy (MTE). Stroke mimics have a huge impact on costs. In the DRG systems, stroke mimics are not adequately reimbursed although the initial costs and efforts can be quite high. They also block the beds in stroke units for patients who need them more urgently. Their rapid identification also helps to decrease the number of unnecessary invasive vascular investigations or even false treatments. In chameleons, a proper diagnosis also avoids delaying effective treatment in those with a true stroke or TIA. This review focuses on what the clinician should know about the most common etiologies of stroke mimics and the appearances of stroke chameleons, and how to come to a clear diagnosis in the first hours after onset. Modern MR imaging in conjunction with multimodal neurovascular ultrasound will solve the problem in most cases. A never-ending list of conditions has been considered in the differential diagnosis.

Anita Arsovska, Zoran Arsovski (Skopje, Macedonia): Cerebral venous thrombosis: etiology, symptoms, diagnosis and treatment

Cerebral venous thrombosis (CVT) is an uncommon disorder compared to arterial disease. Its incidence is 3-4 cases/1000000 and it occurs more frequently in younger women, who have increased risk due to pregnancy or use of hormonal contraceptives. Risk factors include deficiencies of antithrombin, proteins C and S, factor V Leiden mutation, prothrombin gene mutation 20210, antiphospholipid antibodies and hyperhomocysteinemia. Symptoms and signs may present as isolated intracranial hypertension, focal neurological abnormalities, seizures and encephalopathy. Majority of the patients (up to 90%) complain of headache and 40% of the patients have motor weakness. Laboratory tests include D-dimer level that is usually elevated, however, a normal D-dimer level does not exclude the diagnosis as it can be seen in the chronic phase of the disease. Brain imaging includes computer tomography (CT), CT venography, Nuclear Magnetic Resonance (NMR) and MR venography. Acute phase therapy for CVT focuses on anticoagulation, management of sequelae and prevention of cerebral herniation. Current guidelines recommend anticoagulation with an oral vitamin K antagonist and a target international normalized ratio (INR) of 2.0 to 3.0. The duration depends on the etiologic factor and it lasts 3 to 6 months in patients with provoked cerebral venous thrombosis and 6 to 12 months in those with unprovoked cerebral venous thrombosis. Patients with severe thrombophilia (homozygosity for prothrombin gene mutation 20210 or factor V Leiden; combined thrombophilias; deficiencies of antithrombin, protein C, or protein S; or antiphospholipid antibodies) should be considered for indefinite duration of the anticoagulant therapy with a target INR of 2.0 to 3.0.

Marjan Zaletel (Ljubljana, Slovenia): Antiphospholipid antibodies, a possible etiologic factor for cerebrovascular events in younger adult patients

Healthy subjects, prevalence of antiphospholipid antibodies (aPL) ranges between 1 and 5 % and, similarly to that of other autoantibodies. 6% of patients with persistent aPL had a 2-fold to 3-fold increase in recurrent thrombotic events. Antiphospholipid syndrome (APS) is an autoimmune prothrombotic disorder related to the presence of (aPL). The studies showed that presence of aPL is an independent risk factor for stroke. The inflammatory process is a major contributor to atherosclerosis and to the pathophysiology of ischemic stroke. Indeed, aPL increase the risk for thrombotic events, but several other variables importantly modulate the final clinical expression, such as the profile of aPL (isotype of antibodies and their combinations, their persistence and levels), the coexistence of other thrombotic risk factors, and the presence of another underlying autoimmune disease. The primary aim was to determine the frequency of patients experiencing a stroke and fulfilling the laboratory criterion for an antiphospholipid syndrome (APS) or probable APS (being persistently positive for antiphospholipid antibodies, not yet included in APS criteria). The second aim was to investigate whether the persistent presence of antiphospholipid antibodies represented a risk factor for a stroke. We also focused on the efficacy of the selected treatment strategy in the first year after the stroke. Eighty-nine patients with an acute CVE were prospectively followed for one year. In the comparative group, there were 25 patients with migraine and 20 patients with Huntington's disease. At least two sera from each were tested for lupus anticoagulants, anti-cardiolipin, anti- β 2 glycoprotein I, anti-phosphatidylserine/prothrombin and anti-annexinV antibodies. Our results have shown that 20/89 (22%) of stroke patients fulfilled criteria for APS (17/20 for definitive and 3 for probable APS). The cause of the stroke could be subsequently explained as APS in 16% of the patients with the formerly unexplained stroke. There was a significant association between the persistently present antiphospholipid antibodies and the stroke (OR 4.62). Being treated mainly with acetyl salicylic acid, no statistically significant difference was found in the stroke recurrence rate between APS-stroke and nonAPS-stroke patients. In conclusion, the antiphospholipid antibodies represent an independent risk factor for stroke. Regarding to these results, in the first year after a CVE or at least until APS confirmation (at least 6 to 9 months are needed) a secondary CVE prevention strategy with the focus on antiplatelet therapy together with the control of other risk factors (e.g. a strict control of classical cardiovascular risk factors and thromboprophylaxis with low molecular weight heparin in high-risk situations for thrombosis), seems to be sufficient.

Matija Zupan, Bojana Žvan (Ljubljana, Slovenia): Impact of leukoaraiosis on the endothelial function

Background: Despite the high prevalence and clinical relevance of leukoaraiosis (LA), its pathophysiology is still incompletely understood. Theories of ischaemic genesis and a leaky blood-brain barrier could share a common denominator – endothelial dysfunction (cerebral, systemic or both), which has not been studied thoroughly in LA. In the present work, we focused on answering the question whether LA patients have cerebral and/or systemic endothelial dysfunction and whether this is solely a consequence of the presence of risk factors for atherosclerosis (RFA).

Subjects and Methods: Thirty patients with LA (58 ± 7 years) and 30 sex- and age-matched controls without LA (55 ± 6 years) (control group) were recruited. The RFA were identical in both groups. The cerebral endothelial function was determined by cerebrovascular reactivity to L-arginine (CVR) using transcranial Doppler sonographic measurements of mean arterial velocity in both middle cerebral arteries before and after intravenous L-arginine infusion. The systemic endothelial function was determined by flow-mediated dilatation (FMD) of the brachial artery after hyperaemia. We measured the diameter of the brachial artery before the compression of the artery and after the release of the compression. All participants underwent a brain magnetic resonance imaging adjusted to search for radiological signs of LA that was classified according to the Fazekas score. Statistical analysis was carried out with statistical programme SPSS 20.0.0. The paired t test was used to compare parametric variables within a group of patients. The unpaired t test was used to compare parametric variables between the two groups. The Fisher's exact test was used to compare categorical variables. The univariate linear regression was used to explore the correlation between CVR and FMD. A 95-percent confidence interval was used and CVR was the dependent variable. The multivariate linear regression took into account independent variables LA and FMD, and the dependent variable CVR. For any statistical test, the $p \leq 0.05$ was regarded as statistically significant.

Results: We found statistically significant decrease in both CVR ($9.6 \pm 3.2\%$ vs. $15.8 \pm 6.1\%$, $p < 0.001$) and FMD ($4.8 \pm 3.1\%$ vs. $7.4 \pm 3.8\%$, $p = 0.004$) in patients with LA compared to controls. Both CVR ($7.4 \pm 3.1\%$ vs. $12.2 \pm 2.6\%$, $p = 0.001$) and FMD ($3.0 \pm 2.2\%$ vs. $6.4 \pm 3.1\%$, $p = 0.011$) were significantly decreased in LA subgroup Fazekas 3 compared to the subgroup Fazekas 1. In patients with LA and controls, the univariate linear regression revealed a positive statistically significant correlation between CVR and FMD ($b = 0.299$, 95% confidence interval = 0.075–0.855, $p = 0.02$). The multivariate linear regression showed a negative statistically significant correlation between LA and CVR ($\beta = -0.504$; $p < 0.001$), but not between LA and EOVD ($\beta = 0.115$; $p = 0.336$).

Conclusions: The results suggest that patients with LA have a significant impairment of both cerebral and systemic endothelial function independent of RFA, which correlates with LA severity. Overall, the results suggest a so far unknown generalised endothelial dysfunction in patients with LA that could be involved in its pathophysiology. This may offer further clinical implications for studying the genetic basis of endothelial dysfunction and interventions aiming at enhancing endothelial function in LA.

NEUROSCIENCE SYMPOSIUM - NEUROBIOLOGIC BASIS OF COGNITIVE DEVELOPMENT**Ivica Kostović (Zagreb, Croatia): Development of “wiring” specific for the human fetal brain**

Introduction/Objectives: The complexity of neuronal connections and functions of the cerebral cortex underlies human specific social, cognitive, emotional and behavioural functions. The objectives of this presentation was to review evidence on structural and functional factors, which are characteristic (unique?) for development of neuronal circuitry in humans.

Participants, Materials/Methods: The review was based on observation on histological and MR imaging material (Zagreb collection, <http://www.hiim.unizg.hr/index.php/znanost/odsjek-zagrebacka-neuroembrioloska-zbirka-i-banka-tkiva>) published previously, unpublished data, and current neuroimaging data in humans and experimental data in monkeys (collaboration with dr Rakic, Yale University).

Results: Synaptic activity in the cerebral cortex of the human fetus begins around 8 postconceptional weeks (PCW). This activity is endogenous and spontaneous, and marks the development of humans as cortical beings. Around 15 weeks PCW thalamic axons form significant input to transient subplate zone, which is the most prominent and evolutionary advanced compartment of fetal cortex. This phase can be designated as a sensory expectant phase. After 22-24 PCW thalamocortical axons form synapses in the cortical plate and two types of circuitry exists in cortex; a) transient circuitry of subplate and b) cortical plate circuitry, which includes synapses of apical dendrites in the marginal zone. The connection between thalamus and subplate- cortical plate is structural basis for cortical response after peripheral stimulation. This phase can be designated as preconscious phase. It is surprising that in this early stage there is resting-state activity in associative cortical areas and selective response on mother's voice as measured by in vivo functional imaging. The substrate for this early connectivity is subplate network, which extends along the hemisphere and development of long cortico-cortical pathways. Emergence of short cortico-cortical pathways forms a substrate for transient phenomena between 3-9 months postnatal. Increase in number of synapses provides a substrate for early cognitive functions around 9 postnatal months. “Theory of mind” functions occur after cortex achieves maximal number of synaptic spines in precingulate areas of medial prefrontal cortex, around 4 years of age. The strategic reasoning around 7 years may be related to tangential intracortical myelination and stronger connections within connectome.

Conclusions: In conclusion, prominent, transient phenomena in evolutionary advanced cortical compartments play a crucial role during prolonged development of cortical circuitry, forming a framework for sequential development of cortical pathways, which are involved in human specific complex cognitive and social functions.

**Zdravko Petanjek, Dora Sedmak, Ana Hladnik, Domagoj Džaja, Ivana Bičanić, Sanja Darmopil (Zagreb, Croatia):
Plasticity of microcircuitry during protracted development of human associative cortex**

The main biological substrates of our mental abilities are neuronal circuitries of the cerebral cortex. Their structure is determined by the number, diversity and distribution of synaptic connections. Synaptic organization is unique to each person, thus being the principal substrate of personality.

Synaptic connections in the human cerebral cortex are initially overproduced, and then pruned to the adult level. This activity-dependent stabilization and selective elimination of the initially overproduced synapses is the major mechanism for generating diversity of neuronal connections beyond their genetic determination. Furthermore, most psychiatric disorders are neural network diseases, and defective tuning or pruning of initially overproduced synapses is the main mechanism of pathological deflection.

The most extensive and protracted synaptic overproduction in humans happens in the associative and intracortical excitatory network. This networks becomes more prominent regarding the functional hierarchy, as in higher order areas such as the prefrontal cortex. Peak expression of genes regulating neuronal development, including those associated with schizophrenia, occurs between years 15 and 25. In addition, when compared to non-human primates, transcriptome profiles in the human prefrontal cortex are delayed. The protracted post adolescent period of synaptic elimination in the prefrontal cortex may be linked to human-specific cognitive functions and circuitry specializations. As postulated by the selective-stabilization hypothesis, these are the result of cooperation between genetic endowment and the environment.

Molecular mechanisms that regulate prolonged reorganization of microcircuitry are reflected in changes of dopaminergic innervation. The magnitude of dopaminergic innervation in monkey and human cortices, including gene expression of the D1-receptor essential for bidirectional modulation of synaptic plasticity in the medial prefrontal cortex, increases up to young adulthood, and reaches its peak during adolescence and young adulthood. This data strongly suggests that an increase in dopaminergic innervation in the prefrontal cortex, is associated with an increase in modulation of glutamatergic synapses located on the dendritic spines, and involved in synaptic stabilization. Hence, dopamine–glutamate interaction on dendritic spines of pyramidal neurons in the prefrontal cortex during synaptic elimination, might be involved in protecting vulnerable subjects from developing schizophrenia.

The prolonged developmental plasticity in the human associative frontal cortex allows an unprecedented opportunity for acquiring the highest cognitive abilities, however, at the same time, makes it prone to circuitry malformation that leads to late-onset neuropsychiatric disorders.

Supported by Croatian Science Foundation (HRZZ) project number 5943: Microcircuitry of higher cognitive functions

Goran Sedmak, Željka Krsnik (Zagreb, Croatia): Gene expression in the developing and adult human brain: relevance for brain disorders

Introduction/Objectives: Despite of the recent impressive advancement in revealing genetic blueprint of the human neocortex, our knowledge on real operation of neural assemblies during cognitive, social and emotional functions is rather limited. The advent of microarrays and RNA sequencing (RNA seq) techniques in the last decade has broadened our knowledge about gene expression in different regions of the human brain throughout whole lifespan. It enabled us to analyze large scale changes in the gene expression pattern between various brain regions and in many disorders of the nervous system. The data from these studies significantly advanced our understanding how human brain develops and functions. However, understanding of the higher cognitive functions requires not only genetic approach, but also analysis of interaction of genes and environment in shaping neuronal circuitry and modulation of neural assemblies.

Participants, Materials/Methods: The human brain transcriptome was analyzed on 1340 samples from embryonic development (5 PCW) to late adulthood (90 years of life) and in 16 different brain regions including 11 neocortical areas. All samples were from clinically unremarkable donors. The analysis was done from total RNA extracts, using microarray and RNAseq techniques.

Results: The 86 percent of the genes analyzed were expressed in the human brain, and 90 percent exhibited differential spatio-temporal expression either on the level of whole gene or individual exon. The majority of differences were observed before the birth. Furthermore, the transcriptome exhibits sex differences in gene and exon expression. The transcriptome is organized into distinct co-expression networks and modules. When analyzing the temporal dynamics of gene expression in neocortex three different phases can be observed. The first phase is prenatal characterized by the highest number of differentially expressed genes; the second phase in preadolescent characterized by uniform gene expression; and the third phase (from adolescence onward) characterized by increased differential gene expression driven by functional specification of cortical areas.

Conclusions: Over the last decade the transcriptomic studies experienced significant boost with the perfection of large-scale and high-throughput techniques. The wealth of data provided by these studies enabled us to better understand driving forces behind the development of the human brain. It also provided us with unique opportunity to study transcriptomic changes between different cortical areas, species or disorders in fast and efficient way. However, it is important to remember that changes in gene expression are endogenously driven but also significantly influenced by environment and for the proper understanding must be put it in proper developmental context.

NEUROSCIENCE AND NEUROPSYCHIATRY IN SOCIETY –STUDENT SYMPOSIUM**Filip Đerke, Luka Filipović Grčić (Zagreb, Croatia): Healthy Brain Project – promoting mental health in school children**

Nowadays it has come to the attention of public health that the health, and particularly the mental health of the youth is endangered. Due to the stressful lifestyle and the rigid and unstimulative education system the creativity of the schoolchildren is rapidly deteriorating and, with it, the mental capabilities, which are closely related to new experiences, rather than the declarative memorising of numerous unassociated sets of information, on which our system resides. Following this pattern, throughout the school period there is no comprehensive teaching concerning the brain, or fields associated with it. Merely the anatomy is taught, without concerning functions or disorders of any kind. Thus, the ignorance and the prejudices considering different disorders, such as stroke, mental disorders and dementia, are only deepened, thus leading to propagation of stigma over this group of people, making them even more vulnerable. It was, therefore, our aim to introduce the school children of the upper classes of elementary and secondary schools to the mechanisms and backgrounds of these disorders via the series of interactive lectures. Apart from that, we sought to teach them about the mechanisms of addiction and the workings of drugs on the brain. Furthermore, as the children are more exposed to criticism of peers, not just in school, but on the internet as well, we explained the phenomena to them, thus strengthening their character and self awareness in order to stand firm against criticism. The value of creative expression was stressed in order to encourage the children to find comfort and pleasure within it, as to build the sense of achievement and self-esteem. Nearly 600 children from various schools from Zagreb have undergone this programme. In the subsequent evaluation questionnaire that was submitted to them they deemed the programme to be useful and expressed a wish to have more similar projects in the future. We wish to continue the work we begun and to develop more innovative projects for the time to come.

Luka Filipović-Grčić, Filip Đerke (Zagreb, Croatia): Healthy brain project - promoting brain health on internet

There are many ways in which one can improve one's own health. The most effective and cheapest way to do it is through education. The possibilities of modern world, internet in particular, make this task even easier. We, as medical students, see it as our duty to inform the public about questions concerning health, especially mental health and other issues associated with the brain. There is no single web page available in Croatian that offers a broader view of the brain and fields pertaining to it. With this in mind we devised an internet page that would offer relevant information concerning brain health, physiology, anatomy, healthy lifestyle, neurological and psychiatric diseases, as well as provide support for patients. It is our aim to recruit medical professionals to film short educational videos for this site, thus making this content more accessible and understandable for the public. The site will also serve as a sort of hub to unite the professionals, such as psychiatrists, neurologists, psychologists and others, non government and government organisations, hospitals and other institutions which promote brain health so that one can access them more easily. It will also improve the collaboration of the aforementioned institutions and their visibility. It is our wish that the visitors of this site broaden their knowledge of this field, not just on academic level, but also on practical issue of everyday life. We want to help lift the stigma of neurological and psychiatric disorders and to help those affected by them to find help and support. Above all, we hope that this site would incite people to take their and the mental health of others more seriously and take better care of it.

Melinda Šefčić (Zagreb, Croatia): The aestheticization and rehumanization of public space: art as therapy

The project entitled *The Aestheticization and Rehumanization of Public Space: The Case Study of Artistic Interventions in Hospital Environment* is a multidisciplinary project which was derived within the framework of the *CreArt project 2017*, gathering in collaboration the Croatian Association of Fine Artists with the Department of Ethnology and Cultural Anthropology of the Faculty of Humanities and Social Studies of the University of Zagreb, the Institute of Ethnology and Folklore Research (within their project *City-making: space, culture and identity* supported by the Croatian Science Foundation) and the University Hospital Centre Zagreb located at Rebro.

The goal of the project was to examine the possibilities of revitalization, aestheticization and rehumanization of hospital space as we know it by introducing spatial interventions applying art and painting. The project aimed to encourage social awareness on identifying and accepting art as a constituent part of the everyday life. The project contributes to multiple therapeutic effects, providing possibilities for positive distraction, faster and easier recovery of patients, as well as artistic space breeding and creating a stimulating work environment for the entire hospital community.

