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ROMANIAN SOCIETY OF ELECTRODIAGNOSTIC NEUROPHYSIOLOGY

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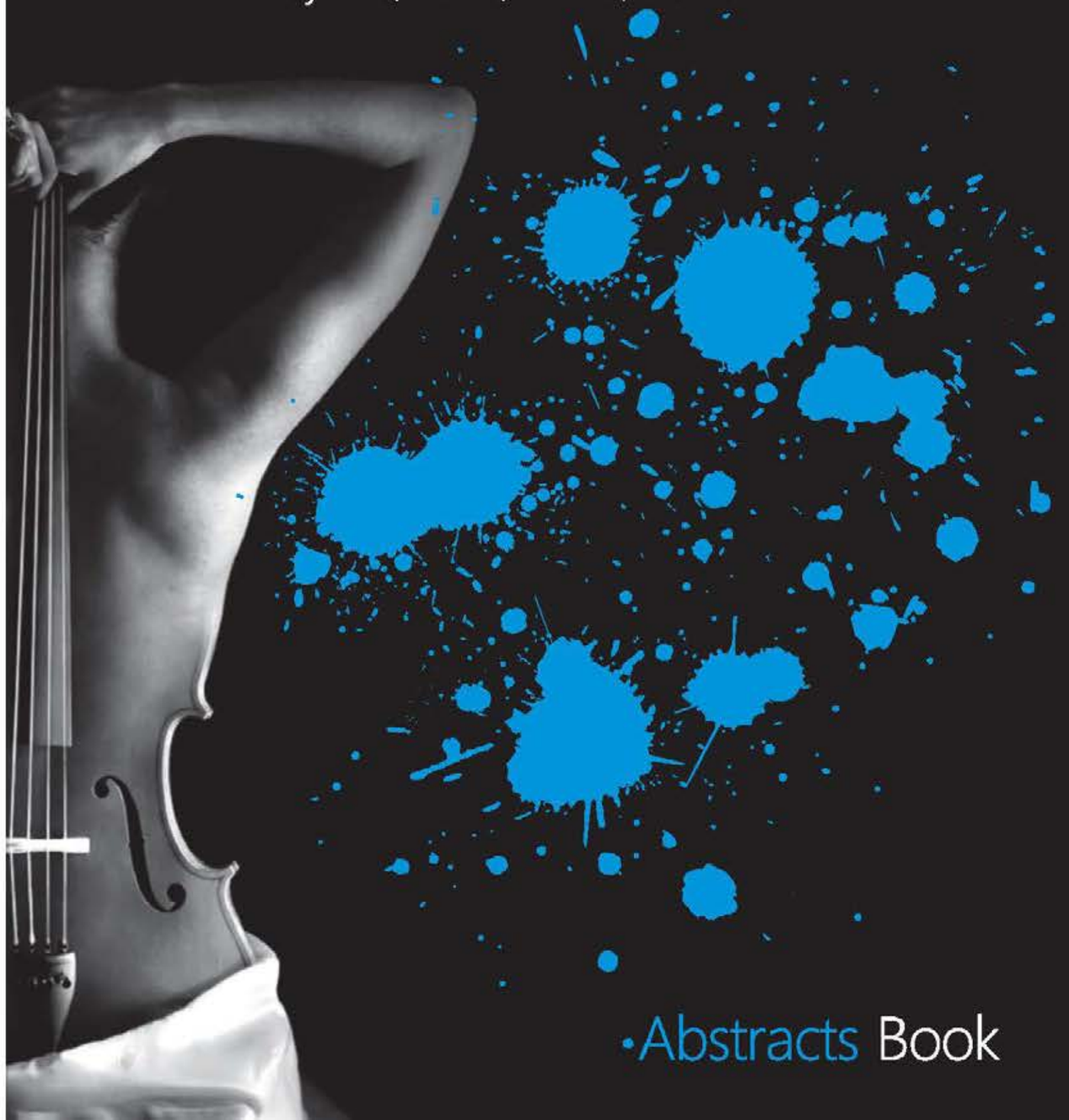
Clinical Neurophysiology Summer School

July 6-8, 2012, Eforie, Romania



Abstracts Book

2012 Summer School Participants

(confirmed till the print date)

Andronic Simona
Andronic Iulian
Avram Carmen
Avram Stefan
Balan Liliana
Baldea Adrian
Baldea Simona
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Benga Constantin
Birsanu Lenuta
Cambrea Cristian
Cambrea Adela
Codau Eugen
Cosofret Emilia
Cotolan Mircea
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Dinca Emanuela
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Feticu Marian Cristian
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Vanghelie Doinita
Varga Ioana
Vasile Dorina Daniela
Vizitiu Dragos
Vizitiu Simona
Voiculescu Ana Maria
Voiculescu Mihai

2012 Summer School Invited Speakers

Amzica Florin / Montreal
Barborica Andrei / Bucharest
Benninger David / Lausanne
Bolbocean Orest / Iasi
Cobzaru Ana Maria / Bucharest
Constantin Dumitru / Bucharest
Florea Bogdan / Cluj-Napoca
Frasineanu Armand / Bucharest
Ignat Bogdan / Iasi
Lie Octavian / San Antonio
Lupescu Tudor Dimitrie / Bucharest
Mindruta Ioana / Bucharest
Moldovan Mircea / Bucharest
Moldovan Mihai / Copenhagen
Muresanu Dafin / Cluj-Napoca
Schiller Andreas / Zürich
Sisak Edith / Brasov

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FRIDAY, the 6th of July 2012

