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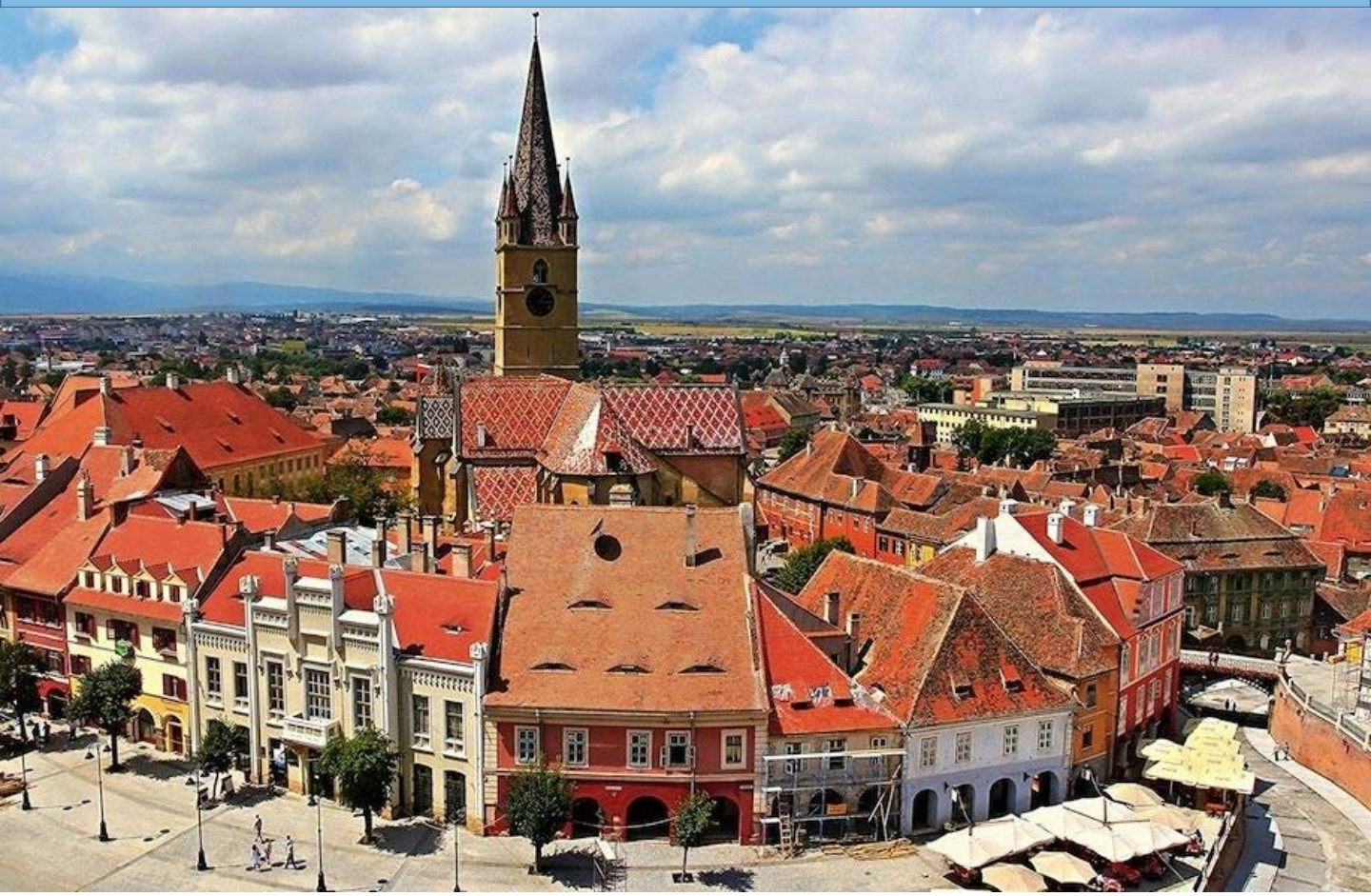
The 11th *National Conference of ASNER,* The Romanian Society of Electrodiagnostic Neurophysiology

CN2019, Sibiu, Romania
October 18 – October 20, 2019

Program & Abstract book



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THE SOCIETY FOR THE STUDY OF NEUROPROTECTION AND NEUROPLASTICITY

International Federation of Clinical Neurophysiology

Dear Friends,

So here we are again, for the 11th time, and I find it really remarkable. Every single year since 2009 we have managed to organize a National Conference in Clinical Neurophysiology, in which we tried to invite the best experts in the field. Our goal was to spread good practice in clinical neurophysiological techniques among those who are interested and dedicated, but also to promote research. And I dare say, we are on the right path, and we are determined to continue. Some of you have been with us from the beginning, many of you have attended a few times, and others are newcomers, but all of us have one thing in common, namely our passion for neurophysiology.