The artists who contributed to the realization and completion of this project are renowned Croatian artists: Ana Ratković, Damir Sobota, Sanja Stojković, Stipan Tadić, Tomislav Buntak and Melinda Šefčić, who intervened with their works, painting the walls on six locations within the hospital area of the University Hospital Centre Zagreb located at Rebro.

In the research part of the project were involved the students of graduate and postgraduate students of the Department of Ethnology and Cultural Anthropology, Faculty of Philosophy in Zagreb, whose task was to follow and analyze the whole process of implementation of works of art in the hospital and their influence on the people and environment, writing ethnographic reports from the field. Students who participated : Ana Antolković, Maša Borović, Dinko Duančić, Marijana Paula Ferenčić, Tia Glavočić i Sara Mikelić under the mentorship and coordination Nevena Škrbić Alempijević PhD, Valentina Gulin Zrnić PhD and Jasna Capo Zmegač PhD.

Successful realization and results of the project *The Aestheticization and Rehumanization of Public Space: The Case Study of Artistic Interventions in Hospital Environment* showed the need and great interest for this kind of humane artistic and research activities that contribute to acceptance and setting of the new contemporary artistic tendencies which contribute to transformation and acupuncture of health institutions with the aim on the therapeutic effect of art on the entire health community, with an emphasis on general well-being of the individual and thus the entire society.

Lectures

Tea Majer, Marta Okružnik, Marija Heffer (Osijek, Croatia): Brain awareness week - our experience

The campaign launched by the Dana Alliance for Brain Initiatives organization, known worldwide as the Brain Awareness Week, was held in Osijek during March 13th-19th 2017 for 16th time. The main organizers are the Faculty of Medicine Osijek, its Student Section for Neuroscience SENZOS and the Department of Biology of the University J. J. Strossmayer and the Biological Student Organization of ZOA.

The main topic of the Osijek project was Hungry brain, which was guided with three different topics: First three years of the brain, Neurogastronomy and Brain in the space.

As an announcement posters were sent to every elementary, high school and faculty in region. The project was visible on web pages, newspapers, posters in trams and buses. Unique Hungry brain T- shirts were designed.

During this year's event, which was very successful, 42 workshops, 25 lectures, Scientific Caffe, Quiz, Culinary spectacle and Brian Party were held just in Osijek. Professors from other universities, our university professors and students had lectures presenting the main theme in various ways.

For the first time in all BAW we had culinary spectacle audience tasting different sweets prepared by various culinary techniques using neurogastronomy. We saw food can be scientific and artistic. But as well we added in our BAW meal art exhibition and theater show for everyone's taste. We spread The Brain Week to one more city Vukovar and together with Zagreb and Slavonski Brod there were 16 lectures and 10 workshops presented.

The aim of our BAW was accomplished - to present scientific complicated topics in a simple way, to connect old and new, to think about things we do every day, why and how we do it, how long and can it be improved and in what ways food and brain are connected. Such activities contribute to the visibility of the Faculty of medicine Osijek. Medicine becomes more accessible and more open to people.

Lectures

Alen Juginović, Silvia Dužević, Josip Melvan, Hana Đogaš, Dora Knezović (Split, Croatia): Student Society for Neuroscience NeuroSplit: a brief story of a great future

Student Society for Neuroscience NeuroSplit was founded by students in November 2015 as the first ever student society at the University of Split School of Medicine. From that day onwards, the Society which is ran by Medical Students has been growing rapidly and today we have more than 150 members. They are either High School or Faculty Students from Croatia or foreign countries studying in Split. NeuroSplit consists of the following six Subsections: Basic Neuroscience, Neurology and Neurosurgery, Psychiatry, Ultrasound, Sleep Medicine and Volunteering. The aim, in general, is to make science, specifically neuroscience popular among all generations of people and young people in particular. By organizing many different activities we offer everyone interested in science and neuroscience quality education and the opportunity to actively participate in the field of science. Also, we are working on humanitarian activities and enhancing the most important practical knowledge of our Medical Students. Through quality practice in the Medical School in Split, our Hospital “KBC Split” and other partner institutions in Croatia we tend to give the best experience and knowledge to every member of NeuroSplit. With good organization and teamwork in the Society, all of the activities mentioned above are running smoothly.

Our six Subsections are independent one from another meaning they have their own members, leaders, yearly program and primary partner institution outside Split which the members visit a few times a year to get better experience and knowledge. The Subsections all share the same core activities and help one another when needed. All members have a chance to actively participate in national and international Congresses and general NeuroSplit activities, regardless of Subsection choice. Subsections are: Subsection for Basic Neuroscience, Subsection for Neurology and Neurosurgery, Subsection for Sleep Medicine, Subsection for Psychiatry, Subsection for Ultrasound and Subsection for Volunteering

NeuroSplit Society as a whole actively participates in many science activities like the Science Festival, Brain Awareness Week and many more. Also, our members often do lectures and workshops for the public at many popular places in Split to make science, specifically neuroscience popular.

With only one and a half years since our beginning, NeuroSplit has done many activities thanks to the good will of our members, leadership, and teamwork. Each and every day from our office many new ideas arise and many of them become a reality. With hard work, devotion and support which we receive all around, even the most impossible goals can turn into reality. We truly hope this rapid growth continues for the future to come and that our members will one day be proud of NeuroSplit because they are the ones who made this Student Society for Neuroscience a great story and an example that even if the seas are sometimes wavy and unpredictable, when all the sailors row together, no wave is too high and no port is too far.

Christina Isabell. Jukić, Maša Lovrović (Rijeka, Croatia): Student congress of neuroscience- NeuRi

Introduction: The idea of a Student congress of neuroscience – NeuRi was born in 2011. Since then NeuRi is organized annually in April at the Faculty of Medicine in Rijeka and Psychiatric Hospital Rab throughout three days. Our aim is to create a platform for students who are interested in scientific research in the field of neuroscience and give them an opportunity to present their work to colleagues with similar interests as well as professors. Our social programme allows participants to establish contacts with other students and our scientific committee, which will give them a better opportunity to grow as professionals later in life. We also aim to increase student interest in neuroscience and fight the stigma of mental illness with education.

Participants, methods / materials: Our target group are medicine and psychology students as well as students from other biomedical branches in Croatia and the wider region. On NeuRi, students can participate actively with oral or poster presentations or passively, listening to plenary lectures and participating in one of the workshops. It gives them an opportunity to join the scientific community, start their own research, learn how to correctly write an abstract and finally present their results in given time. The visit to Psychiatric Hospital Rab allows students to see how such an institution works and how they approach their patients, which gives them a better view of modern approaches and treatments of mental illnesses. Hopefully, that experience changes their outlook on mental institutions to a positive one and gives them a better understanding of the nature of mental illnesses.

Results: During 7 years, NeuRi has gathered over 650 participants from Croatia, Bosnia and Herzegovina, Serbia, Slovenia, Netherlands, Ukraine, Poland, Montenegro, Macedonia and Kosovo. So far, 211 student poster and oral presentations and 26 plenary lectures were presented as well as 18 workshops.

Conclusion: Throughout the years, NeuRi has become widely recognized as one of the most promising projects on University of Rijeka. With the motto “Education & experience”, NeuRi encourages students to actively participate in congresses and gives a small, but meaningful contribution to the development of neuroscience and destigmatization of mental illness.

6th SYMPOSIUM ON INTERFACE PROVIDERS IN NEUROREHABILITATION

Snježana Rucner (Zagreb, Croatia): The importance of music in everyday life

Without music, it doesn't even go in the nature (bird singing). And in our lives it thrills us since infant age - cooing of the baby. There is no life without playing music, movement and dancing. It is important to understand and more importantly apply music in everyday life. We can connect music with everything we do throughout the day. With music we celebrate and we mourn. Music affects the most basic parts of our nervous system, all the way through the central parts of our brain (feelings). We should encourage children from early age to notice the importance of music in everyday life. It is amazing the speed with which music rebuilds our energy. By knowingly applying music it beautifies our everyday life and our responsibilities.

JOINT MEETING WITH ALPS-ADRIA NEUROSCIENCE SECTION AND CENTRAL AND EASTERN EUROPEAN STROKE SOCIETY AND WFN APPLIED RESEARCH GROUP ON THE ORGANIZATION AND DELIVERY OF CARE**Matea Fogec (Zagreb, Croatia): Searching for collectors: an examination of their profiles and behavior within Croatia**

Collecting is considered to be a very intense and captivating form of consumption, which plays an important part in many people's lives; research confirms that almost 30% of the Western society indulges into some type of collecting behavior. Foreign studies show that collectors are ought to be older males, who are mainly working as “white collar” employees. Even though collecting is often mistaken for hoarding, accumulating or possessing, it represents a unique form of consumer behavior, which can benefit the person performing it.

So far, there has not been a completely successful attempt of explaining the collecting behavior; however, different perspectives are trying to shed light on the phenomena, with psychoanalytic, social, evolutionary and cognitive psychology taking the lead. Further, there has been only a small amount of quantitative research examining this topic, creating space for new revelations and approaches. To our knowledge, we performed the first research in Croatia focused on collectors, with the main goal of discovering which dispositions predict the intentions of collecting consumer behaviour. We also collected data considering the demographics, personalities and collecting habits of the examined group.

The results show that in comparison to the general population, Croatian collectors possess higher results on extraversion, agreeableness, intellect, and two consciousness facets, order and achievement striving. The sample age varied from 18 to 63 years, with the participants being predominantly female. Furthermore, only 2.6 % of the collecting intention variance was explained, with (female) gender being the only significant predictor. The participants mainly collected memorabilia, prints, coins, weapons, stones, models and sugar packages. These data may contribute to the future research on this topic, as well as to the general comprehension of collecting behavior within Croatia.

Karl Bechter (Günzburg, Germany): Achieving remission of therapy resistant psychosis by immune treatments-single case analyses

In the severe mental illness of the affective and schizophrenic spectrum a new differential diagnostic challenge is emerging. Autoimmune encephalitis, immune encephalopathy, mild encephalitis are recently diagnosed in an increasing number of cases. Such differential diagnosis is not trivial and bears important therapeutic consequences. Examples from the literature and an extended detailed in case of 25 years of psychosis, then successfully treated with immune suppression, are being demonstrated. General recommendations of early detection and differential diagnosis of autoimmune encephalitis and mild encephalitis are discussed.

Azra Alajbegović, Salem Alajbegović (Sarajevo, BiH): Use of cannabis in the therapy of neurological diseases

Indian hemp represent cannabis sativa var.indica.

Marijuana is a dried flower (sometimes a leaf) of female Indian hemp stems containing more than 0.2% of THC (tetrahydrocannabinol). Today it is included in group of narcotics, and its use in treatment has been forbidden for a long time, as long as public pressure (primarily in America) for the last ten years has not allowed its controlled medical use. Contrary to these facts, valuable fact is that the use of marijuana is still illegal in most countries around the world. Obviously, most doctors/neurologists are not familiar with medical effects, properties and the way of marijuana use. Most of them have conflicting attitudes, from liberal use up to complete ban.

To be able to respond rationally, without prejudice and adequately answer to patients (and before that to ourselves), we need to know the answers to the following questions: What are the reports on the use of cannabis in the therapy of neurological patients? The sources that can answer this question are: anecdotal, media news and clinical studies. The results of the studies are contradictory. The problems in the studies are as follows: different types of cannabis are used, different cannabis types with significant variations in potency and concentration of different cannabinoids. A specific problem is the specificity of the relationship: plant/patient from the aspect of genetic polymorphism.

Manners of use may vary: inhalation, tablets, waxes, concentrates, topical ointment, liquid extracts. Cannabis is most commonly applied in patients with multiple sclerosis and epilepsy. It is not used for other neurological disorders. The medical use of the marijuana in reducing the symptoms of multiple sclerosis include actions to: chronic pain, depression, fatigue, numbness, spasms, ataxia, emotional changes, sexual dysfunction, and paresthesias. More than 80% of patients reported decrease of spasm, pain, tremor, depression, anxiety and paresthesias. Cannabinoids are proposed in the treatment of primary anorexia nervosa, but do not have a measurable beneficial effect. "The dangers of cannabis and the lack of clinical studies to support its medical value", American Association for Addictions in March 2011 issued a letter that advised discontinuation of marijuana use as medicine in the United States, even in states in which it was legalized.

Problems that are somewhat unique to studies on medical marijuana are that results are based on subjective experiences versus objective measures of the effects. Objective measures such as walking distance and Ashworth scale spasm scale may show better score if patients feel less pain, sleep better or even have a generalized sense of improvement.

Arguments for use of medicinal marijuana are: Medical marijuana is effective in relieving nausea and vomiting, particularly when chemotherapy is used in the treatment of cancer; Marijuana can relieve muscle spasm that used to be associated with multiple sclerosis and paralysis; Marijuana can assist in the treatment of appetite loss associated with HIV/AIDS and certain types of cancer; Marijuana can relieve certain types of pain.

Marijuana is safe, in fact safer than most other drugs that are prescribed for the treatment of the same symptoms. Research shows that only smoking marijuana (without concomitant use of tobacco) does not increase the risk of lung diseases.

Marijuana has been used for centuries as a medicinal agent with good effect.

Against use stand the following arguments: It can seriously affect short-term memory; May damage cognitive abilities; Can severely damage the lungs; There is not enough evidence to support marijuana as an effective analgesic; It carries the risk of abuse and addiction; In the body are entered carcinogenic substances.

As long as the marijuana does not move from the narcotic of the 1st order according to the Act of controlled substances (CSA), larger clinical trials will not be possible. If we truly want a definite answer whether marijuana is useful for treatment of symptoms, it must be evaluated using the same standards applied to other medications. According to the evidence base level -the level of action of cannabis is C, which means obscure aspect for scientific use. The consensus is that it can be lawfully be administered in case of multiple sclerosis, malignancies, AIDS and child epileptic syndromes by specific recommendations in each country where it is legal or in the process of legalization. For other neurological diseases such as for example, Parkinson disease, Huntington disease, dementia, neuromuscular disease, amyotrophic lateral sclerosis there is still no recommendations nor guidelines.

Hrvoje Budinčević (Zagreb, Croatia): ESO-EAST project and stroke registries

Enhancing and Accelerating Stroke Treatment (ESO-EAST) is a 5-years project aiming at improvement of stroke care management in Eastern countries through cooperation of European Stroke Organization experts and Country Representatives. The goals of ESO-EAST are: 1) to educate health-care professionals on current stroke management; 2) to review, develop and facilitate the implementation of European guidelines on stroke care; 3) to provide technical support in data collection and analysis; 4) to improve surveillance, monitoring and evaluation systems.

Monitoring the quality of stroke care has a high international priority. Registries provide information about disease burden, patient characteristics, and patterns of care and outcomes. They can be used for etiologic research, intervention program evaluation, quality improvement, and health policy decision-making at local, state, and national levels. Well-known registries which are used in Central and Eastern European countries are SITS registry and RES-Q registry.

SITS (Safe Implementation of Treatments in Stroke) is a non-profit, research-driven, independent, international collaboration, with its base at the Karolinska Institute in Sweden. SITS is an initiative by the medical profession to provide safe implementation of stroke treatment in routine clinical practice. SITS offers a world-leading platform for high quality stroke data from over 170 000 patients in over 1600 stroke centres. The platform is an internet-based interactive stroke registry, which serves as a tool for structured data entry and is an instrument for centres to compare their own treatment results with national and global performance.

RES-Q is a registry of stroke care quality developed under ESO and dedicated primary for countries of Eastern Europe and beyond. RES-Q is a basic tool of the ESO-EAST Project to help involved countries to improve their stroke care system. The set of performance measures that will allow standardized comparison of quality of stroke care which include covering of : 1) coordination of care (stroke unit-based care), 2) diagnosis (brain imaging, vascular imaging, cardiac arrhythmia detection, and therapy assessment), 3) preservation of neural tissue (thrombolytic therapy and door-to-needle time), 4) prevention of complications (dysphagia screening), 5) initiation of secondary prevention (antiplatelet, anticoagulation, lipid lowering, blood pressure lowering, carotid surgery, time from vascular imaging to carotid surgery, and smoking cessation), 6) survival (90-day post-stroke mortality), and 7) functional outcomes (90-day modified Rankin Scale).

There are also some limitations of using registries in general it might include: funding, time consuming, training the staff in data collection or measuring scales, data entering problems, inform content issues, patient selection, etc.

WORKSHOPS

Anton Glasnović. Vida Demarin (Zagreb, Croatia): How to plan a research in clinical setting

Many clinicians today have hard time when it comes to writing a scientific paper. But maybe more complicated than writing a paper is to plan a research which could give us valuable data and consecutively in the same process conclusions that are worth of publishing. Medical schools give some information on how to do it properly, but many students, both graduate and post-graduate, do not give much about this big topic, because they feel keen to jump into clinical situation, and do not want to bother themselves with numbers, data, tables, reading literature and statistics. Our goal as a scientific community is to give our fellow colleagues a firm ground on what is science, why is it important, and how is it conducted, and also, what is the most important thing: a seed of interest for science. This is very important if we want to grow as academically grounded experts, and as clinicians. Here, we present basic tools necessary to plan and conduct a research of quality in clinical setting, what to do when they see an interesting case or incidence, what to do with big datasets, and also give insights on how to construct a scientific paper.

Workshops

Igor Mošič (Rijeka, Croatia): Beyond wants – stress-relief mind training

Objective: The main intention of the lecture is that all the participants get a simple and most-up-to date understanding of the stress-relief mind training and its implications, followed by 15-minute practical demonstration for everyone.

Abstract: Everybody wants to experience pleasure, be happy and calm. Nobody wants to be disturbed, experience stress, conflicts, and pain. Despite that aspiration, most of the people are not reaching that goal. According to the World Health Organization (WHO), depression and other mental health conditions are on the rise globally. It is estimated that by 2020, depression will be the second leading cause of work disability and by 2030, it is expected to be the largest contributor to disease burden. Those facts are horrifying.

Stress does not happen by itself. Stress has its causes. Oak also does not happen by itself. An acorn is the main cause of oak. If stress was a choice, nobody would experience it, isn't it? Since nobody wants to experience stress; stress would not occur. Stress is the effect of different causes and conditions.

By recognizing and eliminating the causes and conditions of stress; stress can be eliminated. Stress-relief mind training gives us powerful tools to do that effectively.

POSTERS PSYCHIATRY

1. INFLAMMATORY MARKERS ARE ASSOCIATED WITH VOLUMETRIC GRAY MATTER MEASURES IN BIPOLAR DISORDER

Veronica Aggio, Sara Poletti, Sara Di Toro, Davide Ghiglini, Cristina Colombo, Roberto Furlan, Francesco Benedetti

Scientific Institute and University Vita Salute San Raffaele, Department of Clinical Neurosciences, Milan, Italy

Introduction/Objectives: Bipolar Disorder (BD) is a severe psychiatric illness characterized by an alternating occurrence of depressive and manic episodes. Several studies have suggested regional grey matter (GM) alterations as possible biomarker of the disorder. BD has been repeatedly associated with an inflammatory condition, that can possibly be associated with the structural brain abnormalities observed in BD patients. These immunological alterations seem to be representative of both a peripheral neuroimmunological cells disequilibrium and a microglial activation. Therefore, the aim of our study is to investigate the hypothesis of a correlation between inflammatory markers and GM alterations in BD.