12.00-13.00 Registration

Chairpersons: Tudor Lupescu, Ioana Mindruta

13.00-13.30 Opening Remarks on Clinical Neurophysiology Summer School
13.30-14.20 Amzica Florin: EEG and cellular correlates of sleep
14.20-14.50 Constantin Dumitru: EEG in Encephalopathies
14.50-15.30 Moldovan Mihai: Abnormal axonal ion currents in neuropathy: from diagnostic to therapy
15.30-16.00 COFFEE BREAK

Chairpersons: Mihai Moldovan, Andreas Schiller

16.00-16.50 Schiller Andreas: Neurogenic thoracic outlet syndrome : what it teaches us about the brachial plexus
16.50-17.40 Benninger David: Transcranial Magnetic Stimulation current concepts and future applications
17.40-17.50 JUST BREAK

Chairpersons: Florin Amzica, David Benninger

17.50-18.20 Muresanu Dafin: The role of multimodal molecules and pleiotropic metabolic regulators in brain protection and recovery
18.20-19.20 Mindruta Ioana & Frasineanu Armand: EEG evaluation for patients with epilepsy referred to a specialized center
19.20-19.40 Sisak Edith: Diagnosis of brain death
19.40-20.00 Cobzaru Ana Maria: New therapies in peripheral neuropathic pain
20.00-21.30 DINNER
21.30-24.00 EEG during sleep- workshop: Amzica Florin

SATURDAY, the 7th of July 2012

Chairpersons: Ioana Mindruta, Octavian Lie

8.30-9.00 Lupescu Tudor: Transcranial Magnetic Stimulation
9.00-9.20 Ignat Bogdan: TMS - Evolution of cortical excitability after functional electrical stimulation (FES) based gait rehabilitation in stroke patients
9.20-9.40 Bolbocean Orest: TMS - Transcallosal conduction abnormalities in patients with multiple sclerosis
9.40-10.30 Lie Octavian: Refractory Epilepsy - an American experience
10.30-11.00 COFFEE BREAK

Chairpersons: Bogdan Florea, Florin Amzica

11.00-11.30 Florea Bogdan: Nonconvulsive Status Epilepticus – to EEG or not to EEG ?
11.30-11.50 Barborica Andrei: Stereoelectroencephalography –an investigation where stereotaxy joins electrophysiology for an accurate localization of the epileptic seizure onset zones.
11.50-12.10 Mindruta Ioana: Experience with lacosamide treatment in Romania - 6 month of Early Access Program.
12.10-12.30 Moldovan Mircea: Segmental motor paralysis of the left upper limb in herpes zoster
12.30-12.50 Lupescu Tudor: Cervical Dystonia - modern therapeutical approach
13.00-14.00 LUNCH

Trainers: Tudor Lupescu, Andreas Schiller, David Benninger, Mihai Moldovan, Edith Sisak, Mircea Moldovan
Trainers: Florin Amzica, Ioana Mindruta, Bogdan Florea

14.30-16.30 Hands on WORKSHOPS
16.30-17.00 COFFEE BREAK
17.00-19.30 Hands on WORKSHOPS
19.30-21.00 DINNER
21.00-24.00 EEG during sleep- workshop: Amzica Florin

SUNDAY, the 8th of July 2012

9.00-11.00 Hands on WORKSHOPS
11.00-11.30 COFFEE BREAK
11.30-13.00 Hands on WORKSHOPS
13.00 Closing Remarks

Florin AMZICA

Prof Florin Amzica has graduated the Faculty of Computer Science, Polytechnics Institute Bucharest, Romania, and has earned his PhD in Neurobiology at the Laval University, Quebec, Canada.
Regarding his career, he began as a Research Fellow - deisgn manager in the Laboratory for Biomedical Equipment, Electronics Research Institute in Bucharest (1983-1990), where he was involved in the design and software of electronic medical equipment (evoked potentials, visual stimulation for EP, screening audiometer, cardiotachometer); afterwards he moved to the Institute of Neurology and Psychiatry, Romanian Academy, Bucharest, where he had an important contribution in the application of the evoked potentials in neurosurgery, and the processing of evoked potentials (1990-1991). Between 1991 and 1995 he was a PhD student in Neurophysiology Laboratory at the Laval University. Thereafter, Prof Amzica worked as a post-doctoral fellow in the same place, where he became Professor; since 2008 Prof Amzica works in the Neurophysiology Laboratory in Montreal University. His activity is based on the research related to neuron-glia activity during slee and wakefullness, deep brain stimulation, graduate courses and supervision of graduate students, and is also a member of the committee for ethics in health research.
During this time he earned many awards and distinctions.
Professor Amzica is member of the Society For Neuroscience, the American Physiology Society, American Epilepsy Society, and Romanian Clinical Engineering and Computing Medicine Society. He was invited as speaker at many conferences and scientific meetings, and is author of many published articles and chapters in textbooks.

EEG and cellular correlates of sleep

Florin Amzica - Université de Montreal

The human brain spends a third of its life in sleep. Although the role of sleep only begins to be understood, it is clear that altered sleep states undermine general health. Moreover, several pathologies, such as epilepsy, Parkinson's, etc., exacerbate during sleep or are associated with modifications of sleep architecture. Starting with USA and Canada, and continuing with Western Europe, more and more sleep clinics are created to assess and improve the quality of sleep in humans. Which imposes the necessity to understand the physiological bases of sleep and the mechanisms generating various EEG patterns. During my talk, as well as during the practical workshop, I will concentrate on the basic EEG patterns that accompany normal sleep. This is a state of thalamo-cortical deafferentation that sets the cerebral networks in an oscillatory mode. I will particularly emphasize the presence of a "master" cortical oscillation situated around 1 Hz that triggers, groups and organizes other sleep patterns (such as thalamic spindle and intrinsic delta oscillations). Such patterns are under the influence of both