As always, this year we have organized practical sessions, plenary sessions, and case presentations. We intend thus to present some practical aspects, to hear interesting lectures from our guests, and to share our own experiences with each other.

So prepare for a few days of intense scientific activity with ample opportunities for networking, and to make new friends.

The conference has been awarded CME credits.

Welcome to the 11th edition of the ASNER National Conference.

Tudor Lupescu M.D. Ph.D.

ASNER President

contact@asner.org

http://www.asner.org

https://www.facebook.com/asner.org/

Ioana Mindruta, M.D. Ph.D.

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Mihai Moldovan, MD, PhD

ASNER Scientific director

Copenhagen University, Denmark and "Carol Davila" University of Medicine and Pharmacy, Bucharest, Romania

moldovan@sund.ku.dk

Vineri, Oct 18

09.00 – 18.00 Atelier EEG: Epilepsie - cazuri practice

Locatia: Hotel Golden Tulip Ana Tower (Strada Scoala de Inot nr 2)

9.30 -10.00 Anomaliile interictale in EEG de veghe si somn - sef lucr Ioana Mindruta

10.00 -10.20- Caz 1pediatric - dr Eugenia Roza,sef lucr Dr Raluca Ioana Teleanu

10.20-10.40 - Caz 1 adulti - sef lucr Ioana Mindruta

10.40 - 11.00 debriefing

11.00 - 11.30 pauza

11.30 - 12.00 Cum analizam anomaliile ictale? - dr Andrei Daneasa

12.00 - 12.20- Caz- dr Evelina Iachim,sef lucr Dr Raluca Ioana Teleanu

12.20-12.40 - Caz - adulti - dr. Andrei Daneasa

12.40 -13.00 debriefing

13.30 - 14.30 pranz

14.30 - 15.00 cum testam crizele inregistrate EEG? - dr Irina Popa

15.00- 15.20 – Caz 3- dr Eugenia Roza, sef lucr Dr Raluca Ioana Teleanu

15.20-15.40- Caz 3 adulti - dr Irina Popa

15.40 - 16.00 debriefing

16.00 - 16.30 pauza

16.30 - 17.10 caz audienta (2 caz)

17.10- 18.00 debriefing

15.00 – 18.00 Atelier EMG

Locatia: Facultatea de Medicina – Sala Senatului din cadrul Universitatii Lucian Blaga (Strada Lucian Blaga 2A)

Workshop EMG Hessel Franssen

Sâmbătă, Oct 19 – Partea 1

Locatia: Facultatea de Medicina – Sala Senatului din cadrul Universitatii Lucian Blaga (Strada Lucian Blaga 2A)

08.30 – 09.00 Deschiderea conferintei

09.00 – 11.30 Sesiune plenara

Hessel Franssen: Neuropatii mediate imun (studii de excitabilitate și modelare)

Pascal Proot -: Studii de conducere senzitivă în electrodiagnosticul leziunii de plex brahial

11.30 – 12.00 Pauza

11.30 - 12.00 Simpozion "Atrofia musculară spinală"

Tudor Lupescu – Atrofia musculară spinală - perspective terapeutice

12.00 – 12.45 Simpozion - **"Manifestari clinice ale unei boli sistemice – polineuropatia amiloida de tip transtiretina**

Ana Cobzaru– polineuropatia transtiretinica

Roxana Rimbas - Amiloidoza cardiacă

12.45 – 14.00 Prânz

Comentariu: Mircea Moldovan – Neurofiziologii

Sâmbătă, Oct 19 atelier tehnicieni EEG

Locatia: Facultatea de Medicina – Biblioteca din cadrul Universitatii Lucian Blaga (Strada Lucian Blaga 2A)

Tutori: Sef Lucrari dr Ioana Mindruta, Sef Lucrari dr Raluca Teleanu

9.00- 9.30 Traseul de baza in inregistrarea EEG prelungit la adult - Sef Lucrari dr Ioana Mindruta

9.30 - 10.00 Traseul de baza in inregistrarea EEG prelungit la copil - Sef Lucrari dr Raluca Teleanu

10.00 - 11.00 Variante de normalitate

11.00 - 11.30 Pauza de cafea

11.30 - 12.00 Artefactologie EEG

12.00 - 13.00 Prezentari de caz

13.00 - 14.00 Pranz

14.00 - 18.00 Sesiune de prezentari teoretice interactive:

1. Montaje EEG; 2. Corectia artefactelor; 3. Anomalii epileptiforme;4. Inregistrare crize epileptice/evenimente clinic; 5. Arhivarea