Participants, Materials/Methods: We studied 35 inpatients affected by a major depressive episode in course of BD type I. All patients underwent a venous blood sampling for characterizing inflammatory subsets via cluster of differentiation (CD) markers determination. The fluorescence activated cell sorting (FACS) analysis was conducted to determine percentages of T cells, Natural Killer (NK), and their sub-populations. Brain imaging volumetric T1-weighted images of all subjects were acquired on a 3.0 Tesla Scanner. The statistical analysis were performed on Statistical Parametric Mapping (SPM) 12. Voxelwise multiple regression were performed with peripheral values as independent variables and total intracranial volume (TIV), age, gender, and lithium as nuisance covariate. Threshold for significance was $p < 0.05$, Family Wise Error (FWE) corrected for multiple comparisons. **Results:** inflammatory cells and cytokines are associated with volumetric GM changes. Specifically, CD3+CD8+, CD3+CD8+TNF, CD3+CD8 Naïve Perforin and CD3+CD4+IFN γ are positively correlated with GM volume in the inferior and middle frontal gyrus, postcentral gyrus, cuneus and precuneus. NK and NK+ TNF negatively correlate with volumes in the left inferior temporal gyrus and middle frontal gyrus

Conclusions: inflammatory markers have been associated with GM alterations in BD. NK cells represent the most important component of the nonspecific immunity, due to its

cytotoxicity and cytokine-producing effector functions. The associated areas has been previously reported as implicated in BD structural GM alteration, and the volumetric reduction related to NK cells and the released TNF could be due to its pro-inflammatory effects. The increased GM volume positively related to the CD3+CD8 pattern, together with the contemporary presence of IFN γ and TNF cytokines, seem to be related to a different mechanism. The cytotoxic activity exerted by cytotoxic T cells through the perforin and granzyme action can be related to a preapoptotic osmotic change or an increased amount of water/edema in the brain, thus resulting in increased GM volume

2. EXPLORING THEORY OF MIND IN SCHIZOPHRENIA: DIFFERENCES BETWEEN “POOR”, “FAIR” MENTALISERS AND CONTROLS

Giulia Agostoni, Margherita Bechi, Marta Bosia, Mariachiara Buonocore, Roberto Cavallaro

Department of Clinical Neurosciences, IRCCS San Raffaele Scientific Institute, Milan, Italy

Università Vita-Salute San Raffaele, Milan, Italy

Introduction/Objectives: Theory of Mind (ToM) is defined as the ability to attribute mental states to other individuals (Frith, 2003). ToM deficits have been well documented in schizophrenia (Bora et al., 2009) and have been directly linked to functional impairment (Ventura et al., 2015). ToM has often been related to psychopathology and neurocognition: the severity of mentalising deficits have been found to correlate with both negative and positive symptoms and disorganization (Lysaker et al., 2011; Ventura et al., 2013), while the independence of ToM from neurocognitive functions is still under debate (Bozikas, 2011). Studies show that a part of patients with schizophrenia perform within normal ranges or close to normal on mental state attribution tasks when compared to healthy controls (Brune 2012; Rocca et al., 2016), nevertheless their functional outcome appears highly impaired.

Participants, Materials/Methods: We divided patients into two sub groups, “poor” and “fair” mentalisers. Quality of life, neurocognition and ToM have been evaluated in both sub groups, in order to verify if differences in ToM tasks were associated with differences in quality of life and neurocognition. Then ToM and neurocognition have been compared in “fair” mentalisers and healthy subjects, in order to analyze if neurocognition can help to explain performances in ToM tasks.

Method: 122 patients with schizophrenia (DSM-IV) were assessed for demographical and clinical data, psychopathology (by Positive and Negative Syndrome

Scale), neurocognition (by Brief Assessment of Cognition in Schizophrenia), ToM (by Picture Sequencing Task) and quality of life (by Quality of Life Scale). 67 healthy subjects were assessed for demographical and clinical data, neurocognition and ToM.

Results: ANOVA between “fair”, “poor” groups and controls was performed on ToM, neurocognitive functions and quality of life. “Fair” patients are significantly better than “poor” in quality of life, cognitive abilities. Significant differences between “fair” mentalisers and healthy controls were found in Cognitive ToM performances and neurocognitive performances. A set of forward stepwise regressions were run in order to analyze which components could determine these differences. ToM is related to neurocognitive and demographic variables in healthy subjects, while it is associated with attention and symptoms in “fair” patients and it is related to executive functions and symptoms in “poor” mentalisers.

Discussion: These results could suggest that even if some schizophrenic patients have good performance in ToM abilities, cognitive component of ToM and neurocognition could have negative influences on functioning and could not allow patients to achieve higher level of quality of life.

3. THE ROLE OF BIOLOGICAL AND SOCIOCULTURAL FACTORS IN EATING DISORDERS

Marina. Artemieva, Boris Tsygankov, Roman Souleimanov, Ivan Danilin, Anastasia Lazukova, Elena Kislova

RUDN University, Scientific and Practical Centre of Neuropsychiatry
Department of psychiatry and medical psychology
Moscow, Russian Federation

Introduction/Objectives: Eating disorders provoke severe protein-calorie deficiency which leads to severe somatic, metabolic and psychic consequences. At the same time social factors provoke Anorexia Nervosa forming an ideal body image. The aim of this study is to identify the significance of both biological and cultural factors in the genesis of eating disorders.

Participants, Materials/Methods: We examined 150 patients with eating disorders since 2008 to 2014. In addition to clinical method the analysis of urinary catecholamines at different stages of therapy was used.

Results: The study confirms the value of dominant position of sociocultural factors and obligatory presence of biological pathogenetic link between organic pathology, personality and affective disorders. Nevertheless, social factors are crucial for Anorexia Nervosa at the provoking and forming factor regardless of nosology of the disease since the content

of both overvalued and delusional ideas, remain identifiable by trends and views prevalent in society. Various types of eating disorders and treatment stage correspond to different urinary catecholamine levels that can be used as a diagnostic criteria.

Conclusions: Social factors play significant role but there are also biological factors such as catecholamine changes. Further study of the relationship between catecholamines and symptoms of eating disorders is useful for the investigation of new methods of treatment and objective control of eating behavior.

4. CHILD-PARENT RELATIONS AS A FACTOR IN THE FORMATION OF EMPATHY IN CHILDREN WITH MINIMAL DYSFUNCTION

Tatiana Arakelyants, Zhanna Gardanova

Pirogov Russian National Research Medical University (RNRMU)
Department of Psychoterapy
Moscow, Russian Federation

Introduction/Objectives: Currently, due to the deterioration of the environmental situation and the overall level of public health, there is an increase in the occurrence of pathologies of pregnancy, childbirth and postpartum development. These pathologies create prerequisites for the emergence of various types of dysontogenesis, including delay in the mental development of children. The prevalence of minimal brain dysfunction as an independent state in our country ranges from 1.2% to 8-10% of the number of all registered mental illnesses.

In connection with the foregoing, our goal is to study the influence of the characteristics of child-parent relationships on the formation of empathy in children with minimal brain dysfunction.

The object of research is the relationship of parents and their children with a delay in mental development.

The following theoretical hypotheses were put forward:

1. Children with CRD are less emotionally responsive and identify emotions worse than their healthy peers;
2. Emotional response of both healthy children and children with minimal brain dysfunction related to the peculiarities of child-parent relations;

Participants, Materials/Methods: the peculiarities of child-parent relations;

Methodological equipment included:

1. experimental study of empathy;
2. Study of child-parent relations using the "Family Drawing" technique and the "PARI" questionnaire by E. Scheffer and R. Bell in the adaptation of TV Nescheret [17];
3. For statistical processing of the results, the Mann-

Whitney U test was used, the Student's t-test, and the Spearman correlation analysis. The processing was performed using the program Statistica 6.1.

Results: Based on the results of the work done, we come to the following conclusions:

1. Disturbances in the cognitive component of empathy in children with minimal brain dysfunction are manifested in a decrease in the ability to recognize emotions;
2. Violations of the emotional component of empathy in children with minimal brain dysfunction are characterized by a decrease in emotional responsiveness to the experiences of another person;
3. Child-parent relations are an important factor in the formation of empathy both in healthy children and in children with minimal brain dysfunction. At the same time, the influence exerted by parents on the development of empathy in children is usually very different from the effect exerted on children with minimal brain dysfunction by their parents;
4. The difference in the influence of parents on the formation of empathy in healthy children with the influence exerted by parents on the development of empathy in children with minimal brain dysfunction is due to the personal characteristics of parents and the specifics of child-parent relations;

Conclusions: Thus, we come to the conclusion that the family creates an orientation towards another person either as a subject of communication or as an object of interaction, which determines the features of empathy. The importance of directivity to the other for the formation of empathy is emphasized in the works of LP Vygovskaya . In families of healthy children, a true interest in another is formed, and in families of children with minimal brain dysfunction, the manifestations of empathy are more adaptive.

5. PSYCHIATRIC MANIFESTATIONS OF NEUROSYPHILIS IN EARLY STAGE OF INFECTION - CASE REPORT

Andreja Celofiga, Jure Koprivšek

University Medical Centre Maribor
Department of psychiatry,
Maribor, Croatia

Introduction/Objectives: In recent years, there has been a remarkable increase in prevalence of syphilis infections, not only in developing countries, but also in Western Europe and United States. Without treatment, 25-40% of affected individuals may develop neurosyphilis, which can manifest primarily with psychiatric symptoms. Traditionally, neurosyphilis develops decades after primary infection, but in recent years some authors reported that the average period of latency was a few years or even less than a year.

Neurosyphilis may develop at any time in the natural history of the disease. We are presenting a clinical case with an early stage of syphilis infection manifested as neurosyphilis with exclusively psychiatric symptoms.

Participants, Materials/Methods: The patient was a 31-year old man admitted to the psychiatric department with a 4 month history of memory impairment, occasional states of confusion and psychotic symptoms. At the time of admission he was confused and disoriented with concentration and attention disturbances. His behavior was disorganized, with persecutory and grandiose delusions, insomnia and weight loss. The mood was dysphoric and elevated with marked emotional instability. He reported no previous somatic diseases and the physical and neurological examinations showed no abnormalities. Laboratory results of blood biochemistry, complete blood count, thyroid hormones, vitamin B12, folic acid and other biochemical tests were normal. In serum testing TPHA and VDRL were positive, CFS showed normal WBC count, TPHA test was positive. He was serologically negative for hepatitis B, C and HIV infection.

Results: The patient was treated with penicillin G, administered i.v., and with low doses of risperidone. After three weeks the patient was asymptomatic regardless of psychotic and mood symptoms, cognitive symptoms resolved completely after two months.

Conclusions: Early diagnosis and appropriate treatment of neurosyphilis are crucial, since it appears that the symptoms of early neurosyphilis, including cognitive decline, are completely reversible, which is not common in the late stages.

6. ANXIETY IN PSORIASIS PATIENTS

Ivan Danilin, Zofia Niewozinska, Marina Artemieva,
Roman Souleimanov, Anastasia Lazukova, Irina
Korsunskaya

RUDN University, Department of psychiatry and medical
psychology
Moscow, Russian Federation

Psoriasis is considered as a chronic disease of polyetiologic nature. Psychosomatic constituent seems to be an important part of its pathogenesis. The aim of this study is to identify the situational and personal anxiety levels in patients suffering of psoriasis. We examined 23 patients with exudative form of common psoriasis vulgaris using STAI and HADS tests. All patients underwent inpatient treatment in Moscow Scientific and Practical Center for Dermatovenereology and Cosmetology. The survey was conducted at the stage of hospitalization. Our patients

demonstrated a marked predominance of personal anxiety, the permanent character trait, which manifests in the tendency to experience anxiety, regardless of the force of real threatening factors and significantly influences the behavior and life strategy in general. The mean value of anxiety and depression on HADS test made up 7.82 and 5.33 points respectively, which indicates the absence of a significantly symptoms of depression and subclinical severe anxiety, reaching 11 points in 5 patients. Results of HADS scale matched the data of the STAI test, and the results of other studies, indicating the significant role of the anxiety radical in the structure of personality in patients with psoriasis. We also found considerable information in medical literature about the successful use of some psychotropic drugs (amitriptyline, doxepin, bupropion, chlorprothixene, teraligen) regulating the metabolism of neurotransmitters participating in the pathogenesis of anxiety disorders in psoriasis patients. The information for use of SSRI is quite heterogeneous. We, in turn, have the successful experience of a year and a half remission in two patients with common vulgar psoriasis, taking escitalopram in a dosage of 15 mg daily in addition to standard treatment. Further study of the relationship between mental and somatic components of this disease, finding common links in the pathogenesis of skin diseases and mood disorders will significantly optimize the treatment and improve the quality of life of patients with psoriasis.

7. PROPORTIONAL ANALYSIS OF THE COPING STRATEGIES AND DEFENSE MECHANISM IN PROSTATE CANCER PATIENTS COMPARED WITH PATIENTS IN OTHER CANCERS AND HEALTH PEOPLE

Zhanna Gardanova, Anton Chernov, Iskander Abdullin

ISBEO HPE "N. I. Pirogov Russian National Research Medical University, Department of psychotherapy, Moscow, Russian Federation

The prostate cancer is the most widespread among other forms of cancer at men in the United States to America. Annually more than 180 000 new cases and 37000 deaths from it are found. In America about 1 billion dollars are allocated for patient care with prostate cancer. [1] In Russia the prostate cancer takes the 6th place on prevalence and mortality among other forms of cancer at men. It promotes number of features of treatment of this disease, such as late diagnostics of disease and lack of psychological patient care. The research included 65 people. From them 40 people have prostate cancer, 25 people of patients with other types of oncological diseases (intestines cancer, cancer of urinary bladder). All patients are men whose average age of

62,4±7,1 years. Suffering from cancer prostates (experimental group) and patients with oncological diseases were at the initial stage of treatment (stage of laboratory diagnostics). Selection of group of patients with cancer of prostate formed on the basis of sex, age, existence of disease and stage of its treatment. Examination was conducted by N to voluntary basis. The research was conducted by questioning method. To find out indicators of such characteristics as levels of situational, personal anxiety, coping-strategy and expressiveness of psychological protective mechanisms techniques "Scale of uneasiness of Spilberger" (7), by "Coping-test of Lazarus" (8) and "Index of Vital style» were used (6) The purpose of our research - to study indicators of expressiveness of psychological protective mechanisms and coping – strategy at patients with cancer of prostate and group of the people sick with other oncological diseases, and also level of expressiveness of uneasiness and its dependence on psychological protective mechanisms and coping-strategy. Statistical analysis of data was carried out by means of SPSS Statistics 17.0 package, and also the Microsoft Excel program and included descriptive statistical characteristics of selection (arithmetic average, standard deviation) and the correlation analysis which was carried out by means of rank coefficient of Spirmen. Reliable considered differences at $p \leq 0,05$. Thus, it was revealed that at group of the people having the diagnosis prostate cancer, high level of personal and situational uneasiness. For its suppression they use preferential such protective mechanisms as "Suppression" and "Denial", unlike control group. This acquired information demonstrates that at this group is much higher risk of psychosomatic disorders, than at patients with other oncological diseases. At the behavioral level it is confirmed by results of research of system of coping-strategy of patients. Men address for social support less often, but its receiving reduces their uneasiness. From everything is higher than told follows that patients with cancer of prostate need to create absolutely new system of psychological rehabilitation which will rely on the received results. This program has to include integrated effect on mentality of the patient, work with its a close social circle, especially with the spouse. Main objectives for work are the high level of uneasiness, the suppressed emotions and unwillingness to accept support from the relatives. It is also necessary to study more profoundly existence at this group of people of psychosomatic

8. PSYCHOLOGICAL CORRECTION OF PSYCHO-EMOTIONAL STATES IN PREGNANT WOMEN WITH HYPERTENSIVE COMPLICATIONS

Zhanna Gardanova, Dmitry Hritinin, Kseniia Anisimova

Pirogov Russian National Research Medical University (RNRMU), Department of Psychoterapy
Moscow, Russian Federation

Pregnancy is a special period in a woman's life, not only in terms of the evolutions concerning the physiology and somatic component, but also a psychological self-acceptance and its future role. An important role is played by psycho-emotional state of a pregnant woman, it is known that unstable psycho-emotional state can have a negative impact on the work of any human organs and systems, causing and provoke the development of various psychosomatic diseases.

In recent years there has been growth in the number of pregnancies complicated by hypertension, which is part of a group of psychosomatic illnesses, representing a kind of "life" of a person.

Material and Methods:

To investigate the psycho-emotional sphere of pregnant women used the questionnaire Spielberger-Hanin to assess the level of situational anxiety and Beck test to determine the level of depression.

The study was conducted in FGBU NTsAGiP them.

Academician VI Kulakov. The study involved 180 pregnant women, 120 of which have been accompanied by hypertensive pregnancy complications. Age of patients from 18 to 40 years. At the end of the 2nd trimester of all women with hypertensive complications are divided into 2 groups according to the type of hypertensive complications: Group 1 - chronic arterial hypertension (CAH); Group 2 - gestational hypertension (GAG). Then each of these groups was divided into 4 subgroups according to type of psychological correction:

1 sub-group (15 people) - the control group - pregnant women who will be encouraged to carry out standard maintenance of pregnancy - improving walking, breathing exercises, music therapy;

2nd subgroup (15 people) - was carried out psychological correction method of Erickson hypnosis on a background of standard maintenance of pregnancy.

3rd subgroup (15 people) was conducted psychological correction methods of cognitive-behavioral psychotherapy against standard maintenance of pregnancy.

4th subgroup (15 persons) is a complex psychological correction, consisting of a combination of methods of Erickson hypnosis and methods of cognitive-behavioral psychotherapy against standard maintenance of pregnancy.

Results of the study.

In the group of pregnant women with CAH most effective results for reducing anxiety and depression were obtained in the subgroup of women receiving comprehensive psychological correction. A little less than a statistically significant effect was detected in the group with psychological correction Ericksonian hypnosis. In the subgroup of women, which applied the methods of cognitive-behavioral therapy, the positive effect is less pronounced than in the subgroup with Ericksonian hypnosis ($t = 0,57$ at $r \leq 0,01$). Against the backdrop of ongoing effective psychological correction in the 2nd trimester, a decrease levels of anxiety and depression, with a slight increase in the 3rd trimester. In the 1 st subgroup without psychological correction marked anxiety and depression levels of growth throughout the period of pregnancy with a significant increase in the 3rd trimester.

In the group of pregnant women with GAGs most effective results for the correction of psycho-emotional state in the form of lower levels of anxiety and depression were obtained in the subgroup of women with complex psychological correction. Between subgroups with Ericksonian hypnosis and cognitive behavioral psychotherapy statistically significant differences were found. The effectiveness of ongoing psychological correction was estimated decrease in the level of situational anxiety and depression.