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Andrei BARBORICA

Andrei Barborica, PhD, is an Associate Professor in Electronics and Biomedical Engineering, Faculty of Physics, University of Bucharest. After obtaining his PhD in laser physics in 1994, he became fascinated by the development of neurosciences, and worked in computational neuroscience (1995-1998) then in systems neuroscience (since 1999),performing single-unit electrophysiology in non-human primates as a postdoctoral fellow at Mahoney Center for Mind and Brain of Columbia University (1999-2003). Currently, he is working on Epilepsy and Deep Brain Stimulation (DBS), designing biomedical instrumentation, performing single-unit electrophysiology, stereoelectroencephalography (SEEG) and advanced data analysis. He was a key member of the teams at Bagdasar-Arseni and University Emergeny Hospital that have pioneered the DBS and SEEG procedures in Romania.

Stereoelectroencephalography –an investigation where stereotaxy joins electrophysiology for an accurate localization of the epileptic seizure onset zones.
Andrei Barborica, Ioana Mindruta, Jean Ciurea

Presurgical evaluation of patients using intracerebral depth electrodes is required for an accurate definition of the seizure onset zone in pharmacoresistant epilepsy. Despite the fact that the method has been introduced in the 60's by Talairach and Bancaud, it remains one of the most complex and challenging procedures in the present days as well, due to the large number of electrodes (typically more than 10) that need to be accurately inserted in brain's specific areas using stereotactic methods, and the total number of contacts (up to 18 per electrode) that need to be recorded and analyzed. Wereviewin detail the stereotactic surgical planning and implantation techniques, with emphasis on our experience with two different systems. Particularities of the signals recorded with intracerebral electrodes, compared to the scalp EEG, and how these signals can help in delineating the seizure onset zone are discussed.

David BENNINGER

David Benninger obtained his MD at the University of Geneva (1996) where he did internships in Medicine, Neurosurgery and ENMG. He completed his Neurology residency in Zurich and Aarau with fellowships in Clinical Neurophysiology (EEG and Evoked Potentials, ENMG, Cerebrovascular Ultrasound), Neuropsychology, Movement Disorders and Deep Brain Stimulation. He pursued a fellowship in Movement Disorders and Clinical Neurophysiology at the National Institute of Neurological Disorders and Stroke, NIH, USA (2007-2010). He's currently privat-docent and senior consultant at the University Hospital of Lausanne and Co-Chair of the TMS-ENMG-Lab and Neuromuscular Unit. His research focuses on the pathophysiology of Movement and Neuromuscular Disorders and therapeutic studies of non-invasive brain stimulation in Parkinson's disease, focal hand dystonia and chronic tinnitus.

Transcranial Magnetic Stimulation current concepts and future applications

David Benninger

Transcranial magnetic stimulation (TMS) is a method of noninvasive stimulation of the brain. TMS is generated by a short-lasting, high-intensity magnetic field which results from a high-voltage impulse passing through a magnetic coil. The rapidly altering magnetic field can depolarize the brain below the coil which manifests symptoms corresponding to the function of the stimulated brain area, e.g. TMS of the visual cortex elicits phosphenes and other visual phenomena. In clinical practice, TMS is mainly applied to the primary motor cortex to evoke the motor potential (MEP) that tests the cortico-spinal motor conduction. The triple stimulation technique, a combined stimulation paradigm of the brain, plexus and peripheral nerve, can quantify the integrity of the corticospinal projections and its damage in various neurological disorders [Magistris et al. 1998]. TMS can map cognitive, motor and sensory function of the brain which offers potential clinical applications.

The TMS can be applied by pairs of stimulation, whereby a conditioning impulse precedes the test pulse. This paired pulse TMS paradigm tests cortical excitability, in particular intra-cortical inhibitory and facilitatory circuits, and functional connectivity between cortical areas, which have advanced our understanding of brain physiology and the pathophysiology of neurological diseases. The diagnostic utility of some TMS measures has been recognized in recent consensus statements [Chen et al. 2008;Groppa et al. 2012].

TMS can be applied repetitively (rTMS), which modulates cortical excitability and brain activity. The stimulation parameters such as frequency, intensity, periodicity etc determine their effects. High-frequency ($\geq$ 5 Hz) rTMS is facilitatory [Pascual-Leone et al. 1994] and low-frequency ($\leq$ 1 Hz) rTMS inhibitory [Chen et al. 1997]. The neurophysiological effects of rTMS persist beyond the immediate stimulation period, suggesting long-term potentiation and depression, which are basic mechanisms of neural plasticity. This potential for sustainable modulation offers a therapeutic utility of rTMS. The application of rTMS has been approved for the treatment of major depression, and is currently being investigated for various other conditions.

Orest BOLBOCEAN

Bolbocean Orest is a medical doctor within the Neurology Department of the Rehabilitation Hospital in Iasi. He has graduated in 2006 and earned his PhD degree in 2011. He is currently working within the group coordinated by prof. Cristian Dinu Popescu, with interests in spine rehabilitation, MS evaluation and follow up, TMS clinical applications.

Transcallosal conduction abnormalities in patients with multiple sclerosis

Bolbocean O, Bohotin V, Ignat B, Popescu C.D.
Department of Neurology, University of Medicine and Pharmacy "Gr.T. Popa" Iasi, Romania

Introduction. Transcranial magnetic stimulation(TMS) represents a non-invasive technique able to asses or modulate cortical excitability. In multiple sclerosis patients TMS is used to measure motor evoked potentials abnormalities. The most important parameter is central motor conduction time (CMCT).

Corpus callosum(CC) is an interhemispheric connection that transfers sensory, cognitive and motor information

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and plays a role in coordinating skilled motor functions. According to imaging studies, demielinating lessions in corpum callosum were found in 93% of multiple sclerosis patients. TMS allows functional analysis of interhemispheric motor transmission mediated via the transcallosal pathway.

The aim of our study was to determine frequency of motor and transcallosal conduction abnormalities in MS patients and also which of the parameters of transcallosal inhibition(TI) are changed, and to determine if TI investigation increases the sensitivity of TMS in detecting central conduction deficits in MS patients. We investigated 40 MS patients and 18 healthy volunteers.

Results. CMCT was abnormal in 80% of cases, latencies of transcallosal inhibition(LTI) were modified in 77.4% and duration of transcallosal inhibition(DTI) was abnormal in 93.5%.

Conclusions. Significant involvement of corpus callosum in demielinating processes in MS is demonstrated by frequent transcallosal conduction abnormalities. DTI is a sensitive marker to appreciate transcallosal conduction abnormalities in MS patients. They are found more frequently than CMCT alterations. Demielinating processes in multiple sclerosis lead to an impairment of interhemispheric transmission, which could also contribute to deficits in motor act performance. TMS investigation should also contain TI examination for a higher sensitivity of abnormalities detection in MS patients.

Ana Maria COBZARU

Born in 3rd of September 1975

Neurologist with competence in electrophysiology and special interest in clinical neurophysiology

Working in the University Emergency Hospital in Bucharest as general neurologist and in private sector as neurophysiologist.

New therapies in peripheral neuropathic pain

The treatment of neuropathic pain is still difficult because of complexity and variety of underlying mechanisms. In those cases where the symptoms or sings suggest peripheral sensitization and ectopic nerve activity, topical application of high-concentration of capsaicin has proved a pronounced defunctionalisation and reduction of hyperactive cutaneous nociceptors, as measured by reversible reduction in intra-epidermal nerve fibres (ENFs), with secondary efficient analgesia.

Dumitru CONSTANTIN

Neurologist, Psychiatrist, Professor, Scientist and Novelist – but much more then all these, a real researcher, a restless character, never satisfied with the conventional answers.
He graduated in 1962 the Medicine University in Bucharest, then became specialist in neurology and psychiatry; in 1974 created the Neurological Clinic in the Central Military Hospital, Bucharest, Romania. As neurologist, is the author of more than 280 scientific works , and also of the EEG and epileptology manual. Passionate about alternative medicine, he studied in Coreea, India and China. Awarded by the Romanian President in 2000 with the National Order " Steaua Romaniei" as a Commander degree and in 2004 with the National Order "Meritul Sanitar" as Officer degree.
In 2005 he worked as visiting Professor in "St. George " University of Toronto, Canada, being involved in stem cells and nanomedicine domains.
He is an active member of Neurological, Psychiatry and Psychological Societies in Romania and abroad.

EEG in encephalopaties

Encephalopathies are described as situations when the normal brain activity is impaired – permanently or temporary – by different causes, which influence the cognitive function. Between the causes are cited: CNS infections, autoimmune diseases, metabolic, vascular, trauma, endocrine, intoxication etc. EEG changes in encephalopathies have some common patterns, but also some specific features – as in Creutzfeld-Jacob, PESS, hepatic encephalopathy. The relative specificity refers to the main part of EEG changes in some encephalopathies, a low percentage being noticed in other brain conditions.
The main change in encephalopathy is represented by the background rhythm slowing; sometimes there are epileptiform discharges. EEG is in this frame not only useful, but necessary instrument of investigation.

Bogdan FLOREA

Bogdan Florea graduated the "Iuliu Hatieganu" University of Medicine in Cluj-Napoca in 1997. After the five years training in the Neurological Clinic in Cluj Napoca, he became neurologist in 2005. Since 2012 he is consultant neurologist. Clinical neurophysiology fellowships in Italy – Modena and Bologna, USA – Mayo Clinic, Sweden – Uppsala doubled by the daily activity in the computerized EEG department of the Neurological Clinic and many teaching courses in this area recommend him as a passionate in neurophysiology. His research interests include epileptology, neural networks; the main research interest is represented by altered consciousness states and EEG.
In 2002 he graduated the educational Master of Sciences program in Kinesiology, Kinetotherapy and Physical Rehabilitation. He earned the Competence in Clinical Neurophysiology in 2005. Dr. Bogdan Florea is member of some professional associations, such the Romanian Society of Neurology, European Neurological Societies and founder member of the Society for the Study of Neuroprotection and Neuroplasticity, where where acts as Medical Programs Coordinator since 2007. Since 2009 he is the secretary of the Romanian Society of Electrodiagnostic Neurophysiology – ASNER.

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Nonconvulsive Status Epilepticus – to EEG or not to EEG ?

Electroencephalographic analysis during and after seizures is difficult and skilled interpretation is necessary. This includes differentiation of movement artifact from electrographic seizure discharges and recognition of the varying ictal and post-ictal patterns and the evolution of EEG abnormalities with ongoing Status Epilepticus (SE). Sometimes we really don't need an EEG to diagnose a Generalized Convulsive Status Epilepticus. The situation is more demanding for the neurologist as the motor seizures continues and will become increasingly clinically subtle. It could reach the point of completely dissociation between what we see on EEG and what we clinically observe. This is the point where we are not sure: this is a post-ictal or the patient still has electrical status? Having only very subtle movements or no motor activity, often in coma, the Non-Convulsive Seizures (NCS) and Non-Convulsive Status Epilepticus (NCSE) are the silent killers of the brain. Therefore, it is critical to document by EEG that the Status Epilepticus has stopped. Continuous EEG monitoring is mandatory. Because rapid control of seizures is mandatory. Then, cEEG is a matter of life.