Thus, it is revealed that a group of pregnant women with chronic hypertension most effective use of the integrated psychological treatment consisting of Erickson hypnosis and methods of cognitive-behavioral psychotherapy. Erickson also recommended the use of hypnosis. conduct a comprehensive psychological treatment for a group of pregnant women with gestational hypertension is necessary.

9. EXCITATORY AMINO ACID TRANSPORTERS 1 (EAAT1) AFFECTS CORTICOLIMBIC CIRCUITRY DURING IMPLICIT PROCESSING OF NEGATIVE STIMULI IN BIPOLAR DISORDER

Davide Ghiglino, Sara Poletti, Francesco Benedetti

IRCCS San Raffaele Hospital
Department of Clinical Neuroscience
Milan, Italy

Introduction/Objectives: Glutamatergic overactivity has been reported as a potential pathophysiological mechanism and antidepressant target in bipolar disorder (BD). Patients showed elevated levels of glutamate (Glu) in frontal and limbic regions compared to controls, exerting an excitotoxic damage on corticolimbic circuitry. The family of the excitatory amino acid transporters (EAATs) affects the glutamatergic neurotransmission and its reuptake in the synapse, and help in limiting Glu neural excitotoxicity. The rs2731880 polymorphism is a SNP (C/T) located in EAAT1

gene promoter region: previous studies pointed out that homozygote carriers of T allele were associated with lower expression of EAAT1, more Glu in synaptic space, and impaired cognitive functions compared to C carriers. The dysregulation of corticolimbic circuitry has been proposed as biomarker for BD. This study is aimed at exploring the effect of rs2731880 on functional corticolimbic connectivity during emotional processing in bipolar depressed patients.

Participants, Materials/Methods: We used fMRI and a Functional Connectivity analysis (CONN toolbox) to study the effect of rs2731880 on the response to emotional faces in 68 BD patients (43 C carriers, 25 TT). Seed-based analyses were performed by comparing the temporal bivariate correlation between the BOLD signals from bilateral Amygdala (Amy) to all other voxels in the brain between genotypes and, as within effect, the difference between the processing of emotional faces and the control condition of the task. Analyses were thresholded at cluster-size $pFDR < 0.05$

Results: A significant interaction between rs2731880 and the within effect of the task was found for the connectivity between right Amy and right subgenual Anterior Cingulate Cortex (sgACC) ($T = 4.70$). TT patients showed a significant negative correlation between right Amy and right sgACC, although in C carriers this connection was absent.

Conclusions: Our study reveals an interaction effect between EAAT1 polymorphism and emotional processing on Amy–sgACC crosstalk in BD. T allele showed a different connectivity compared to C carriers during emotional processing: in TT patients Amy–sgACC coupling was negative, whereas it was absent in C carriers. In depressed and euthymic bipolar patients, higher ACC Glu levels compared to healthy controls have been reported in magnetic resonance spectroscopy. In addition, neuroimaging studies demonstrated that the sgACC could be considered as a critical brain region in emotion processing and in the pathogenesis of mood disorders. These findings support the involvement of glutamatergic mechanisms in affecting functional connectivity between Amy and sgACC in BD. However, future studies are warranted so as to investigate the nature of this connection.

10. NEUROSCIENCE AND PSYCHOANALYSIS ON DICHOTOMY PSYCHE/SOMA

Alen Greš, Ljubomir Radovančević, Ivica Šain

General Hospital Pula
Department of psychiatry
Pula, Croatia

Introduction/Objectives: Neuroscience studies brain biology, its functions and structures that can be objectified. Psychoanalysis studies subjective mental processes.

Neuropsychanalysis is an interdisciplinary field which applies findings to psychoanalytic theory and vice versa. Neuroscience is preclinical research and psychoanalysis is clinical. The development in technology and the development of new clinical and laboratory methods such as electroencephalography (EEG), magnet resonance (MRI), positron emission tomography (PET), photon emission computerized tomography (SPECT), imaging methods etc., made possible to bring neuroscience and psychoanalysis closer together.

Participants, Materials/Methods: Authors look at the present titles subject through scientific view of the eternal problem of psyche – soma diversity. They consult literature, have subjective experiences in several psychiatric practices and through objective observations.

Results: Disput after introduction of evaluated and crossoverwhelmed approaches to mentalisation psyche through the body and body itself. Determination of cognitive and general scientific resolutions is given.

Conclusions: Neuroscience and neuropsychanalysis are definitely re/solved the millennium lasting philosophical and medical problem of artificial dichotomy of mental and organic diversities. At least, neuroscience has found the final (?) answer on the question of antinomies and diversities of psyche / soma situation.

The authors accept the holistic consideration of the organism – the unity of body and soul, what can be separated only in didactic and pragmatic purposes.

11. ANONYMOUS FEEDBACK FROM THE FIRST YEAR MEDICAL STUDENTS AT THE FACULTY OF MEDICINE IN RIJEKA ABOUT THE “COMMUNICATION MODEL FOR HEALTHCARE PROFESSIONALS” WORKSHOP

Suzana Janković, Igor Mošič

Faculty of Medicine, University of Rijeka
Rijeka, Croatia

Everybody wants to be healthy and experience well-being. Nobody wants to be unwell, sick or ill. That aspiration is the same for health professionals as well as ordinary people. With regard to avoiding sickness and being healthy, we're all the same. Further, we don't know the time when we'll get unwell, sick or ill, but that time will come. When that time comes, we all want to see a doctor or a health professional. And the first thing the doctor is going to do will be conducting an interview. History-taking part of the patient interview influences most of the diagnostic decisions.

At The Faculty of Medicine in Rijeka, in April 2016 we experimentally organized five workshops regarding communication skills for healthcare professionals for the

first year medical students. It was the initiative from Suzana Janković, MD, PhD from the Department of social medicine and epidemiology. The trainer of the workshops was Igor Mošič, NLP Master Practitioner and New Code NLP Coach. „Communication model for healthcare professionals“ workshop was based on the technology of Neuro-Linguistic Programming (NLP). The intention of the workshops was to make sure that students get a simple and most up-to-date understanding of verbal and nonverbal communication skills for healthcare professionals.

We evaluated the workshops through anonymous feedback received from the students and they showed high level of interest for the subject of communication. Feedback was received from 101 students and we received the following average grade evaluation (scale from 1 to 5): training skills of the trainer – 4,7, the topic of communication – 4,7 and the benefits of such training for healthcare professionals – 4,6. In April 2017, one year after the workshops, 91% of those students expressed interest to continue with the „Communicating model for healthcare professionals“ training.

With our workshops we are trying to prove the hypothesis that there is a strong positive relationship between health professional's verbal and nonverbal communication skills and healthcare outcomes.

12. STUDY OF METABOLIC SYNDROME AND ITS CLINICAL CORRELATES IN PATIENTS SUFFERING FROM SCHIZOPHRENIA”- AN INDIAN STUDY

Vishwanath Lalugol, Shivananda Jena

Maulana Azad Medical College, G. B. Pant Hospital,
Department of psychiatry,
New Delhi, India

Introduction: Metabolic syndrome is a cluster of disorders comprising obesity(central and abdominal) ,dyslipidemias (hypertriglyceridemia and low serum HDL) and glucose intolerance. Metabolic syndrome is of immense clinical relevance because its associated with development of coronary heart disease, cerebrovascular disease as well as type 2 diabetes mellitus . Many recent studies have shown significant causal association of severe mental illness like schizophrenia in the development of metabolic syndrome (MS).

Methodology: This was a cross sectional study conducted among the subjects attending psychiatry OPD of a tertiary care hospital in Central Delhi, India. A total of 100 subjects with schizophrenia diagnosed according to DSM-5 were taken up for the study. Subject's socio demographic data, anthropometric measurements along with blood samples for lab testing were done. International Diabetic Federation Criteria for diagnosis of metabolic syndrome was used, accordingly subjects with Central obesity (waist

circumference: Male ≥ 90 cm ,Female ≥ 80 cm) plus any 2 out of 4 were considered to have MS. i.e, triglycerides ≥ 150 mg/dL, HDL < 40 mg/dL, blood pressure :systolic BP ≥ 130 or diastolic BP ≥ 85 mmHg , plasma glucose : ≥ 100 mg/dL

Results : Prevalence of metabolic syndrome was found to be 24% (n =100). The mean age of the subjects suffering from schizophrenia with MS was 38.50 years and for the subjects without MS was 36.47 years. Out of 57 male subjects with schizophrenia, 16 had MS and out of 43 female subjects 8 had MS. Schizophrenia subjects in the age group of 40- 50 years and those belonging to upper/ lower middle class of socio-economic status had significant correlation with development of MS. Subjects who were treated with olanzapine (n=9, p-value=0.02) had higher prevalence of MS when compared to other antipsychotics. Schizophrenia subjects who were markedly ill had significant association with MS. (n=10 ,p=0.014)

Discussions: It has been observed that people with severe mental illness such as schizophrenia are at greater risk of coronary heart disease than people without such diagnosis. Prevalence of metabolic syndrome amongst schizophrenia patients varies across globe (32%to 60%). Hence, prevention, identification and modification of cardiovascular risk factors should be one of therapeutic objectives in the management of the severe mental illness like schizophrenia.

13. PSYCHOTHERAPY IN EVERYDAY PSYCHIATRIC TREATMENT

Jadran Morović

Dom zdravlja Zagreb – Centar
Zagreb, Croatia

During the last twenty years working in psychiatric outpatient care, with classic psychiatric and psychotherapeutic approach, I used Gestalt psychotherapy approaches, methods and techniques.

Gestalt Psychotherapy belongs to the humanistic and holistic therapy school. Basic theoretical settings of this approach are dialogue, a phenomenological approach and field theory. The goal of Gestalt psychotherapy is to broaden client's awareness, through establishing client-therapist contact, in the 'here and now' setting. In this way, processes of establishing client's relationship with the environment and with himself, are reflected and become visible. This allows clients to take responsibility for themselves and their situation, and accept their ability to feel and respond to stimuli from inside and from the environment.

The setting and methods of Gestalt psychotherapy greatly contribute to quality and efficacy in daily psychiatric work. In this work I showed the possibilities and usefulness of Gestalt psychotherapy approach to patients, as well assist techniques and methods.

Briefly describing the principles of Gestalt psychotherapy, and further describing some selected methods and techniques, from the perspective of long psychiatric experience, I described the approach to the clients/patients and their difficulties, through their own understanding of certain disorders, including mental illness in the true sense of the word, whilst respecting the needs and capacities (possibilities) of each individual patient.

This work shows the importance of adequate approach to the relationship: the patient - doctor (therapist), and the willingness and interest of the individual, in his own growing, accepting himself and accepting responsibility for his or her behavior, mood and daily life.

14. TRYPTOPHAN CATABOLISM AFFECTS THE NEURAL CORRELATES OF MOOD-CONGRUENT PROCESSING BIASES IN BIPOLAR DEPRESSION

Martina Riberto, Benedetta Vai, Francesco Benedetti

IRCCS San Raffaele Hospital
Department of Clinical Neuroscience
Milan, Italy

Introduction/Objectives: Tryptophan (TRP) catabolism pathway has been emerging as possible candidate contributing to depression. Initially Indoleamine 2,3-dioxygenase-1 (IDO) and Tryptophan-2,3-Dioxygenase (TDO) breakdown TRP into Kynurenine (Kyn), further metabolized into 3-hydroxy-kynurenine (3HK) and kynurenic acid (KynA) due the kynurenine-3-monooxygenase (KMO) and Kyn aminotransferase II (KATII). Bipolar patients showed higher TRP breakdown index (Kyn/TRP) and KMO activity, confirmed by increased 3-HK levels, and reduced levels of KynA compared to controls. Neuroimaging studies in bipolar disorder (BD) highlighted the influence of Trp and Kyn catabolites on the widespread disruption of white matter tracts involved in both cognitive and emotional aspects of behavior. Cognitive distortions are a core symptom of BD and lead to mood-congruent biases: bipolar depressed patients demonstrate facilitation in processing negative emotional stimuli paralleled by abnormal functional response in corticolimbic network. No previous studies explored the effect of Tryptophan catabolites on this circuitry. We evaluated the effect of serum levels of Kyn, KynA, and 3-HK as well as the approximated activity of the IDO/TPO (measured by Trp Breakdown, Kyn/TRP), KMO (measured by 3-HK/KYN ratio), KAT II (measured by KYNA/KYN ratio), and the 3-HK/KYNA ratio on the functional neural correlates of mood-congruent information processing bias in bipolar depression.

Participants, Materials/Methods: fMRI was used to study

the effect of TRP catabolites and enzymatic ratios on brain regions specifically involved in inhibiting response to negative stimuli during an affective (morally tuned adjectives, eg. brave or vile) go no-go task in 15 BD patients. Antidepressant medication load was entered as nuisance covariate. Whole brain analyses were thresholded at cluster-size pFDR **Results:** Trp Breakdown (Kyn/TRP) was associated to an increase of BOLD signal in right dorsolateral prefrontal cortex (PFC), KynA in bilateral supragenual anterior cingulate cortex, 3-HK in ventromedial PFC, and Kyn in right precuneus, cerebellum and bilateral premotor areas. No significant associations were found with other ratios.

Conclusions: Our results showed that TRP breakdown, Kyn, 3-HK, and KynA are associated to a higher neural response in dorsolateral and ventromedial PFC, in anterior cingulate cortex, in precuneus and premotor cortex during the inhibition of response to negative morally tuned adjectives. These areas are involved in monitoring processes, in inhibitory control, in directing attention and in elaborating emotional experience. A higher response in these areas has been associated to mood-congruent information processing in BD and TRP catabolites could exert a detrimental effect on them. Considering the enzymatic activity, TDO is mainly induced by TRP itself and by steroids, whereas IDO, KMO and KATII have been primarily associated to proinflammatory stimuli and cytokines. The absence of significant effects related to these last enzymes on corticolimbic network could suggest that the detected effect of TRP breakdown could be related to TDO. Thus, it underlies to a glucocorticoid overproduction and chronic HPA hyperactivation, previously hypothesized as biological underpinning of the disorder. This is in line with the absence of 3-HK/KYNA effect on this circuitry, ratio usually associated to a neurotoxicity of inflammatory related end-products.

15. THE PHENOMENOLOGICAL ANALYSIS OF IMPAIRED AGE SELF-CONSCIOUSNESS IN LATENT SCHIZOPHRENIA

Roman. Suleymanov, Marina Artemieva, Ivan Danilin, Anastasia Lazukova, Tatiana Varnakova

RUDN university
Department of Psychiatry and Medical Psychology
Moscow, Russian Federation

Introduction/Objectives: From 2007-2017, 94 patients, aged 18-31 (average 21.8 years old) underwent a study on latent schizophrenia at the Department of Psychiatry and Medical Psychology of PFUR Moscow, Russia. The topic of research was phenomenon of age regression in latent

pseudo-neurotic schizophrenia.

Participants, Materials/Methods: The following observations were made: obsessive phobic syndrome in 41 patients (43,6%), 36 patients (38,3%) with juvenile asthenic insolvency syndrome and 17 patients (18,1%) with hypochondriac syndrome. Simultaneously, the phenomenon of Impaired Age Self-Consciousness was diagnosed in all subjects.

Results: Apart from the acute manifestation of the main syndrome in all the patients, affective disorders (mixed sub-threshold depressive or hypomania) as well as minor formal thought impairment, in combination of a set of other psychopathological symptoms were also noted. With respect to the level of social development and biological age of the patients, the onset of the disease was dominated by a radical drop of the subjective age in their self-conscious mind. This was accompanied by a tormented feeling of loss of self-dependence, role autonomy, helplessness, inability of decision making and to be answerable. Patients described this sudden condition as a loss of "maturity feeling" and return to the juvenile perception of self. In a delusive and unclear manner, phrases such as 'I feel inferior to others as if a helpless child among adults', 'I feel like a kid', and 'I feel as if my childhood is back' were uttered. Statements like excessive worrying and enlivening of childhood memories were also included. This correlates to the specific features of preschool and early primary school age groups. The patients demanded excessive care and support from their surroundings which led to the occurrence of humble and sometimes dependent/avoidant behaviour that was paradoxically combined with general vigilance and mistrust. Feeling of helplessness and fear with respect to caring for one self, rising subordination and suggestibility were expressed in the form of inadequate selective credibility openness and communication with strangers, who appeared benevolent. Consequently, patients often became victims of fraud and prejudice.

Conclusions: On the level of self-consciousness, sudden age regression was marked by profound internal changes with regard to oneself and in general, to the external world. This phenomenon of regress to earlier ontogenetic level of personal development reported as impaired age self-consciousness can thus be regarded as an obligate form of depersonalization in patients with pseudo-neurotic type of latent schizophrenia.

16. BRAIN PATHOLOGY IN MENTAL DISORDERS CAUSED BY THE USE OF OPIOIDS (NEUROIMAGING ASPECTS)

Dmitriy Tarumov, Igor Zhelezniak, Vladislav Shamrey

S.M.Kirov Military Medical Academy, Saint-Peterburg, Russian Federation

Separately taken methods of early identification of the persons using narcotic preparations are uninformative and also don't answer modern trends of growth of addictive pathology that demands revision of this concept from the point of view of complex diagnostics of these states. It causes expediency of further search (a clinical-psychopathological and laboratory), complex methods of diagnostics the addictive disorders including functional neurovisualization.

A 65 male patients ($25,9 \pm 2,6$ years) with a confirmed diagnosis of opioid dependence syndrome were examined. Experience of using drugs had been 9,5+3,4 years. The control group consisted of 27 healthy people. The mental condition was estimated by means of clinical-psychopathological method and psychometric scales: the questionnaire to assess the degree of anhedonia syndrome; the scale of severity of dependence (SDS-S) and (SDS-D); scales of changing in readiness and aspiration to recover (SOCRATES); diagnostic screening questionnaire (PDSQ). Functional MRI (fMRI) with use of stimulus material has been executed to patients during the study the functional characteristics of the brain. The features of patterns of the brain answer of patients of the main selection and control group had been studied during carrying out neurovisualization researches. The received results show that the patients of all groups had high rates of jet alarm, suicide risk, a depression, high rates of expressiveness of all three components of a syndrome of an anhedoniya at the time of inclusion in research and also intensive attraction to heroin was identified despite various periods of remission. At the same time, by results of a scale of readiness and aspiration to treatment (SOCRATES) all patients had shown rather high rates. Various patterns of the reply of structures of a brain of patients had been received during carrying out FMRI. So, all drug addicts in comparison with healthy examinees showed the strengthened answer of an central lobe of cerebrum and the dorsolateral of prefrontal cortical departments at the left, structures of a hippocamp (mainly on the right). It should be noted that at 35% (n=14) of examinees activation zones in a projection of forward departments of the pons cerebelli and the nucleus basalis were noted. At the same time areas with reliable activation in the "memories" systems (hippocamp), "motivations and emotions" (prefrontal cortex and thalamus opticus) were identified. Especially activation of the zone of "cognitive control" located in prefrontal cortex should note. This fact could be correlated to the results of a psychometric technique of SOKRATES that showed high rates of readiness for treatment and change of living positions. Activation in the zone of a brainstem and a pons cerebelli are most probably connected with a accumulation in this area of opioid receptors. At the same time, it remains not clear why the structures of a brain, that responsible for the

system of "reward" (an island, a pale sphere), were involved. The received preliminary results demand more detailed studying by means of other methods of neurovisualization, such as diffusive and tensor MRI, a voxelwise morphometry, spectroscopy and PET-scan of the brain. The combination of clinical and tool radiation methods gives an opportunity more complex and objective consider a problem of addictive pathology in general.