Armand FRASINEANU

Dr. Armand Daniel Frasineanu was born on 11 September 1967 in Bucharest . After graduating "U.M.F Carol Davila" in 1992 (General Medicine), he fulfilled his residency in neurology at Colentina Clinical Hospital, in Bucharest, and became specialist on 1998. From 1998 until now he is employed at Colentina Clinical Hospital. From 2003 he is consultant neurologist .On 2001 he achieved competence in electrophysiology . During the last ten years he was focused on epilepsy and neurodegenerative diseases (Parkinson disease , dementias) and attended few clinical European courses and master classes in these fields .

WHY THE NEED OF SPECIALISTS IN EPILEPSY ?

The presentation is trying to identify the difficulties of the process of epilepsy diagnosis and treatment, at the level of general neurologist and to suggest some clinical scenarios (based on real patients) when the best solution was the intervention of the specialist in epilepsy . At the same time , is an attempt to put red flags on some errors of treatment and diagnosis, specially on the EEG recordings and interpretation .Finally , the conclusion is the need of more specialists in epilepsy and more epilepsy units .

Bogdan IGNAT

Bogdan Ignat is an assistant professor within the Neurology Department of the "Grigore T. Popa" Medical University in Iasi. He has graduated in 2000 and earned his PhD degree in 2011. He is currently working within the group coordinated by prof. Cristian Dinu Popescu in the Iasi Rehabilitation Hospital, with interests in stroke rehabilitation (and functional electrical stimulation), MS evaluation and followup, TMS clinical applications.

"Evolution of cortical excitability after functional electrical stimulation (FES) based gait rehabilitation in stroke patients"

Ignat B., Bohotin V., Bolbocean O., Popescu C.D.UMF "Gr. T. Popa" Iasi

Gait is one of the critical rehabilitation goals in stroke patients. Among the newer methods available, functional electrical stimulation seems o have an impact both on momentary performance and also on future recovery. We have used transcranian magnetical stimulation to evaluate the cortical changes induced by two different FES based approaches (FES use during gait and "passive" bedside FES). A number of 39 patients were included in three groups – active FES training and non-facilitated TMS evaluation, active FES training and facilitated TMS and passive FES training and facilitated TMS. All patients have participated in a 9 days training programme – 29 using FES while walking and 14 using bedside FES. TMS evaluation of the motor threshold (MT), motor evoked potential's (MEP) amplitude, lower limb cortical projection were performed before and after the completion of the training program. MT and cortical projections'surface (total number of responsive points) had favourable dynamics on both lesioned and non lesioned hemispheres in all groups. MEP amplitude over the healthy (HH) and lesioned (LH) hemispheres had different evolutions, with a negative trend in the LH in the active FES groups contrasting with increases in passive FES patients' LH and in the HH in all groups.

Octavian LIE

Octavian Lie, M.D., Ph.D.receivedhis medical degree from the University of Medicine and Pharmacy Iuliu Hatieganu, Cluj-Napoca, in 1999. He earned a Ph.D. in genetics from the University of Nebraska Medical Center, Omaha, in 2009. Dr. Lie completed a neurology residency at the Feinberg School of Medicine, Northwestern University, Chicago, in 2009. Thereafter, he completed a two-year epilepsy and clinical neurophysiology fellowship at the University of Washington, Seattle, in 2011. Dr. Lie has served as Acting Instructor at the University of Washington. In 2011, he joined the Department of Neurology at the University of Texas in San Antonio as Assistant Professor. Dr. Lie is board-certified in Neurology by the American Board of Psychiatry and Neurology.

Dr. Lie is an adult epileptologist with appointments at the South Texas Comprehensive Epilepsy Center and the Audie L. Murphy Memorial Veterans Hospital, San Antonio.

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About a third of all individuals with epilepsy are refractory to medical therapy. Many of these patients suffer from focal epilepsy and are potential candidates for epilepsy surgery.
Ascertaining surgical candidacy requires a costly multimodal evaluation aimed at defining the extent andlocation of the epileptogenic zone, an area of cortex that must be resected for a complete abolition of seizures. The initial, noninvasive (phase I)evaluation includes inpatientlong-term monitoring with video-EEG, structural and functional neuroimaging studies. Frequently however, subsequent invasive recordings (phase II)with chronically implanted intracranial electrodes are needed to improve the definition of the epileptogenic zone.Still, the data provided by invasive recordings is biased by theresults of the prior noninvasive studies, which are used to guide intracranial electrode placement.
Approximately 30-60% of surgical patients with pharmacoresistant focal epilepsy experience postoperativeseizures. Applying innovative, inexpensive techniques such as electric source imaging and electrode localization by image co-registration is suggested to assist in obtaining a better surgical outcome by improving the definition of the epileptogenic zone. During the talk, these techniqueswill be introduced, and their specific application in the case of a patient with focal cortical dysplasia and intractable epilepsy will be presented.

Tudor Dimitrie LUPESCU

Tudor Lupescu was born on the 21th of March 1964 in Bucharest.
He attended the Carol Davila Medicine University in Bucarest, and graduated in 1989.
1992 he began his training in Neurology at Colentina Hospitalin Bucharest, and became a specialist in 1995; since 1996 he works at Agrippa Ionescu Hospital, where in 1999 he became Head of the Neurology Department. In 1998 Dr Tudor Lupescu qualified as Consultant Neurologist.
He showed a special interest in Clinical Neurophysiology, and attended many courses and teaching programs in this field, and in 2000 he earned a Competence in Clinical Neurophysiology (EEG, EMG, Evoked Potentials).

In 1997 he began to use the technique of Transcranial Magnetic Stimulation.
In 2005 Dr Lupescu earned the title of Ph D with the thesis: Motor Evoked Potentials. Transcranial Magnetic Stimulation.
Since 1996 Dr Lupescu was secretary of the Romanian Society of Clinical Neurophysiology, and since 2008 - president of the Romanian Society of Electrodiagnostic Neurophysiology.
Since 2008 Dr Tudor Lupescu is also a member of the Subcommittee for Neurophysiology of the European Neurological Societies. He is also an associate member of the American Academy of Neurology since 2008, and an associate member of the American Association of Neuromuscular & Electrodiagnosti Medicine.
He is author of many articles, oral presentations, and posters, also of chapters of textbooks.
He also shows clinical interest in multiple sclerosis, peripheral neuropathies, and movement disorders, including therapy with botulinum toxin.

TRANSCRANIAL MAGNETIC STIMULATION

Tudor Dimitrie Lupescu
Agrippa Ionescu Hospital, Bucharest

Transcranial magnetic stimulation is a useful neurophysiological technique that investigates the central nervous system, mainly the central motor pathways. It is used as a diagnostic tool, but also in research, therapeutics and neurorehabilitation. The method appeared 25 years ago, and has developed intensively throughout the world, so that nowadays a lot of scientific knowledge has been gathered. This presentation will try to describe the method, its physical and biological principles, and to show its major indications in clinical situations, as well as other more complex approaches regarding the central nervous system function in normal and pathological conditions.

Ioana MINDRUTA

Neurologist with competence in electrophysiology and special interest in epileptology and epilepsy surgery, working in the University Emergency Hospital in Bucharest in the Epilepsy and Sleep Monitoring Unit.
Main research interest in invasive recordings for epilepsy surgery.
Vicepresident of Romanian Association for Clinical Electrodiagnosis (ASNER) since 2009.
PhD in 2006 on "Sleep in epileptic syndromes"
Academic affiliation at the University of Medicine and Pharmacy "Carol Davila" of Bucharest since 1994.

EEG evaluation for patients with epilepsy referred to a specialized center

Epilepsy is a chronic disorder, most of the time a lifelong condition.
EEG is regarded as the cornerstone of diagnosis and proves the epileptic nature of recurrent attacks.
Across different stages of the disease, general neurologists usually face a large range of difficulties in managing patient's condition. Evaluation in a center dedicated to epilepsy will offer:
-Interpretation of EEG findings according with the clinical context
-Review of the treatment scheme
-Prolonged video-EEG recordings that could capture clinical events and also sleep studies
-Recommendation of neuroimaging with an epilepsy protocol according to electroclinical semiology
-Phase I presurgical evaluation / Phase II invasive recordings for selected candidates
-Rezection planning / Patient's follow-up.
The presentation will discuss the management of EEG studies and results throughout different disease phases.

Experience with lacosamide treatment in Romania - 6 month of Early Access Program.

The presentation will discuss he results of 6 month lacosamide treatment in a population of patients with focal pharmacoresistant epilepsy. The patients are in clinical follow-up in 8 neurology departments across the country.

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Mihai MOLDOVAN

Mihai Moldovan obtained his medical degree from "Carol Davila" University Bucharest in 1999. Based on his research interests as a student, after graduation he was selected to work in the group of prof. Christian Krarup that continues the Copenhagen neurophysiology school founded by prof Fritz Buchthal in the 60' with the aim of translating experimental neurophysiology into clinical electrodiagnostic procedures for patients with nerve and muscle disease. Mihai Moldovan obtained his PhD degree in neurophysiology from Copenhagen University in 2004 where he continues his scientific career as associate professor. His primary research interest is the development of clinically applicable electrophysiological methods with particular emphasis on peripheral nerve excitability testing. While based in Copenhagen, Mihai Moldovan continued to collaborate with prof .Leon Zagrean at "Carol Davila" University first as scientific project coordinator and now as associate professor at the department of physiology. His research in Bucharest is focused on developing electroencephalographic biomarkers to monitor the ischemic disturbances in the electrical activity of the brain neuronal networks. Emerging from these wide research interests are not only original publications and review articles in high impact international journals but also educational chapters in several neuroscience and neurophysiology textbooks in Romanian language. Mihai Moldovan has scientific duties in several international organizations including International Brain Research Organization (IBRO). He is also founder member and scientific consultant for the National Neuroscience Society of Romania (SNN) and the Romanian Society of Electrodiagnostic Neurophysiology (ASNER) where he continues to promote the advantages of neurophysiological investigations for clinical practice. He was recently appointed editorial board member for Clinical Neurophysiology, the official scientific journal of the International Federation of Clinical Neurophysiology (IFCN).

Abnormal axonal ion currents in neuropathy: from diagnostic to therapy

Conventional peripheral nerve conduction studies (NCS) provide information about the number and conduction velocity of axons that are able to propagate the electrically evoked action potentials between the stimulation and recording sites.