17. EMOTIONAL INTELLIGENCE. IMPLICATIONS FOR ELDERLY PSYCHIATRY

Fabio Tassi, Franco Babici, Antonino Riolo

Mental Health Center Domio
Department of Mental Health
Trieste, Italy

Introduction/Objectives: Emotional intelligence could represent the balance between limbic system and cerebral cortex. Psychological frailty, as consequence of age-altered brain function, encompasses cognitive, motivational, physical changes. Emotional intelligence could mediate the relationship between age and subjective well-being but also improve the adaptation to neurological events as stroke or mental disorders as depression in the field of elderly psychiatry.

Participants, Materials/Methods: This is a observational-descriptive study focused about 10 patients with vascular dementia and 10 patients affected from depression >65 old-age. We evaluated the possibility to structure the emotional stimulation for these patients.

Results: Only for a few patients, regardless of the diagnosis of depression or vascular dementia, it is possible to develop an emotional stimulation.

Conclusions: In the ageing, the emotional interest is focused on a few people, the ones closest to the elderly person. Dementia and depression modify the normal emotional experience and only in a very limited number of patients it is possible to develop an emotional rehabilitation.

18. A ROLE OF GUT-MICROBIOTA-BRAIN AXIS IN THE PATHOGENESIS OF PSYCHIATRIC ILLNESS

Luka Turkalj, Emina Horvat Velić

University of Zagreb, School of Medicine, Zagreb, Croatia

Human gut hosts at least equal number of commensal bacteria as there are tissue cells. Gut-microbiota-brain axis influence host physiological processes by means of complex immunological, hormonal and neural interactions. Microbiota alterations have recently been related to a plethora of diseases such as obesity, cardiovascular disease,

cancer and multiple sclerosis. Psychiatric illnesses are implicated as well, including major depressive disorder, autism and schizophrenia. The alterations of normal bacterial flora may also underlie the observed co-presence of gastrointestinal symptoms and some psychiatric disorders. Here we present the mechanisms by which the microbiota might influence the development of psychiatric illness. Bacterial cells secrete neurotransmitters, fatty acids, hormones and other metabolites into the bloodstream which affect the brain activity. A decrease in inflammatory markers after a course of probiotics suggests a role of immune system. The behavior is also influenced via vagal nerve afferents which communicate with the brain stem nuclei. Changes in brain development are also observed and possibly have a role in the pathogenesis of autism. The further elucidation of this intricate mechanisms opens new possibilities for the development of effective treatment for this common group of diseases.

19. ATTITUDES OF DOCTORS ON SPECIALIZATION CONTRACTS

Ivan Vukoja, Ivana Šmit, Ada Barić Grgurević, Lana Videc Penavić, Željko Blažinkov, Ana Gverić Grginić, Jakov Ivković, Luka Vučemilo, Ivan Lerotić, Ivan Raguž, Ranka Serventi Seiwerth, Marija Perić, Krešimir Luetić

Croatian Association of Hospital Doctors
Zagreb, Croatia

Introduction/Objectives: We have witnessed the worsening situation of doctors in Croatia, and the situation even worsened with failure to comply the former Ordinance (called Nakic's) on specialist training for doctors of medicine. Medical doctors are the only health professionals with an obligation to return funds invested in their specialist training.

Participants, Materials/Methods: Croatian association of hospital doctors conducted his own survey on the attitudes of physicians about specialization contracts in the period 21 to 31 October 2016 via the internet. The survey was completed by 732 HUBOL members without sexual differentiation.

Results: 88.9% of respondents fully or partially supported the former Ordinance (called Nakic's Ordinance), and 90% of respondents fully or partially supports the process of the Croatian Medical Chamber against principals who do not respect that Ordinance. 61.2% of respondents expressed fear of further functioning of small medical institutions. Proposal of a centralized allocation of specialization which will be at the level of the Ministry/Agency/Chamber decide on the needs of specialization and residents according to the ranking to be deployed in the Croatian institutions supported by only 18, 6% of respondents.

Conclusions: The findings show that doctors are strictly against the system of penalizing as part of the employment contract, but that it is necessary to create stimulative conditions for survival of small medical institutions.

20. ME AGAINST MYSELF: A YOUNG PATIENT WITH RECURRENT EPISODES OF ANTI-NMDA RECEPTOR ENCEPHALITIS: CASE REPORT

Tracey Wing, Rochelle Kinson

Department of Psychological Medicine

Tan Tock Seng Hospital

Singapore

Introduction/Objectives: Anti-N-methyl-D aspartate receptor (anti-NMDAR) encephalitis is an uncommon, relatively newly discovered immune-mediated disorder affecting the central nervous system. The earliest symptoms can be characterized by predominance of psychosis, memory loss and personality changes. Recurrent anti-NMDAR encephalitis is poorly documented in literature

Participants, Materials/Methods: We present a patient who suffered from three episodes of anti-NMDAR encephalitis over 6 years, presenting with psychiatric symptoms.

Results: A 23-year old female tutor with no past medical history first presented in 2009 with psychosis, aggression and short-term memory loss. Serum anti-NMDAR antibody ----was weakly positive, and magnetic resonance imaging (MRI) of the brain showed subtle changes of encephalitis in the frontal-gyri. Cerebrospinal fluid (CSF) showed no marked changes. A diagnosis of autoimmune encephalitis was made. Methylprednisolone was started. Psychotic symptoms were managed with Olanzapine 2.5mg BD. An ultrasound of the abdomen, pelvis and serum voltage-gated potassium channel (VGKC) were negative. The patient recovered, and completed a degree in accounting and returned to work as a tutor, but defaulted follow-up two months post discharge.

In 2012, she presented again with irrelevant speech and labile mood. Diagnosis was confirmed by identification of anti-NMDAR antibodies in both CSF and serum.

Intravenous immunoglobulin and Rituximab was initiated. Olanzapine 5mg BD was required to manage her behaviour. She was discharged well after a prolonged inpatient rehab stay complicated by status epilepticus and dysautonomia. A year later, she defaulted follow-up. She returned to part-time tutoring in mid June 2014.

The third time, she presented in 2014 with labile mood, aggression and persecutory delusions. No repeat investigations (eg: MRI, serum NMDAR antibody) were done as presentation was consistent with a relapse of anti-

NMDAR encephalitis. An immunosuppressant (mycophenolate mofetil) was commenced. Olanzapine was restarted at 10mg at night. She received inpatient psychiatric care for 2 months. She subsequently attended a psychiatric facility for over a year, and during this time she was compliant to medical therapy. She returned to teaching at a child care centre, and MMSE was 28/30 a month after discharge. Unfortunately, 13 months after discharge, she defaulted follow-up.

Conclusions: This is a patient with recurrent anti-NMDAR encephalitis, with increasing difficulty to manage each episode, presenting with affective, psychotic and cognitive symptoms. She returned to premorbid levels after each episode requiring prolonged immunosuppression after the third episode. Anti-NMDAR encephalitis still remains a complex and under recognized syndrome which can present with a range of psychiatric and neurologic symptoms

POSTERS NEUROLOGY

21. CEREBRAL VENOUS SINUS THROMBOSIS WITH HAEMORRHAGIC TRANSFORMATION AND ULCERATIVE COLITIS IN A 19 YEAR OLD FEMALE PATIENT

Anita Arsovska, Frosina Stojkowska, Irena Djorceva, Marija Babunovska, Jasmina Mitrevska-Velkov

University Clinic of Neurology, Medical Faculty, University Ss Cyril and Methodius, Skopje, Macedonia

Introduction/Objectives: Cerebral venous sinus thrombosis is a rare complication of ulcerative colitis.

Participants, Materials/Methods: We present a case report of a 19 year old female patient that was admitted due to an acute onset of generalized thunderclap headache resistant to analgetics, right hemiparesis and motor dysphasia. She was diagnosed with Ulcerative Colitis one year ago and was on oral treatment with sulfasalazine and azathioprine.

Results: Urgent CT of the brain showed superior sagittal sinus thrombosis with haemorrhagic transformation. Blood laboratory analysis showed increased levels of sedimentation (90), CRP (136 mg/L), D-dimers (> 4500 ng/ml) and decreased levels of RBC (2,51 10x12/L), albumins 27 g/L and Fe 3,7 mmol/l. Treatment with low-molecular heparine- Clexane was initiated. Control CT of the brain 2 days after showed increased dimensions of the venous infarction (98x56mm) with haemorrhagic transformation (16mmx9mm) and strong compressive behaviour towards the surrounding structures, including cerebral falx and left lateral ventricle. Despite treatment, the patient worsened, she became comatous, with right hemiplegia. The fourth day the patient developed series of symptomatic partial complex motor seizures with secondary generalization and compromised cardiorespiratory fuction. She was transferred to the ICU and put on life-support for 3 weeks. Then she improved and was returned to the Neurology Clinic, still with motor dysphasia and right hemiplegia. Second control CT showed haemorrhagic infarction in the superior sagittal sinus in the phase of reabsorption. After 2 weeks she was dismissed and treated with low-molecular heparin (Clexane), oral antiepileptic (Carbamazepin) and other symptomatic therapy. Control D-dimers after 6 months normalized and she started treatment with oral anticoagulant therapy.

Conclusions: Any sudden neurological symptoms such as headache, hemiparesis and seizures in a patient with ulcerative colitis should initiate urgent diagnostics in order to prevent the complications of the disease.

22. IMPACT OF BODY MASS INDEX AND WRIST CIRCUMFERENCE ON CARPAL TUNNEL SYNDROME

Dražen Ažman, Milan Bitunjac, Pero Hrabač, Lidija Šapina, Marija Ratković, Vida Demarin

General Hospital "Dr. J. Benčević", Slavonski Brod, Department of neurology, Slavonski Brod, Croatia

Introduction/Objectives: Carpal tunnel syndrome is the most common entrapment neuropathy caused by compression of median nerve (MN) in the carpal tunnel. In majority of cases it is considered to be idiopathic. Clinical presentation usually includes paresthesia and pain in the affected hand (usually prominent during the night), hypesthesia in the median nerve distribution and weakness of muscles innervated by the median nerve. Various risk factors have been previously proposed and evaluated. We present here our results on the relation of anthropometric measures – body mass index (BMI) and wrist circumference (WC) - with CTS and its characteristics.

Participants, Materials/Methods: A total of 88 CTS patients and 78 healthy controls were included in our study and the same number of hands were evaluated. Historical-objective-distribution (HiObDb) scale was used for clinical symptom quantification. Wrist circumference was measured at the distal wrist crease. Additionally, provocative tests (Hoffmann-Tinel and Phalen) were assessed. EMNG was performed and, based on findings severity, patients were classified into 6 categories (0-5). Ultrasound of the carpal tunnel was used to obtain MN measures on 4 anatomical levels – forearm, carpal tunnel inlet, mid-tunnel and tunnel outlet.

Results: Significant difference was found in BMI ($p < 0.001$) between the CTS and control group with mean values of 29.4kg/m² and 26.1kg/m², respectively. Higher mean BMI was found in Tinel positive patients as well as with HiObDb stage (both $p < 0.001$), but mean was not significantly different for Phalen's sign or presence of pain. Correlation of BMI and EMNG grade was also found. All ultrasound parameters except inlet-outlet ratio and mid-tunnel cross sectional area significantly correlated with BMI. There was also significant difference in wrist circumference ($p < 0.001$) between both groups with mean values of 17.8cm and 16.8cm in CTS and control groups, respectively. Finally, ROC curve analysis for BMI and WC showed higher sensitivity of WC (58.7% vs 46%) and higher specificity of BMI (88.5% vs 68%) in confirmation of CTS.

Conclusions: Anthropometric measures – BMI and wrist circumference - may play a role in development of carpal

tunnel syndrome. While obesity seems to be a risk factor for CTS, impact of wrist size on CTS is less clear.

23. BILATERAL ARTERIAL THORACIC OUTLET SYNDROME IN 20-YEAR-OLD WOMAN

Milan Bitunjac, Marija Čandrlić, Dražen Ažman, Martina Galić, Gordana Lojen, Marija Ratković

General Hospital "Dr. J. Benčević", Department of Neurology
Slavonski Brod, Croatia

Introduction/Objectives: Thoracic Outlet Syndrome (TOS) is a complex of symptoms which arise due to compression and/or irritation of the brachial plexus, subclavian artery or subclavian vein. This occurs at the site of their exit from the thorax between the clavicle and the first rib.

According to Blanchard et al. (1992), TOS can be classified into following etiological types: neurogenic, arterial, venous, posttraumatic and scalenus anticus syndrome. Neurogenic TOS is the most frequent type that accounts for about 95% of TOS cases. Arterial type is proposed origin in 1% of all TOS patients. Venous type makes up for remaining 4%. Bilateral TOS is less common than unilateral TOS. We report here a case of unilateral arterial TOS with contralateral subclinical arterial TOS.

Case report: A 20-year-old female patient presented to our outpatient clinic with history of intermittent intense right hand pain, along with edema, cyanosis and weakness of the hand. She also reported occurrences of severe headache and nausea.

Physical exam findings included tense and painful muscles on the right side of the neck, limited range of right arm movements accompanied with pain and hyperesthesia of her whole right arm. Arterial pulsations were normal with hands relaxed and adducted. Roos test was positive on the right and marginally positive on the left. Adson's test revealed reduced arterial pulsations on both sides.

Laboratory values, X-ray of the cervical spine and thorax, CT and MR of the brain, electromyoneurography and carotid ultrasound were normal. Color Doppler flow imaging of the right arm arteries was normal with arm adducted, but showed reduced amplitude and biphasic specter in abducted and elevated arm.

The diagnosis of TOS was finally confirmed when DSA of both subclavian arteries was performed in adducted and abducted arm position. Finding was normal with arms adducted to the body. However, when arms were elevated and rotated inwards, a compression of subclavian artery was observed bilaterally at the site of their contact with upper edge of clavicle bones.

Patient was referred to physical therapy and analgesics were prescribed. A surgical treatment is scheduled.

Conclusions: Diagnosis of TOS is difficult due to absence

of single gold standard test which would encompass all etiological types. Crucial diagnostic procedure for establishing the correct diagnosis in case of patient described here was digital subtraction angiography. Making the correct diagnosis is necessary for choosing the optimal therapeutic approach.

24. INTIMA MEDIA THICKNESS AND CORONARY ARTERY BYPASS GRAFTING SURGERY

Hrvoje Budinčević, Mijo Meter, Petra Črnac, Krešimir Kordić, Luka Marjanović, Edvard Galić, Vida Demarin

Stroke and Intensive Care Unit, Department of Neurology, Sveti Duh University Hospital, Zagreb, Croatia
School of Medicine, Josip Juraj Strossmayer University, Osijek, Croatia

Department of Cardiology, Sveti Duh University Hospital, Zagreb, Croatia

Department of Cardiology, Sestre Milosrdnice University Hospital Centre, Zagreb, Croatia

School of Medicine, University of Zagreb, Zagreb, Croatia
International Institute for Brain Health, Zagreb, Croatia

Introduction: Atherosclerosis is the common pathophysiological cause for the development of coronary and carotid artery disease. The aim of this study was to evaluate the relationship between common carotid artery intima-media thickness and risk factors in patients who underwent coronary artery bypass grafting surgery (CABG) based on extent of coronary artery disease.

Material and Methods: This study included all patients with coronary artery disease hospitalized in the Department of Cardiology during the period from 2007 to 2014, who underwent CABG. Two groups were formed: patients who underwent CABG of three and more vessels (CABG3+) and patients who underwent CABG of two or less vessels (CABG2-). Carotid intima-media thickness (C-IMT) was assessed by carotid ultrasound according to the Mannheim Carotid Intima-Media Thickness Consensus.

Results: The study included 66 patients. There were 35 patients in the CABG3+ group and 31 patients in the CABG2- group. We found no statistically significant difference in the mean intima-media thickness of the common carotid artery between these two groups ($p=0.5637$), neither between C-IMT and the extent of the coronary artery disease ($p=0.82612$). The CABG 3+ group had higher incidence of arterial hypertension ($p=0.0298$) and hyperlipidemia ($p=0.0388$). No statistically significant difference was found between age, gender, previous ischemic stroke, smoking between groups.

Conclusion: Our study did not show statistically significant relationship between common carotid artery (CCA) IMT

Posters Neurology

and the extent of CABG surgery and coronary artery disease. Arterial hypertension and hyperlipidemia are more important risk factors, more commonly present in patients with greater extent of CABG surgery.

25. GUILLAIN-BARRE SYNDROME: CLINICAL EXPERIENCE FROM DEPARTMENT OF NEUROLOGY, TUZLA, BOSNIA AND HERZEGOVINA

Alena Burgić, Sanela Zukić, Nermina Pirić, Adnan Burina, Jasmin Kulenović, Renata Hodžić, Goran Kojić, Osman Sinanović

Department of Neurology, University Clinical Center Tuzla, School of Medicine of University Tuzla, 75000 Tuzla, Bosnia and Herzegovina

Introduction: Guillain-Barré syndrome (GBS) can be described as a collection of clinical syndromes that manifest as an acute inflammatory polyneuropathy, resulting in symmetrical rapidly progressive muscle weakness, areflexia, and raised cerebrospinal fluid (CSF) protein level, but normal cell count in CSF. Two-thirds of cases are preceded by symptoms of upper respiratory tract infection or diarrhea. The most frequently identified infectious agent associated with subsequent development of the GBS is

Campylobacter jejuni. GBS is an autoimmune disease. Estimated population incidence ranges are from 0.62 to 2.66 cases per 100,000 person-years across all age groups. **The aim** of this study was to analyze frequency and some clinical and demographic features in patients with GBS which have been treated during period of ten years.

Patients and Methods: We retrospectively analyzed the clinical data of GBS patients that have been treated during the period of 2006-2016 at University Clinical Center Tuzla Department of Neurology (51 beds).

Results: In a period of ten years it was hospitalized 17.412 patients, and among them 77 patients with GBS, what means 0.4 % from all hospitalized patients, with average years of age of 48.9 ± 17.9 (range 16 to 77 years). According to the season more patients were during winter (43/56%), than autumn (38/49.3 %), summer (30/39%) and spring (30/39%). Mostly, patients were hospitalized in Oktober (17/22%), then January (16/20%) and November (16/20). In 58 patients was registered acute motor and sensory neuropathy (AMSAN) (75.3%), in 11 patents acute inflammatory demyelinating polyneuropathy (AIDP) (14.2%) and in the 8 acute motor axonal polyneuropathy (AMAN) (10.39%). The male patients were more frequent than female (43:34). The diagnose was confirmed by: history of disease, neurological analyze of CSF and electromyoneurography. Lesions of cranial nerves were found in 20 (26%) patients with facial nerve involved

the most (11), than vagus (7), glossopharyngeal (5), oculomotor (3), statoacoustic (4), and the list abducens (1) and trigeminal (1) nerves.