At axonal membrane level, conduction velocity of myelinated axons is determined primarily by the passive cable properties and by the nodal transient voltage-dependent Na+ channels while the remaining membrane ion channel machinery including but not limited to voltage-gated K+ channels are used to maintain the threshold for action potential generation.
Clues about the membrane function of peripheral axons in vivo can be obtained by "threshold-tracking" excitability testing, a "submaximal" stimulation technique complementary to NCS. Nerve excitability testing provide information about (i) nodal Na+ currents (mediated by Nav1.6 in motor axons and Nav1.6 co-expressed with Nav1.1/Nav1.7 on sensory axons); (ii) fast K+ currents (juxtaparanodal Kv1.1 and Kv1.2); (iii) slow K+ currents (mainly Kv7.2 on nodal and internodal membrane) and (iv) inward rectifier currents (mainly HCN1 on internodal membrane) which are comprised in a 2-compartment (nodal-internodal) biophysical membrane model accounting for differences between motor and sensory axons. These channels are not specific to peripheral axons, and their mutation giving raise to excitability alterations in the central nervous (like epilepsy) may not lead

to neuropathy but still be detectable by nerve excitability testing.
This presentation will focus mainly on neurophysiological testing of Nav function by nerve excitability testing techniques. This could offer a new insight into acquired transcriptional channelopathies i.e. alteration in expression of non-mutated Nav channel isoforms, such as those leading to chronic pain. Furthermore, it could offer a monitoring tool for the level of Nav blocker therapy in CNS conditions like multiple sclerosis or epilepsy.

Mircea MOLDOVAN

Dr. Mircea Moldovan, graduated the Carol Davila University of Medicine and Pharmacy, Bucharest in 1965, works at the Neurology Department of Elias Hospital, Bucharest, since 1969., Doctor of Medicine (MD) in 1977, consultant Neurologist since 1980
All during his medical career he maintained a constant preoccupation for clinical neurophysiology. In the 80's, his main interest was focused on EEG and evoked potentials, practicing under the guidance of Prof Dr V. Voiculescu.
In the 90's, his interest extended toward studies of peripheric conduction and EMG, and subsequently directed the Clinical Neurophysiology Laboratory for EMG and Evoked Potentials of the Elias Universitary Emergency Hospital.
During his practice activity, he was a promoter of the importance of clinical neurophysiology techniques in neurological practice, through constant publication and presentation of papers at [national and international] scientific meetings and in scientific journals. Of even greater importance, through his practical experience accumulated and didactic spirit, he contributed to the initiation in clinical neurophysiology of new generations of young neurologists.
In the last decade, as the Neurology Department of Elias Hospital was transformed into a Universitary facility, Dr. Mircea Moldovan officialized his competencies in EMG (2003) and EEG (2004); maintaining his didactic activities, he is conducting – together with Dr. I. Codita – the practical demonstrations for the post-graduate EMG courses organized by Associate Prof. C. Panea MD
In addition, Dr. Mircea Moldovan had a decisive contribution to the revival of the Clinical Neurophysiology from Romania (ASNER), as a founding member since 2009.

Segmental motor paralysis of the left upper limb in herpes zoster

Authors: M. Moldovan[1], B. Rotaru[2], Oana Neagu[3], Carmen Nutu[4], Ionela Codita[1] SUU Elias,[2]C.M. Sanador,[3]C.M. MedLife, [4]CMDTA

The paper presents a case of a 71 years old woman, clinically diagnosed with Herpes Zoster affecting C5-C6 territory on the left arm, which associated paralysis of abduction and rotation of the arm.
When evaluated it was 3 weeks from the rash debut; her medical history is unremarkable, excepting recent stress factors The rash first appeared on the left thenar eminence, then on the anterior aspect of the fist, then the whole anterior region of the left arm and forearm. At the moment of the evaluation, the skin lesions presented crusts. Excepting the abduction and external rotation of the arm (2/5 BMRC, also limited by pain), the other functional tests are normal. The tendon reflexes are normal and symmetrical. There was no objective sensory deficit.
The neurographic study was within normal limits in median, ulnar and radial nerves. The sensory potential amplitude was normal in lateral antebrachial cuthaneus nerve, but lowered in medial antebrachial cuthaneus nerve, sugesting an axonal lesion. One should also note the low penetrance of f wave for left median nerve. The EMG was normal for left trapesius, biceps, brachioradialis muscles; there was spontaneous activity in left supraspinatus, teres minor (fibs) and deltoid (fibs and psw), but with normal MUPs and with neurogenic recruitment.

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Edith SISAK

Edith SISAK- absolventa a IMF Tirgu Mures, este medic specialist neurolog din 1991 si medic primar din 1996. Competentele in examinarea Doppler, EEG, EMG, PE si stagiile practice multiple efectuate in Budapesta, Tel Aviv, Graz si Salzburg confirma interesul in examinarile paraclinice si indeosebi in electroneurofiziologie. In prezent profeseaza in Spitalul Judetean Sf Gheorghe. Este membra a Societatii de Neurologie din Romania, a Societatii pentru Studiul Neuroprotectiei si Neuroplasticitatii, membra a Societatii de Neurofiziologie Electrodiagnostica din Romania si a numeroase societati stiintifice internationale.

DIAGNOSIS OF BRAIN DEATH

Brain death (BD) is recognized by irreversible coma, absent brainstem reflexes and apnea.The most common mechanism to produce BD is the elevation of intracranial pressure above the mean arterial pressure stopping cerebral blood flow and leading to permanent cytotoxic injury of the intracranial neuronal tissue. An other mechanism to produce BD is that of intrinsic injury affecting nervous tissue at cellular level.This will be a review of the methodology of diagnosing brain death, more extensively the auditory evoked potentials contributing to the diagnosis.

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Summing up, the electrophysiological study reveals a partial left C5-C6 myotome lesion, more pronounced in deltoid muscle. The particular feature of this case is represented by the motor involvement which is known to appear in only 2-3% of Zoster patients.

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Dafin Fior MURESANU

DAFIN F. MURESANU , MD, PhD, MBA, is Professor of Neurology, Chairman of the Clinical Neurosciences Department, University of Medicine and Pharmacy "Iuliu Hatieganu" Cluj-Napoca, member of the Academy of Medical Sciences, Romania. He is also President of the Society for the Study of Neuroprotection and Neuroplasticity. In these roles, he acts as coordinator in international educational programs of European Master type (European Master in Stroke Medicine, University of Krems), organizer and co-organizer of European and international schools and courses (Eastern European Neurology Summer School for Young Neurologists - www.ssnn.ro, European Stroke Organisation Summer School, Danubian Neurological Society Teaching Course). His activity includes his involvement in many clinical studies and research projects, his membership in the executive board of many national and international societies, participations as invited speaker in national and international congresses, and a significant portfolio of scientific articles, contributions in monographs and books published by prestigious international publishing houses. Prof. Dr. Muresanu has been honoured with the Faculty of Medicine, University of Medicine and Pharmacy "Iuliu Hatieganu" Cluj-Napoca "Octavian Fodor Award" for the best scientific activity of the year 2010 and the 2009 Romanian Academy of Medical Sciences "Gheorghe Marinescu Award" for advanced contributions in Neuroprotection and Neuroplasticity.

The role of multimodal molecules and pleiotropic metabolic regulators in brain protection and recovery

The old concept that neuroprotection means suppressing pathophysiological processes, the idea that a single mechanism molecule might be effective in clinical practice are obsolete today, and represents the root cause of failure.

The effects of etiological agents on the brain traditionally are conceived as a linear sum of independent pathophysiological processed (excitotoxicity, inflammation, apoptosis-like, oxidative stress, misfolding protein, etc.) generating the pathways of pathological cascades in acute and chronic disorders.

The pathway approach has produced a very detailed understanding of molecular changes in the postlesional brain but it possesses blind spots that are critically related to the failure of pharmacological neuroprotection treatment in neurodegenerative disorders.

This is due to the simplistic way of understanding the neurobiological processes supporting brain protection and recovery and pathophysiological mechanisms. The failure of modifying disease therapies in many pathological conditions is measuring the failure of the reductionistic approach to the problem.

Every lesion in the nervous system initially triggers an endogenous neuroprotective reaction followed by an endogenous repair process, combining neurotrophicity, neuroprotection, neuroplasticity and neurogenesis, overlapping and acting under genetic control to generate endogenous defense activity (EDA) which continually counteracts pathophysiological processes - damage mechanism (DM).

All these biological processes are initiated and regulated by biological molecules.

Neurotrophic factors are probably the best example in this respect. They are acting in a pleiotropic neuroprotective way against pathological cascades.

The same molecules, due to a complex genetically regulated process, are able to regulate further onneurotrophicity, neuroplasticity and neurogenesis as well. Therefore, they have not only pleiotropic neuroprotective activity but also multimodal mechanism of action.

In the same time, post-lesional brain has a very demanding status of aerobic metabolic activation. Unfortunately, in mostly all pathological conditions, this important pathway is heavily impaired. A good cellular aerobic metabolic status is an important prerequisite for neuroprotection and recovery regulated by multimodal molecules. Therefore, we should focus our therapeutical efforts also to sustain this important biological background. In this respect, pleiotropic metabolic regulators having the capacity to improve critically disregulated glucose aerobic metabolic pathway are crucial for neurorestorative approach.

Beside the concept and therapeutical effects of multimodal molecules and pleiotropic metabolic regulators, this presentation will give an overview on the evolution of clinical treatment concepts with these two classes of molecules in stroke.

Andreas SCHILLER

Dr. Andreas Schiller graduated 1998 from medical school, Geneva University, Switzerland. After internship in internal medicine he did his Neurology residency in the Neurology Departement of the University Hospital Zurich. Neurology Board exam certified in 2005, he is responsible for the neurophysiological laboratory of the Clinic for Plastic and Handsurgery at University Hospital Zurich since 2006. His special interests are peripheral nerve- and brachial plexus injuries, peripheral nerve tumors and intraoperative electrophysiological diagnostics. Next to the University Hospital, he works in his private Neurological practice Neuromed in Zurich. His research interests are imagery of peripheral nerves, intraoperative diagnostics and more in general subjects pertinent to electrophysiological examination of peripheral nerves.

Neurogenic thoracic outlet syndrome : what it teaches us about the brachial plexus

Neurogenic thoracic outlet syndrome (NTOS) is a rare but distinct clinical and electrophysiological entity due to compression and eventually damage of the brachial plexus at the level of the scalenus triangle. Due to its relatively unspecific symptoms it is either missed or overdiagnosed if strict diagnostic criteria are not applied. Signs and symptoms may increase and become invalidating, often ability to work is compromized. Diagnosis is based on clinical examination and typical electrophysiological findings that correspond to a sensory-motor brachial plexus lesion. It's electrophysiological features may well be recognized if its distinct pattern, a combination of median, ulnar and median antebrachial cutaneus nerve neurography findings, complemented by a thorough needle electromyography exam, are recognized. Due to their low specificity, diagnosis of NTOS must not be based on provocation maneuvres. Disputed neurogenic thoracic outlet syndrome is a poorly defined syndrome with no electrophysiological and radiological substrate, it should therefore be abandoned. Differential diagnosis is large and englobes a large spectrum of non traumatic brachial plexus and peripheral nerve pathologies. Radiological examination sometimes demonstrates a cervical rib on conventional examinations. Newer magnetic resonance imagery techniques may support diagnosis in certain cases. Treatment of NTOS is always surgical when a lesion of the brachial plexus is documented. Failure to treat this condition in due time may result in rapidly progressive and irreversible neurological damage. The postoperative prognosis in the hands of experienced nerve surgeons is usually good. In conclusion, understanding NTOS constitutes a valuable basis for diagnosing and treating pathologies of the brachial plexus.