Conclusion: Guillain-Barre syndrome is a rare disorder. We registered a less than 0.5% of all hospitalized patients during ten years period, and they were mostly an AMSAN type. The disease onset are more often during the winter and autumn seasons. The lesion of cranial nerves has been found in 26 % of cases with Guillain Barre syndrome.

26. A CASE OF CEREBRAL VASCULITIS IN A 58-YEAR-OLD PATIENT PRESENTING WITH ACUTE STROKE

Marija Čandrić, Milan Bitunjac, Dražen Ažman, Martina Galić

University Hospital Centre Osijek, University Department of Neurology
Osijek, Croatia

Introduction/Objectives: A range of different vasculitides can affect cerebral blood vessels. When a cerebral vasculitis is detected, in an absence of other underlying cause, including other vasculitis symptoms, inflammatory diseases or cancer, it is usually termed primary angiitis of CNS (PACNS) or CNS vasculitis. PACNS is a rare disorder which involves medium-sized and small blood vessels. Leading symptoms of cerebral vasculitis are stroke, headache and encephalopathy and diagnosis is based on laboratory findings and neuroimaging.

Establishing a definite diagnosis is challenging due to limitations of available diagnostic modalities with a high probability of false positive or false negative results. A brain biopsy is occasionally required.

Recommendations for treatment of cerebral angiitis are based on protocols for systemic vasculitis treatment guidelines.

Participants, Materials/Methods: A 58-year-old male has been admitted to our department with clinical presentation of stroke. Sensomotor aphasia, right-sided central facial palsy and plegia of right-sided extremities. NIHSS at initial exam was 21.

He had a history of chronic arterial hypertension, was treated for encephalitis 5 years earlier, as well as for lung tuberculosis and left leg DVT. He also noticed a rash on his lower extremities, which was biopsied and a diagnose of leukocytoclastic vasculitis was established.

Patient was treated with intravenous rtPA, and partial neurological improvement was observed (NIHSS 8). Laboratory values did not show any abnormalities (including SE, protein electrophoresis, tumor markers,

ANA, ANCA, RF, Waaler-Rose test).

Brain MR revealed hemorrhagic transformation of ischemic lesions in basal ganglia in left hemisphere with multiple chronic post-ischemic lesions. Thorax and abdomen MSCT scan, as well as trans-thoracic echocardiography was normal.

Finally, cerebral panangiography was performed, revealing multi-focal segmental narrowing of terminal branches of both ACM, both ACA and both ACP which supported the diagnosis of CNS vasculitis.

Patient was treated with pulse corticosteroid therapy

(1000mg of intravenous SoluMedrol over 5 days).

Cyclophosphamide (1000mg) was also administered as one-dose-per month scheme over 4 months which was well tolerated by the patient. Two more treatments with cyclophosphamide are planned.

Conclusions: We presented here a patient with acute stroke due to CNS vasculitis. Patient was initially thrombolysed with beneficial outcome, and was subsequently treated according to protocols for systemic vasculitis. Definite diagnosis could be confirmed with brain biopsy.

27. DON'T IGNORE THE POSTSTROKE DEPRESSION!

Ljiljana Čengić

General Hospital Vinkovci
Department of neurology
Vinkovci, Croatia

Stroke examination is usually focused on motor deficit to the detriment of mental disabilities, so identification of poststroke depression (PSD) is important in planning successful healing and rehabilitation. The occurrence of PSD peaks three to six months after stroke and has been reported for two years. There are recognised major (MPSD) and minor PSD (mPSD). Symptoms of MPSD are sadness, anxiety, tension, loss of energy, interest, appetite, weight loss, sleep disturbance, worrying, difficulty concentrating and thinking and thoughts of death.

Minor PSD has chronic nature and lack of physical symptoms of depression.

Periods of feeling normal interrupted by periods of impaired functioning almost three of the following (lost of interest, tiredness, sleep disturbance, low self-esteem, reduced capacity to work, poor concentration, social withdrawal, irritability, inability to respond to pleasure, less inclination to talk, pessimism, fearfulness, or morbid thoughts).

PSD and functional outcome mostly did not support any relationship between age and gender. Lesion in left hemisphere caused PSD in first weeks, and after that there were no difference in lateralisation of the lesion. MPSD is more often in frontal lobe lesions and in basal ganglia.

Social support influences on PSD only at two years after

stroke. The relationship between PSD and psychiatric history is not confirmed.

An association of PSD with stroke severity was significant after the acute phase. Depressed patients showed similar improvement in functional status after short-term rehabilitation compared with nondepressed patients. Lack of the encouragement after 6 weeks discharge seems to be participating to PSD.

Conclusion: A greater understanding the phenomena of PSD will provide insight to assist clinicians in the early identification of high-risk patients and starting a treatment. This will improve the quality of life and function, shorter hospital stays, reduced health care costs, reduce morbidity and mortality after stroke.

28. A SPONTANEOUS CAROTID ARTERY DISSECTION IN A BALLET DANCER: A CASE REPORT

Petra Črnac, Mijo Meter, Marija Sedlić, Marina Milošević, Hrvoje Budinčević

Sveti Duh University Hospital, Department of neurology, Stroke and Intensive Care Unit, Zagreb, Croatia

Introduction: Cervicocerebral arterial dissections (CAD) account for nearly 20% of strokes in patients under the age of 45, therefore they are an important cause of stroke in young adults. Most CADs are considered 'spontaneous', although pre-existing disorders of the arterial wall and trauma are the main predisposing factors. It is important to recognise and treat this syndrome because of a relatively benign course and potentially excellent outcome in most patients. We describe a case where a definite temporal correlation was present between neck movement, trivial trauma and acute arterial dissection.

Case report: We present the case of a 48-year old professional male ballet dancer with a spontaneous right internal carotid artery dissection presented as transient left-sided weakness, right-sided tinnitus and blurry vision in his right eye, following intense jerky head movements during dancing. The initial neurological examination revealed right side Horner syndrome. The initial head CT was negative. He was subsequently admitted to the Stroke unit and referred for a color Doppler flow imaging revealing a subintimal hematoma in the proximal part of the right internal carotid artery and reverse flow in the right ophthalmic artery. Transcranial doppler showed markedly reduced hemodynamic in the right middle cerebral artery. Head MRI revealed multiple acute ischemic lesions (emboli) in right frontal regions, basal ganglia, external capsule and knee of the internal capsule. MR angiography of the head and neck revealed narrowing and stenosis of the right carotid artery, with pathological morphological changes from the bifurcation

to the intracranial part of the artery beneath the pyramid, suggestive of dissection. Laboratory findings revealed hyperlipidemia and elevated liver enzymes. The patient was treated with antiplatelet, antihypertensive and hypolipidemic agents, as well as physical therapy. After hospital discharge, a carotid ultrasound follow-up 14 days after through the outpatient clinic revealed the persistence of the subintimal hematoma, but the blood flow through all studied arteries was now physiological. At five-month follow-up, neurological examination was unremarkable except for slight right eyelid ptosis. Carotid color Doppler imaging showed complete resorption of the subintimal hematoma with physiological hemodynamics in all studied arteries. **Conclusion:** There seems to be an important association between neck movements, minor non-penetrating neck trauma and trivial neck torsion precipitating carotid dissection. Whether 'spontaneous' dissections are truly spontaneous or effect of forgotten indirect neck trauma is questionable. A review of the literature shows that in many 'spontaneous' dissections, a history of abnormal neck movement, minor trauma or exercise was present. A history of such subtle precipitating events should be taken while diagnosing young patients with stroke. Sometimes the causal potential trauma antedates immediately the initial symptoms of dissection and there is a definitive temporal correlation, but sometimes the onset of dissection may precede the clinical symptoms by hours or days and it might loosen the association between the two. Hyperextension of the neck has been considered as an important precipitating factor, particularly in the presence of inherent vessel wall abnormalities. By an early identification and treatment, particularly in high-risk patients, it is possible to reduce the incidence of stroke secondary to carotid dissection. Carotid Doppler ultrasound is a noninvasive, accessible and prompt imaging method and has a central role in the assessment of midcervical carotid artery dissections.

29. GENDER DIFFERENCES IN RECURRENT STROKE AMONG PATIENTS WITH ATRIAL FIBRILLATION RECEIVING ANTICOAGULANTS

Petra Črnac, Marina Milošević, Marija Sedlić, Hrvoje Budinčević

Sveti Duh University Hospital, Department of neurology, Stroke and Intensive Care Unit, Zagreb, Croatia

Introduction/Objectives: Gender differences in stroke are observed across epidemiological studies, incidence, etiology, presentation and outcome. The aim of our study was to analyze gender differences in recurrent stroke among patients with atrial fibrillation (AF) receiving oral anticoagulants (OA).

Participants, Materials/Methods: This retrospective study

included 141 consecutive patients with previously known AF receiving OA hospitalized with recurrent stroke from 2004 to 2015. Patient were divided into two groups according to gender: 87 women and 54 men. Stroke severity was assessed according to National Institutes of Health Stroke Scale (NIHSS). Stroke outcome was assessed by modified Rankin scale (mRS).

Results: Women were older ($p=0.001$) and had a higher CHADS2 score ($p=0.007$). Mortality was higher among men (37%) than among women (21%); $p=0.033$. No significant difference was found in risk factors (besides age), stroke localization, presentation, mRS before and after stroke onset between groups. No significant difference was found in INR (International Normalized Ratio) levels or in the optimal INR ratio (2-3) between groups; only 18% of women and 22% of men were optimally anticoagulated at stroke onset. There were 2 haemorrhagic strokes in total. 77% of women and 79% of men continued OA in stroke prevention.

Conclusions: Our results show that women with AF have recurrent stroke more often, but men are affected at a younger age with a fatal outcome more often. Only 1,4% of all strokes were haemorrhagic. An emphasis should be put on further efforts to achieve optimal anticoagulation in appropriate patients populations to maximize the benefit with minimal complications.

30. ROLE OF SPEECH-LANGUAGE PATHOLOGIST AFTER A STROKE

Iva Maria Demarin

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

There are many consequences of a stroke such as language and speech deficits, swallowing problems, physical, cognitive, emotional and sensory deficits. Each of them manifests in a different extent and intensity depending on the patient. Speech-language pathologist's (SLP) role with patients who experienced stroke is to do screening, formal assessment of dysphagia, language and speech abilities, to make a therapy plan and provide its treatment. It is important to provide patient some kind of communication with environment from the beginning of rehabilitation, no matter if it is verbal or non-verbal kind of communication. Consequences of unsuccessful exchange of information with environment can be long-term depression, anxiety and that is why SLPs should be provided in intensive care units and other hospital departments.

Language deficits can be seen in receptive and/or expressive, spoken and written language. In most cases, language and speech deficits are overlapping and are present at the same time. One of the most frequent language consequences of left-side stroke is aphasia which can be

Posters Neurology

fluent or disfluent. Percentage of its existence is dropping as the time and rehabilitation goes by. Some researchers got percentages of patients with aphasia from 24% in acute to 12% in chronic stage of rehabilitation. According to the number of chronic patients with aphasia, their rehabilitation is long-term and focuses on different language and speech domains. In each phase of rehabilitation improvements are visible and it is obligatory to provide those patients SLP therapy in all kinds of environment: intensive care units, hospital and, afterwards, home.

Approach to dysphagia depends on its severity and type of aspiration – intradeglutitive, predeglutitive and postdeglutitive. SLPs are the ones who decide if the patient is ready for food of different density or not, which maneuvers or oropharyngeal exercises should be done with the patient. In addition, SLP is a responsible person for educating people from patient's surroundings about appropriate modification of everyday nutrition habits. There are more than 30% patients who experienced stroke with dysphagia but it is mostly present only in acute phase; thanks to acute rehabilitation it is not present in other stages.

31. A THERAPEUTIC POST-STROKE CHALLENGE: CHRONIC THERAPY-RESISTANT DEPRESSIVE-ANXIOUS SYMPTOMATOLOGY – A CASE REPORT

Irena Đorčeva, Anita Arsovska, Branislav Stefanovski

University Clinic for Neurology, Skopje, Macedonia
University Clinic for Psychiatry, Skopje, Macedonia

In post-stroke patients mood disturbances have been reported at 30% of cases, and while time windows vary, some reports claim as much as 40% of post-stroke patients coping with depressive symptoms. We provide a depiction of our experience concerning the unfolding of a patient's state after a stroke to chronic therapy-resistant depressive-anxious disorder. The patient was admitted to the Department for Urgent Neurology at the University Clinic for Neurology with movement limitations due to right hemiplegia, in addition to speech and other disturbances. After surviving and discharge, followed by regular controls and treatment, long-lasting depressive-anxious symptomatology developed, resistant to therapy, on top of residual disability. Notwithstanding all the measures taken, a therapy effect regarding the depressive-anxious symptomatology had not been reached. The patient was afterwards given advice on doable physical exercise, apposite to the patient's state, and was referred to a depression specialist. Detailed follow-up of patients with such and related symptomatology subsequent to stroke is

crucial, as well as analysis of all the acquired outcomes, with the purpose of acquisition of wide-ranging sapience concerning the patients' mental and general well-being.

32. RANKL/RANK/OPG axis is deregulated in MS patients at clinical onset

Anton Glasnović, Maristela Stojić, Lidija Dežmalj, Dominik Romić, Nino Tičinović, Vladimira Vuletić, Danka Grčević

University of Zagreb School of Medicine, Croatian Institute for Brain Research, Zagreb, Croatia
Clinical Hospital "Dubrava", Department of Neurology, Zagreb, Croatia
University Hospital "Sestre Milosrdnice", Clinic of Neurology, Zagreb, Croatia
Clinical Hospital "Dubrava", Department of Neurosurgery, Zagreb, Croatia
Clinical Hospital "Dubrava", Department of Diagnostic and Interventional Radiology, Zagreb, Croatia
University of Rijeka School of Medicine, Clinic of Neurology, Rijeka, Croatia
University of Zagreb School of Medicine, Department of Physiology and Immunology, Zagreb, Croatia

Multiple sclerosis (MS) is autoimmune inflammatory disease of the central nervous system in which immunological factors play the crucial role of demyelinating damage. Also, patients with MS have deregulated bone remodeling, mainly caused by glucocorticoid treatment and reduced mobility. We hypothesized that, beside these secondary osteoporotic factors, MS patients have enhanced RANKL (receptor-activator of nuclear factor- κ B ligand)/RANK-signal as a part of underlying autoimmune disturbance. Therefore we analyzed the parameters of bone remodeling and inflammation in peripheral blood and cerebrospinal fluid in MS patients at clinical onset in relation to osteoresorptive RANKL/RANK-axis. At MS clinical onset concentrations of decoy receptor OPG (osteoprotegerin) are decreased in cerebrospinal fluid, increasing the bioavailability of RANKL. Advanced MS is marked by higher RANKL/OPG ratio and activating RANK-receptor expression in peripheral blood, which suggests increased proresorptive potential. RANKL/RANK/OPG profile is associated with the expression of immunosuppressive cytokines IL-4 and IL-10 and proinflammatory chemokines CCL2 and CXCL12. Osteoresorptive factor RANKL is in positive, and decoy receptor OPG is in negative correlation with disease severity and alkaline phosphatase activity, interconnecting axis activity, disease intensity and bone formation. Since RANKL/RANK/OPG axis is involved in pathogenesis and progression of MS, these factors may serve as disease biomarkers and molecular targets of novel therapeutic approaches.

33. THE SOCIAL CONTEXT OF ALZHEIMER'S DISEASE

Željka Josipović – Jelić, Ivana Šoljan

Ministry of Labor and Pension System
Independent sector for auditing and supervision of medical expertise
Zagreb, Croatia

Introduction/Objectives: Dementia is one of the main causes of disability and dependence on others in older age.

It is believed that around 44 million people in the world suffer from Alzheimer's disease (AD) – which takes up to 70% of share in total dementias.

Illness is understood as the departure from the normal, which means usual, average. Not being normal results in stigmatization which can lead to isolation.

Illness represents not only deviation from the medical norms but also a deviation from the social norms.

This becomes most visible in senior population which cannot participate fully in the social life due to aging and deterioration. Disturbed mental health can lead to conflicts with the narrow and wider environment, alienations, self conflicts, disrupt family relations, criminogenic behavior, murder and suicide.

Alzheimer's disease, a condition of decreased cognitive functions, is followed by changes in emotional control and behavior, mental incompetence and inability to comprehend or control the consequences of one's behavior.

The disease affects not only the ill person but his family as well.

Attitude towards disease and persons afflicted began to change in the second half of the 20th century when the disease was recognized as a social phenomenon.

Participants, Materials/Methods: Scientists increasingly focus on the disease research, support group are being formed for those afflicted by disease and sick people are becoming more and more integrated in the everyday life. Caring about an AD patient includes care about the family members who devoted their life to him/her because the disease dictates all family members' lives. The consequences are: stress, role changes (a parent becomes a child), feeling of isolation, being used and underestimated and other.

Therefore it is crucial that the whole family receives psychosocial help through education and group therapy but also a concrete support of the community through the basic care of the patient.

Conclusions: Person suffering from AD will feel the best within his/her family. The community must assume that the responsibility for the implementation of medical and social care for AD patients includes care about the family members.

Caregivers (family members) who underwent different forms of therapies and received support had a significantly lower level of tension and disappointment that lasted even up to 12 months.

It is therefore crucial that, in addition to good care, patients receive abundant love and understanding.

At the government and local community level basic guidelines must be regulated for the care of all senior citizens, including those with dementia.

34. BOTULINUM TOXIN IN THE TREATMENT OF NEUROLOGICAL DISORDERS: 10 YEARS EXPERIENCE FROM UNIVERSITY CLINICAL CENTER TUZLA DEPARTMENT OF NEUROLOGY DEPARTMENT, TUZLA, BOSNIA AND HERZEGOVINA

Jasmin Kulenović, Sanela Zukić, Muhamed Lepuzanović, Alena Burgić, Amila Brkić, Goran Kojić, Nihad Tinjić, Adnan Burina, Osman Sinanović

Department of Neurology, University Clinical Center Tuzla, School of Medicine of University Tuzla, 75000 Tuzla, Bosnia and Herzegovina

Introduction: The frontiers of clinical medicine constantly expand as a result of the innovative efforts of visionary researchers and keen observations of seasoned clinicians. In medicine, rarely has a therapeutic agent been found efficacious in the management of so many symptoms and in such a relatively short time as botulinum toxin. **The aim** of the study was to present ten years experience of therapeutic effects of botulinum toxin at Department of Neurology, University Clinical Center Tuzla.

Patients and Methods: The study was retrospective. We analyzed medical history and other medical findings for the 43 patients who were treated at Department of Neurology, University Clinical Centre Tuzla in period of ten years.

Results: In the period of ten years at the Department of Neurology were performed 85 botulinum toxin treatments (in 43 patients). There was a predominance of female (67%) with average age of 45.7±16.47 years (range 10-81 years). Focal dystonia (mainly cervical) was the most commonly disease (22/52.14%) then blepharospasmus (14/32.55). We also treated patients with other neurological diseases - cerebral palsy (2/4.65%), multiple sclerosis 1 (2.3%), Wilson's disease (1/2.3%), cluster headache (1/2.3%), neck traction and spasticity caused by stroke (1/2.3%). Majority of the treated patients improved after botulin toxin treatment.

Conclusion: Botulinum toxin is safe and effective therapy for focal dystonia, spasticity and other forms of muscle overactivity.

35. DIFFERENCE OF THE SLEEP FRAGMENTATION ACCORDING TO AGES IN PATIENTS WITH OBSTRUCTIVE SLEEP APNEA

Jin-Seong Lee, Jong-Won Kim

Pusan National University Yangsan Hospital, Department of psychiatry, Yangsan, South Korea

Introduction/Objectives: Obstructive sleep apnea syndrome (OSAS) not only causes respiratory disturbances during sleep but also decreases the quality of nocturnal sleep through sleep fragmentation. The prevalence of OSAS was reported to be increasing after middle-age. We aimed to investigate the difference of sleep fragmentation (SF) caused by OSAS according to ages.

Participants, Materials/Methods: Four hundred thirty six male patients with OSAS were studied. Patients with sleep disorders other than OSAS were excluded. A single night of PSG was performed for each subject. 30 s epochs were scored following standard criteria. SFI was defined as the number of transitions from a stage N2~N3 or REM to a N1 or Stage W per hour of total sleep time. Probability of the sleep fragmentation following apnea or hypopnea (%) (P_ah) was defined as the number of sleep fragmentations after apnea or hypopnea divided by the number of epochs with apnea or hypopnea, and P_n (%) as the number of sleep fragmentations without apnea or hypopnea divided by the number of sleep epochs without apnea or hypopnea. SFI, P_ah, P_n and other polysomnographic parameters were compared statistically among different age groups (two-tailed, $p < 0.05$).

Results: The subjects were divided into three groups: ages 18~40 (n=140), ages 41~50 (n = 123), ages 51~82 (n=173). AHI was not different among the three groups ($F = 1.1$, $p=0.3$). However, older group had higher SFI (12.5 ± 6.6 vs. 15.6 ± 7.9 vs. 16.1 ± 7.1 , $F=11.7$, $p < 0.01$) and P_ah (18.8 ± 9.8 vs. 25.7 ± 9.6 vs. 28.5 ± 11.4 , $F=34.6$, $p < 0.01$). P_n was not different (7.7 ± 3.5 vs. 8.5 ± 4.0 vs. 8.6 ± 3.6 , $F=2.9$, $p=0.1$). P_ah was correlated with age after controlling for AHI and BMI ($r=0.23$, $p < 0.01$).

Conclusions: Our results suggest that the sleep of elderly patients are more easily fragmented by apnea and/or hypopnea.

36. MYASTHENIA GRAVIS AND EPILEPSY: CASE REPORT

Muhamed Lepuzanović, Jasmin Kulenović, Alena Burgić, Sanela Zukić, Adnan Burina, Osman Sinanović

Department of Neurology, University Clinical Center Tuzla, School of Medicine of University Tuzla, Tuzla, Bosnia and Herzegovina

Background: Myasthenia gravis (MG) is an autoimmune neuromuscular disease caused by antibodies directed against the postsynaptic muscle membrane. The diagnosis is most often made by serological tests identifying either acetylcholine or muscle-specific tyrosine kinase receptor antibodies. Pharmacological and electrodiagnostic testing has a role in supporting the diagnosis.

Epilepsy is a common disorder affecting all age groups. Diagnosis depends on accurate eyewitness description and electroencephalography. Many genetic, metabolic, and structural perturbations of cortical function can cause seizures. Autoimmune mechanisms have been increasingly identified.

Epilepsy is 5 to 7 times more frequent among patients with myasthenia than in the general population. Myasthenia gravis is often associated with other diseases, most of immunological origin. However, hypothesis which are explaining the association are still uncertain.

Case report: We report the case of a 41 year-old woman who has MG since she was 19 years of age. Diagnosis of epilepsy was established at the age of 33 years after she has experienced series of seizures in two-years period. She was treated with various antiepileptics, anticholinesterase drug and corticosteroids. In last four years she is free of seizures and has good control of myasthenic weakness as well.

Conclusion: Epilepsy and autoimmune disease frequently co-occur; patients with either condition should undergo surveillance for the other. The potential role of autoimmunity must be given due to consideration in epilepsy so that we don't overlook a treatable cause. This case report highlights the importance of suspecting epilepsy in young women with history of autoimmune disease in order to reach an early diagnosis and treatment.

37. ACUTE MYOCARDIAL INFARCTION FOLLOWING THROMBOLYTIC THERAPY FOR ACUTE ISCHEMIC STROKE

Maria Mirabela Manea, Dorin Dragos, Ana Maria. Dobri, Emanuel Stoica, Adrian Bucsa, Ioana Marinica, Sorin Tuta

National Institute of Neurology and Neurovascular Diseases, Stroke Unit, Institute of Cardiovascular Disease Emergencies C.C.Iliescu, Bucharest, Romania

Introduction/Objectives: We report a case of acute myocardial infarction during thrombolytic therapy for acute ischemic stroke.

Participants, Materials/Methods: Case presentation. An 87-years old woman with atrial fibrillation (without therapy) was admitted for right hemiplegia with acute onset two hours before presentation. The CT scan showed Fazekas 3 leukoaraiosis, cerebral atrophy and the NIHSS score was

12. She was thrombolysed after 45 minutes from admission. After an initial improvement with NIHSS score 8, 40 minutes after tPA perfusion she suddenly developed severe bradycardia (38/minute due to IIIrd degree atrioventricular block), chest pain and blood pressure drop. During the next two hours a progressive elevation of ST-T segment in inferior leads was noticed and the patient was transferred in another cardiology hospital where coronary angiography confirmed an occlusion of right coronary artery and severe stenosis of others coronary branches but no intracardiac thrombus at echography.

Results: 4 hours after the onset of myocardial infarction the occluded coronary artery was stented without abatement of cardiogenic shock and death two days after. The normal EKG and troponin values at the onset of cardiac symptoms do not favor a diagnosis of myocardial infarction before stroke onset. Embolic occlusion of coronary artery and prothrombotic status after tPA are the proposed mechanisms.

Conclusions: A grade III atrioventricular block following thrombolysis for acute stroke could signal the onset of an inferior/septal myocardial infarction. New trials for introduction of aspirin in the first 24 hours after thrombolysis could help in reduction of cerebral re-thrombosis and myocardial infarction after stroke thrombolysis.

38. PERICALLOSAL LIPOMA: A CASE REPORT

Tomislav Pavlović, Sanja Trtica, Marina Milošević, Hrvoje Budinčević

Sveti Duh University Hospital, Department of radiology, Zagreb, Croatia

Sveti Duh University Hospital, Department of neurology, Zagreb, Croatia

School of Medicine, J.J. Strossmayer University of Osijek, Osijek, Croatia

Introduction: Pericallosal lipomas are rare. Pericallosal lipomas are fat-containing lesions occurring in the interhemispheric fissure closely related to the corpus callosum. The pathogenesis of a pericallosal lipoma is considered to be the result of an abnormal persistence and differentiation of the meninx primitiva into lipomatous tissue. On imaging, they can be identified in two different morphologies: tubulonodular, which is the most common, and usually presents as a rounded anterior nodular mass; and curvilinear, which is usually thin, elongated and curvilinear along the corpus callosum margin. Approximately 50% of patients present with seizures. The tubulonodular variety is usually associated with more severe and extensive abnormalities.

Participants, Materials/Methods: We report a case of a female patient aged 47 year with a five-year history of intermittent headache. Despite peroral analgetic therapy she still have a headache. She presented to the ER with a chief complaint of headache. After laboratory tests which were normal, a brain CT was ordered.

Results: CT showed a fat density mass (-80 to -110HU), 3mm thin, elongated and curvilinear along the corpus callosum margin.

Conclusions: Again she was treated with analgetic therapy and she responded well. No specific treatment is usually required, although seizures if present need medical management. Prognosis is good, but the degree of disability is variable, ranging from severe neurological dysfunction and debilitating seizures to completely asymptomatic.

39. MILLER FISHER SYNDROME IN CHILDREN - CASE REPORT

Dobrinka Petković, Borislav Vuković

General County Hospital Požega, Department of Infectology, Department of Neurology, Požega, Croatia

Introduction/Objectives: Miller Fisher syndrome (MFS) is a rare variant of Guillain-Barre syndrome, based on clinical triad-acute ophthalmoplegia, ataxia and areflexia without progressive muscle weakness of the limbs, but facial paresis and sensory impairment also may occur. The incidence of MFS is 0.1 per 100 000 inhabitants per year.

Goal: Review of the clinical course and treatment of MFS in nine-year old boy.

Participants, Materials/Methods: The boy was hospitalized three days of acute infection of the upper respiratory tract characterized by sore throat, cough and headache. The physical examination detected exudative tonsillopharyngitis and lymphadenitis of the left side neck. The seventh day of illness patient developed double vision and unsteadiness while walking, a neurological examination was detected peripheral paresis left facial nerve and left abducens nerve and reduced tendon reflexes on both m. triceps surae.

History data: perinatal asphyxia and intracranial haemorrhage of the first degree.

The diagnosis of MFS was based on clinical, laboratory and neurophysiological findings and the exclusion of other differential diagnoses.

Results: Hematological-biochemical tests were within the reference range (erythrocyte sedimentation rate, CRP, blood cell count, liver and kidney enzyme analysis, urine analysis).

Microbiological findings were negative (analysis throat swab bacteriological and adenoviruses, analysis stool

bacteriological and enteroviruses, bacteriological culture of CFS).

PCR for HSV and enteroviruses and serological test to EBV, CMV and B. burgdorferi were negative.

Analysis CFS fourth day of illness was a normal, finding blood-brain barrier was related to the intrathecal IgG synthesis with the normal function of blood-CFS barrier.

Anti-ganglioside antibody in serum were limit values (asialoGM1 border, GM1 border, GM2 negative, GD1a border, GD1b border, GQ1b negative).

MRI of the brain (native and postcontrast) detected thickened both facial nerve (dominant left) and left glossopharyngeal and abducens nerve.

Electroencephalogram was diffuse irregular.

Electromyographic testing was performed the 27th day of illness: facial nerves showed slowing of conduction velocities on the left side with normal compound action potential amplitude. Peripheral motor and sensory nerve conduction studies in the upper and lower limbs were normal.

Treatment plasmapheresis (total 10 session) started eighth day of illness. After therapy remained double vision and paresis left abducens nerve and it was indicated further perform of stationary physical therapy. A full neurological recovery was achieved after 6 months from the onset of the disease.

Conclusions: Early use of plasmapheresis in the treatment of MFS achieved complete neurological recovery in our case .

40. ARTERY OF PERCHERON INFARCTION IN A 47-YEAR-OLD MALE: A CASE REPORT

Marija Sedlić, Petra Črnac, Tomislav Pavlović, Franka Jelavić Kojić, Hrvoje Budinčević

Sveti Duh University Hospital, Department of neurology, Zagreb, Croatia

Sveti Duh University Hospital, Department of radiology, Zagreb, Croatia

School of Medicine, J.J. Strossmayer University of Osijek, Osijek, Croatia

Introduction/Objectives: The artery of Percheron (AOP) is a rare anatomic variation in the brain vascularization characterized by a single arterial trunk arising from the posterior cerebral artery (PCA) to supply both sides of the thalamus and midbrain. The incidence of AOP infarction is rare (varied from 0.1 to 2%) in all ischemic strokes.

The aim of this report is to describe a rare case of stroke caused by occlusion of the AOP due to cardioembolism from a patent foramen ovale (PFO).

Participants, Materials/Methods: A case report.

Results: A 47-year-old man presented in our emergency department with sudden onset of vertigo, gait instability and rapid deterioration in consciousness. Initial brain computed tomography (CT) performed on admission was normal.

Magnetic resonance imaging (MRI) showed ischemic lesions in bilateral thalami and mesencephalon. A magnetic resonance angiography (MRA) was performed and demonstrated an absent P1 segment of the right PCA, indicating type II variation of the artery of Percheron. The patient was admitted to the stroke unit where he was treated with acetylsalicylic acid and gradually regained consciousness. Upon hospital discharge, mild ataxia and vertical gaze palsy was present. In further evaluation of stroke etiology a patent foramen ovale (PFO) was confirmed.

Conclusions: Occlusion of the AOP is uncommon which makes early diagnosis very challenging. A comprehensive radiologic examination, including MRI is necessary when severity of clinical features does not correlate with the standard imaging findings. Early diagnosis may lead to timely and adequate treatment and therefore more favorable outcomes.

41. DYSLIPIDEMIA IN SUBCLINICAL HYPOTHYROIDISM REQUIRES ASSESSMENT OF SMALL DENSE LOW DENSITY LIPOPROTEIN CHOLESTEROL (sdLDL-C)

Maida Seferovic Saric, Miljenka-Jelena Jurasic, Slavica Sovic, Bojana Kranjcec, Sanja Kovacic, Andrijana Bogoje Raspopović, Vida Demarin

General Hospital Zabok and Hospital of Croatian Veterans, , Zabok, Croatia

University Department of Neurology, Sestre milosrdnice University Hospital Center, Zagreb, Croatia

University of Zagreb, School of Medicine, Stampar School of Public health and Croatian National Institute of Public Health, Zagreb, Croatia

General Hospital Dubrovnik, Dubrovnik, Croatia

Croatian Academy of Sciences and Arts, Zagreb, Croatia

Introduction/Objectives: Usually both hypothyroidism and hyperthyroidism are related to the cardiovascular and cerebrovascular disease development. The relationship between subclinical hypothyroidism has been widely investigated but the findings remain controversial. The aim of the present study was to evaluate the lipid profile in patients with subclinical hypothyroidism (SHypo) in comparison to controls and to determine the association of SHypo and dyslipidemia in attempt to find importance of small dense low-density lipoprotein cholesterol (sdLDL-C) in atherosclerosis.

Participants, Materials/Methods: In this study we included 100 women, aged 30 to 70 years that were divided in subgroups according to their age. According to the values of levels of thyroid hormones they were divided into euthyroid (control) group (n=64) and (newly discovered) subclinical hypothyroidism (SHypo) group (n=36). A high-

sensitivity C-reactive protein (hs-CRP) and lipid profile, including small dense low-density lipoprotein cholesterol (sdLDL-C) were determined. Body weight and height were measured and BMI calculated. History of the current illness, medication, alcohol consumption and cigarettes smoking were noted.

Results: Changed lipid profile, as well as elevated triglycerides and sdLDL-C was observed in the group with subclinical hypothyroidism compared to the control group.

Conclusions: It is important to determine serum lipid levels, especially serum sdLDL-C levels at an early stage of subclinical hypothyroidism, since they represent atherogenic LDL particles and are better indicators for dyslipidaemia in subclinical hypothyroidism and the development of atherosclerosis with potential complications such as cardiovascular and cerebrovascular diseases.

42. DYSPHAGIA DISORDERS IN NEUROLOGICAL DISEASES: EXPERIENCE FROM UNIVERSITY CLINICAL CENTER DEPARTMENT OF NEUROLOGY, TUZLA, BOSNIA AND HERZEGOVINA

Mirna Selimbašić, Amila Brkić, Osman Sinanović

Department of Neurology, University Clinical Center Tuzla, School of Medicine of University Tuzla, 75000 Tuzla, Bosnia and Herzegovina

Introduction: The many causes of neurogenic dysphagia include stroke (middle cerebral artery territory stroke, lateral and medial medullary syndrome), head trauma, Parkinson's disease, multisystem atrophy, multiple sclerosis, motor neuron disease, myasthenia gravis, oculopharyngeal muscular dystrophy. **Aim** of the study was to describe our experience of dysphagia disorders among various neurological patients during one year period.

Patients and Methods: The study was retrospective. It was analyzed medical records of 1673 patients admitted to Department of Neurology, University Clinical Center Tuzla in 2016. The following data were evaluated: age, gender, leading diagnosis, nasogastric tube placement and its duration, dysphagia assessment scale ratio and outcome of treatment.

Results: In the total sample (n=1673) was determined 872 (52.12%) patients with cerebrovascular insult, 64 (3.82%) with multiple sclerosis, 26 (1.55%) with myasthenia gravis, 9 (0.53%) with Guillain-Barre syndrome, 8 (0.47%) with motor neuron disease, and 1 (0.0005%) with Willson disease. Out of all admitted patients, 147 (8.79%) were observed with dysphagia. Mean age of patients with dysphagia was 73±12 years (range 22 - 93 years), and 82 (56%) were female. From 872 patients with cerebrovascular insult 130 (14.90%) had problems with dysphagia. Other causes were myasthenia gravis 26/10 (38.46%), Guillain-Barre syndrome 9/1 (11.11%), multiple sclerosis 64/3 (4.6%), motor neuron disease 8/2 (25%), Willson disease

1/1 (100%). Out of 130 stroke patients with dysphagia, 48 (36.9 %) were assessed by dysphagia assessment scale ratio. Nasogastric tube (NGT) placement was performed for 120 (81.6%) patients out of 147. Average duration of NGT placement was 5 days. Out of 147 patients with dysphagia 75 (51.02%) patients resulted with fatal outcome. All of them had cerebrovascular insult as a leading diagnosis.

Conclusion: Dysphagia is frequent disorder among hospitalized neurological patients (8.79%), and the most frequent in stroke patients (14.90%). Presence of dysphagia is a negative predictive outcome factor in patients with stroke.

43. EPIDEMIOLOGY OF PHARMACOLOGICAL TREATMENT OF MULTIPLE SCLEROSIS IN CROATIA

Josip Sremec, Jelena Koščak, Pero Draganić, Sanja Tomasović

University hospital "Sveti Duh", Department of neurology, Zagreb, Croatia

Introduction/Objectives: Treatment of multiple sclerosis has been a dynamic field lately, with many new and emerging treatment options. In this study, we investigate the usage of disease modifying therapies (DMTs) for multiple sclerosis in Croatia.

Participants, Materials/Methods: The data on DMT usage was provided by the Agency for Medicinal Products and Medical Devices of Croatia (HALMED). The data was available for years 2005 through 2015.

Results: Consumption of DMTs in DDD/1000/day (defined daily doses/1000 people/day) has been increasing by 9% yearly in average since 2005. In the same period, the yearly cost for those drugs has been increasing by 14.6% yearly in average. The consumption of IFN-beta 1-a has been increasing by a much steeper rate than IFN-beta 1-b. Until 2010 the consumption of glatiramer acetate has been negligible, with a steep increase in years 2011-2015. Natalizumab has become available after 2010, and its consumption has been growing steadily. Dimethyl fumarate has been on the market in Croatia since 2015, and in its first year it gained some market share with yearly costs in the range of those for natalizumab. There was no consumption of other DMTs recorded in this period.

Conclusions: The dynamic of introduction of new DMTs is delayed in Croatia in comparison with some countries. However, there is a continuous increase of costs and prescriptions. This can be expected to become even more pronounced in the following years, due to the abundance of new therapeutic options that are going to become available in near future.

Posters Neurology

44. “THE WITCH” THAT STOLE COGNITION

Zoran. Tomić, Matija Sošić, Olivio Perković, Vladimira Vuletić

Clinical Hospital Center Rijeka, Department of neurology, Croatia, Rijeka
University of Rijeka, Department of neurology, Croatia, Rijeka

Delusional misidentification syndromes (DMSs) are complex psychotic phenomena that may be present in a variety of neurological and psychiatric disorders. Recent studies suggest that DMSs occurs more frequently in Alzheimers disease (AD) than previously thought and are prevalent in 2 to 30 percent of the cases. These syndromes constitute a subgroup of rare delusional disorders, and evidence suggests that one type of misidentification delusion may evolve into another type.

We report a 75 year old woman who developed a DMS called “mirrored-self misidentification“ and no cognitive impairment who was later diagnosed with AD. „Mirrored-self misidentification“ is a rare delusional disorder which involves the misperception that one's reflection in the mirror is a stranger. Individuals affected with the syndrome believe that there are other persons who look like them, they have an illusion of a double that have different traits and live different lives. Initially our patient was having arguments with “the witch, her sister, the old woman, the interlocutor” when looking into the mirror. A year after the onset of the delusion she began to forget fresh events, her daily activity was disrupted and rejected medication, still occupied by „the stranger in the mirror“. A form of prosopagnosia, as the beginning of Alzheimers disease has been suspected. Three months after the introduction of donepezil the delusions were alleviated in intensity and duration, but full recovery was never reached.

45. MILLER FISHER SYNDROME IN ADULTS: A CASE REPORT

Ivana Vuković, Borislav Vuković, Dobrinka Petković

Clinical Hospital Center Rijeka
Department of Pediatrics
Rijeka, Croatia

Introduction/Objectives: Introduction: Guillain-Barré syndrome (GBS) is an acute monophasic immune mediated disease of the peripheral nervous system that usually occurs after diseases of the digestive or respiratory system and less commonly after vaccination. GBS has several variants: acute inflammatory demyelinating polyneuropathy (AIDP), acute motor axonal neuropathy (AMAN), acute motor sensory axonal neuropathy (AMSAN), and some other variants like Miller Fisher syndrome (MFS). MFS is a rare

variant of GBS, observed in only about 1 to 5% of all cases of GBS in Western countries. MFS is characterised by a triad of conditions: ophthalmoplegia, ataxia and areflexia. Objectives: Review, the clinical course, differential diagnosis and treatment of MFS in adult patient.

Participants, Materials/Methods: 63-year-old male patient was admitted to the Department of Neurology at General County Hospital Požega the third day of the disease characterised by nausea, vomiting, diarrhea, xerostomia, diplopia and muscle weakness of the both shoulder girdles. His right eye bulb was deviated to the right temporal and he had double vision when looking straight and to the left side. He had no signs of pupillary defects, eyelid ptosis or nystagmus. In phonation his right palatal arch had lagged behind the left one. The slight degree weakness and bilateral hyporeflexia of the upper limbs were detected. During finger-to-nose testing slightly dysmetria was observed. The patient had no sensory deficits.

Results: Many diagnostic tests have been performed after the admission to the hospital. Cerebrospinal fluid (CSF) laboratory analysis showed albuminocytologic dissociation. Analysis of serum and CSF on neurotropic viruses, Chlamydia pneumoniae, Mycoplasma pneumoniae, Borrelia burgdorferi, Bartonella heselae and Bartonella quintana were negative. Acetylcholine receptor (AChR) and anti-MuSK serum antibodies were negative. Electromyography and nerve conduction velocity studies revealed reduced amplitude compound muscle action potential in muscles of both shoulder girdles. Lower M potential and conduction velocities were mildly reduced with conduction block in n. medianus right and n. ulnaris right. Magnetic resonance imaging of the brain was normal. The patient was treated with intravenous immunoglobulin (IVIG) 0.4 g/kg/day for five days and he completed physical therapy. Motor deficit of upper limbs, ataxia, ophthalmoplegia and palatal arch weakness had fully recovered three months after the onset of the disease.

Conclusions: We reported a case of MFS variant of GBS. After the treatment with IVIG the patient fully recovered from neurological deficits. Once the diagnosis of MFS is suspected or established, the treatment with IVIG or plasma exchange is indicated.

46. TWO YEARS OUTCOME OF POST-STROKE WRITING AND READING DISORDERS

Sanela Zukić, Osman Sinanović, Lejla Zonić

Department of Neurology, University Clinical Center Tuzla, School of Medicine of University Tuzla, 75000 Tuzla, Bosnia and Herzegovina

Background: Post-stroke language disorders are frequent and include aphasia, alexia, agraphia and acalculia. These

disorders refer to an acquired inability to read, write and calculate. In this study, we evaluated the two year outcomes of writing and reading disorders in post-stroke patients, the natural course, recovery and mortality.

Patients and Methods: We evaluated all the patients with stroke who were admitted to the Department of Neurology, University Clinical Centre Tuzla in period of six months, who developed post-stroke alexia, agraphia, acalculia, or different combinations of these language disorders.

Outcome of these patients was evaluated again after 24 months. For clinical assessment of alexia, agraphia and acalculia we used Minnesota Test for Differential Diagnosis of Aphasia.

Results: We investigated 59 (30.5%) of 193 stroke patients with alexia, agraphia, acalculia and combinations. Outcome of these patients after 24 months was: 37 (62.7%) died, 13 (22%) fully recovered and 9 (15.3%) of them retained the same disorder or developed dementia or blindness. Binary logistic regression analysis showed that patients with combined language disorders had significantly higher mortality.

Conclusion: The main factors influencing language disorders recovery in this study are initial severity of reading, writing and calculation impairment, age, neglect and level of education.

SPONSORS AND SUPPORTERS

CITY OF PULA

CITY OF GRAZ

ISTRIAN COUNTY

ABBOTT LABORATORIES

ABBVIE

ALKALOID

BAYER

BELUPO

BOEHRINGER INGELHEIM

KRKA FARMA

LIFELINES LTD

LUNDBECK

MEDIAL

MEDIS ADRIA

MILSING

MOLEAC PTE LTD

NOVARTIS

PHARMASWISS

PFIZER

SANOFI-GENZYME

SIEMENS HEALTHCARE

STROKE ALLIANCE FOR EUROPE



Embrace human nature with BioMatrix Technology

Patients have unique, individual characteristics. Different physiologies and anatomies – but also the way we interact with them and technology – cause unwanted variability. These unique human characteristics, or biovariabilities, present a challenge and a source of error, rescans, and inefficiency when it comes to MR imaging.

This intrinsic patient variability needs to be addressed in order to truly personalize MRI, and pave the way towards precision medicine. To turn this challenge into an opportunity, we must think differently. Instead of adapting human variability to technology, we adapt technology to humans. We do this by embracing their individual nature – with BioMatrix Technology.



Anticipate challenges before they happen with BioMatrix Sensors.



Adapt to all patients, even critical ones with BioMatrix Tuners.



Accelerate workflows, while increasing quality of care with BioMatrix Interfaces.

Contact:

Siemens Healthcare d.o.o.
Heizelova 70a, Zagreb
Tel. +385 1 6105258



SKRAĆENI SAŽETAK OPISA SVOJSTAVA LIJEKA – 1. NAZIV LIJEKA I SASTAV: Aubagio 14 mg filmom obložene tablete. Jedna filmom obložena tableta sadrži 14 mg teriflunomida. **2. TERAPUSKE INDIKACIJE:** Za liječenje odraslih bolesnika s relapsno-remitirajućom multiplom sklerozom (MS). **3. DOZIRANJE I NAČIN PRIMJENE:** Preporučena doza lijeka AUBAGIO je 14 mg jedanput na dan. Tablete se moraju progutati cijele s malo vode. Starija populacija AUBAGIO se mora primjenjivati uz oprez u bolesnika u dobi od 65 godina i starijih zbog nedostatnih podataka o sigurnosti i djelotvornosti. **Oštećenje bubrežne funkcije:** Nije potrebno prilagođavati dozu u bolesnika s blagim, umjerenim ili teškim oštećenjem bubrežne funkcije koji se ne liječe dijalizom. Bolesnici s teškim oštećenjem bubrežne funkcije koji se liječe dijalizom nisu ispitivani. Teriflunomid je kontraindiciran u toj populaciji. **Oštećenje jetrene funkcije:** Nije potrebno prilagođavati dozu u bolesnika s blagim i umjerenim oštećenjem jetrene funkcije. Teriflunomid je kontraindiciran u bolesnika s teškim oštećenjem jetrene funkcije. **Pedijatrijska populacija:** Sigurnost i djelotvornost lijeka AUBAGIO u djece i adolescenata u dobi od 10 do manje od 18 godina nisu još ustanovljene. Nema relevantne primjene teriflunomida u djece od rođenja do manje od 10 godina starosti za liječenje multiple skleroze. **4. KONTRAINDIKACIJE:** Preosjetljivost na djelatnu tvar ili neku od pomoćnih tvari. Bolesnici s teškim oštećenjem jetrene funkcije (Child-Pugh stadij C). Trudnice ili žene reproduktivne dobi koje ne upotrebljavaju pouzdanu kontracepciju tijekom liječenja teriflunomidom i nakon liječenja sve dok su koncentracije lijeka u plazmi iznad 0,02 mg/L. Prije početka liječenja mora se isključiti trudnoća. **Dojilje:** Bolesnici s teškim imunodeficitnim stanjima, npr. AIDS-om. Bolesnici sa značajno oštećenom funkcijom koštane srži ili značajnom anemijom, leukopenijom, neutropenijom ili trombocitopenijom. Bolesnici s teškom aktivnom infekcijom, do njezina izlječenja. Bolesnici s teškim oštećenjem bubrega na dijalizi. Bolesnici s teškom hipoproteinemijom, npr. u nefrotskom sindromu. **5. POSEBNA UPOZORENJA I MJERE OPREZA PRI UPORABI:** Prije liječenja teriflunomidom treba provjeriti krvni tlak, alanin aminotransferazu (ALT/SGPT), kompletnu krvnu sliku, uključujući diferencijalnu sliku leukocita i broj trombocita. **Tijekom liječenja teriflunomidom treba kontrolirati:** krvni tlak, alanin aminotransferazu (ALT/SGPT), kompletnu krvnu sliku na temelju znakova i simptoma (npr. infekcija). **6. INTERAKCIJE S DRUGIM LIJEKOVIMA I DRUGI OBLICI INTERAKCIJA:** Farmakokinetičko djelovanje drugih tvari na teriflunomid: Snažni induktori citokroma P450 (CYP) i prijenosnika: istodobna primjena ponovljenih doza (600 mg jedanput na dan tijekom 22 dana) rifampicina (induktora CYP2B6, 2C8, 2C9, 2C19, 3A) kao i induktora efluksnih prijenosnika P-glikoproteina (P-gp) i proteina koji uzrokuje rezistenciju raka dojke na lijekove s teriflunomidom (70 mg u jednokratnoj dozi) smanjila je izloženost teriflunomidu za približno 40%. Rifampicin i drugi poznati snažni induktori citokroma i prijenosnika, kao što su karbamazepin, fenobarbital, fenitoin i gospina trava, moraju se primjenjivati uz oprez tijekom liječenja teriflunomidom. **Kolestiramin ili aktivni ugljen:** Osim ako je ubrzana eliminacija poželjna, ne preporučuje se bolesnike koji primaju teriflunomid liječiti kolestiraminom ili aktivnim ugljenom jer oni uzrokuju brzo i značajno smanjenje koncentracije lijeka u plazmi. **Farmakokinetičke interakcije teriflunomida na druge tvari:** **Učinak teriflunomida na supstrat izoenzima CYP2C8:** Lijekovi koji se metaboliziraju putem CYP2C8, poput repaglinida, paklitaksela, pioglitazona ili rozigitazona, moraju se primjenjivati uz oprez tijekom liječenja teriflunomidom. **Učinak teriflunomida na oralne kontraceptive:** 0,03 mg etinilestradiola i 0,15 mg levonorgestrela lako se ne očekuje da bi ova interakcija s teriflunomidom mogla negativno utjecati na djelotvornost oralnih kontraceptiva, treba razmisliti o vrsti ili dozi oralnih kontraceptiva koji se upotrebljavaju u kombinaciji s teriflunomidom. **Učinak teriflunomida na supstrat izoenzima CYP1A2:** kofein Lijekovi koji se metaboliziraju putem CYP1A2 (poput duloksetina, alsetrona, teofilina i tizanidina) moraju se primjenjivati uz oprez tijekom liječenja teriflunomidom, jer on može smanjiti njihovu djelotvornost. **Učinak teriflunomida na varfarin:** Preporučuje se pomna kontrola i praćenje INR-a kada se varfarin primjenjuje istodobno s teriflunomidom. **Učinak teriflunomida na supstrate organskog anionskog transportera 3 (OAT3):** Potreban oprez kada se teriflunomid primjenjuje istodobno sa supstratima OAT3, kao što su cefaktor, benzilpenicilin, ciprofloksacin, indometacin, ketoprofen, furosemid, cimetid, metotreksat i zidovudin. **Učinak teriflunomida na BCRP i/ili supstrate organskog anionskog transportnog polipeptida 1 i 3 (OATP1B1/3):** Kada se primjenjuje istodobno s teriflunomidom, preporučuje se smanjenje doze rosuvastatina za 50%. Također je potreban oprez kada se teriflunomid primjenjuje istodobno s drugim supstratima BCRP-a (npr. metotreksatom, topotekanom, sulfasalazinom, daunorubicinom, doksonubicinom) i lijekovima iz skupine organskih anionskih transportnih polipeptida, osobito inhibitorima HMG-CoA reduktaze (npr. simvastatinom, atorvastatinom, pravastatinom, metotreksatom, nateginidom, repaglinidom, rifampicinom). Bolesnike treba pažljivo motriti kako bi se uočili mogući znakovi i simptomi prekomjerne izloženosti lijekovima, a u obzir treba uzeti i smanjenje doza tih lijekova. **7. PLODNOST, TRUDNOĆA I DOJENJE:** **Primjena u muškaraca:** Rizik od embriofetalne toksičnosti usljed liječenja muškaraca teriflunomidom smatra se niskim. **Trudnoća:** Postoje malobrojni podaci o primjeni teriflunomida u trudnica. Ispitivanja na životinjama pokazala su reproduktivnu toksičnost. Teriflunomid može prouzročiti ozbiljne prirodne mane ako se primjenjuje tijekom trudnoće. Teriflunomid je kontraindiciran tijekom trudnoće. **Žene reproduktivne dobi:** moraju koristiti djelotvornu kontracepciju tijekom liječenja i nakon liječenja, sve dok je razina teriflunomida u plazmi iznad 0,02 mg/L. Tijekom tog razdoblja žena treba s nadležnim liječnikom razgovarati o planovima za prekid kontracepcije ili promjenu metode kontracepcije. Ako je test na trudnoću pozitivan, liječnik i bolesnica moraju razgovarati o rizicima za trudnoću. Moguće je da se brzim snižavanjem razine teriflunomida u krvi primjenom postupka ubrzane eliminacije pri prvom kašnjenju menstruacije može smanjiti rizik za plod. U žena koje primaju teriflunomid i koje žele zatrudnjeti treba prekinuti primjenu lijeka, a preporučuje se i primjena postupka ubrzane eliminacije kako bi se što prije postigla koncentracija manja od 0,02 mg/L. **Dojenje:** Dojilje ne smiju primati teriflunomid. **Plodnost:** Rezultati ispitivanja na životinjama nisu pokazali utjecaj na plodnost. Premda nedostaju podaci u ljudi, ne očekuje se učinak na plodnost u muškaraca i žena. **8. UTJECAJ NA SPOSOBNOST UPRAVLJANJA VOZILIMA I RADA NA STROJEVIMA:** AUBAGIO ne utječe ili zanemarivo utječe na sposobnost upravljanja vozilima i rada na strojevima. U slučaju nuspojava poput omaglice bolesnici se moraju suzdržati od upravljanja vozilima i rada na strojevima. **9. NUSPOJAVE:** Vrlo česte nuspojave prijavljene kod primjene lijeka AUBAGIO u placebo kontroliranim ispitivanjima su bile glavobolja, proljev, mučnina, alopecija i povišene vrijednosti ALTa. Česte su nuspojave bile gripa, infekcija gornjih dišnih putova, infekcija mokraćnih putova, bronhitis, sinusitis, faringitis, cistitis, virusni gastroenteritis, oralni herpes, infekcija zuba, laringitis, atletsko stopalo, neutropenija, anemija, blage alergijske reakcije, anksioznost, parestezija, ishijas, sindrom karpalnog kanala, palpitacije, hipertenzija, bol u gornjem dijelu abdomena, povećanje, zubobolja, osp, akne mišićno-koštana bol, mialgija, artralgija, polakizurija, menoragija, bol, povišene vrijednosti GGT-a, povišene vrijednosti aspartat aminotransferaze, smanjenje tjelesne težine, smanjenje broja neutrofila i leukocita, povišena kreatin-fosfolinaza u krvi. **Manje česte nuspojave su:** blaga trombocitopenija, hiperestezija, neuralgija, periferna neuropatija, posttraumatska bol. **10. PREDOZIRANJE:** Nema iskustva s predoziranjem niti trovanjem teriflunomidom u ljudi. Teriflunomid u dozi od 70 mg na dan primjenjivao je tijekom najviše 14 dana u zdravih ispitanika. Nuspojave su bile sukladne sigurnosnom profilu teriflunomida u bolesnika s multiplom sklerozom. **11. FARMAKODINAMIČKA SVOJSTVA:** Farmakoterapijska skupina: Selektivni imunosupresivi, ATK oznaka: L04AA31. **12. NOSITELJ ODOBRENJA:** sanofi-aventis groupe, 54 rue La Boétie, F-75008 Paris, Francuska. **13. BROJ(EVI) ODOBRENJA ZA STAVLJANJE GOTOVOG LIJEKA U PROMET:** EU/1/13/838/001-005. **14. NAČIN I MJESTO IZDAVANJA:** Na recept, u ljekarni. Detaljnije informacije o ovom lijeku dostupne su na web stranici Europske agencije za lijekove <http://www.ema.europa.eu/>.

Ovo je skraćeni Sažetak opisa svojstava lijeka te sukladno Pravilniku o načinu oglašavanja o lijekovima (Narodne Novine broj 43/15) molimo prije propisivanja lijeka Aubagio pročitajte zadnji odobreni Sažetak opisa svojstava lijeka i Uputu o lijeku.

SANOFI GENZYME 

SAMO ZA ZDRAVSTVENE RADNIKE

Detaljnije informacije su dostupne na: Sanofi-aventis Croatia d.o.o. | Heinzelova 70 | 10000 Zagreb | Hrvatska | GZHS.AUBA.17.04.0021