Sâmbătă, Oct 19 – Partea 2

Locatia: Facultatea de Medicina – Sala Senatului din cadrul Universitatii Lucian Blaga (Strada Lucian Blaga 2A)

14.00 – 16.30 Sesiune Neuromonitorizare, EEG si somn

Dan Filip - "Colaborarea intraoperatorie între neurofiziolog și neurochirurg - mapping cortical, subcortical și radicular"

Ionela Codita – monitorizare intraoperatorie in spondilolistezis lombosacrat

Amalia Ene, AnaMaria Cobzaru – Neurofiziologie DBS

Livia Livinț Popa, Dana Slăvoacă, Gianina Maria Balea, Ștefan Strilciuc, Dafin Mureșanu - Introduction to Quantitative EEG

Mihaela Oros: Tulburari de somn la copii

Floriana Boghez: "Effects of acute sleep deprivation"

16.30 – 17.00 Pauza

Comentariu: Mircea Moldovan Inedit- Serendipitate

17.00 – 18.30 Sesiune EMG

Tudor Lupescu –Electromiografia – studii de caz

Mihai Moldovan: Testarea excitabilității nervoase. Avem ghidul, ce urmează?

Mircea Moldovan Tetrapareza proximala, simetrica, reversibila in cadrul unei insuficiente renale cronice (IRC)

18:30- 19:30 Sesiune EMG

- **Pascal Proot:** Importanța recrutării, studiul nervilor cutanați antebrahiali lateral și medial, indicele Robinson în sindromul de tunel carpian.

Duminică, Oct 20

Locatia: Facultatea de Medicina – Sala Senatului din cadrul Universitatii Lucian Blaga (Strada Lucian Blaga 2A)

09.00 – 11.30 Comunicari EMG

Izabela Popa - Electrophysiologic diagnosis in radiculopathies, mononeuropathies and lumbosacral plexopathies

Moscu Bianca - "Disfonie - provocare diagnostica - prezentare de caz"

Nicu Draghici – Sindromul Eaton - Lambert in adenocarcinomul de prostata.

Florian Antonescu - Indicele split hand și alte afectări asimetrice în SLA

Gianina Maria Balea, Livia Livinț Popa, Cristina Pantelemon, Tudor Dimitrie Lupescu, Dafin Mureșan – Neuropatie motorie axonală autosomal recesivă cu neuromiotonie

Roxana Ailoaiei - "Cauze mai rare de mononeuropatie ale membrului inferior-serie de cazuri"

Rotaru Bogdan – Cazuri atrofie musculara spinal tip 4 și foot-drop.

11.30 – 12.00 Pauza

12.00 – 12.30 Comunicari EEG

- Partoaca Aida-Mihaela, Emil Ioachim Istrate, Ana Gheorghiu, Cristian Teodorescu, Alina Popescu: EEG changes encountered in current neurological practice.

- Istrate Emil Mihail, Partoaca Aida-Mihaela, Ana Gheorghiu, Cristian Teodorescu, Alina Popescu: Epilepsia si migrena, coincidenta sau conexiune fiziopatologica: aspecte clinice si neurofiziologice

12.30 – 13.00 Quiz

13.00 Inchidere lucrari, diplome, feed-back

Professor Hessel Franssen

H.Franssen-2@umcutrecht.nl

Immune-mediated neuropathies

Department of Neurology of the University Hospital Utrecht, the Netherlands.

Hessel Franssen was born in 1951 and grew up in a small market town to the north of Amsterdam. He attended medical school in Leiden, the oldest university in the Netherlands. He specialized in Neurology and Clinical Neurophysiology in the Municipal Hospital in the Hague from 1977 – 1984, during which he also served as first Lieutenant in the Dutch Army. He defended his PhD thesis on cortical regulation of saccadic eye movements in the Catholic University Nijmegen in 1986. From 1985 – 2016 he was staff member of the Department of Neurology of the University Hospital Utrecht, the Netherlands. There, he was responsible for training in Clinical Neurophysiology as well as electroneurography and electromyography. He was chairman of the Dutch Society of Clinical Neurophysiology for 8 years. He has published about 150 international peer-reviewed papers on effects of temperature, criteria for demyelination and excitability. Currently he is advisor on subjects related to Translational Electrophysiology in disorders of peripheral and central motor neuron disorders.

Dr Pascal Proot

PascalProot@gmail.com

Involving sensory nerve conduction studies in EDX for suspected brachial plexopathy"

Neurology department, Terneuzen, The Netherlands

Dr Pascal Proot is a neurologist based in Terneuzen, The Netherlands. He is also associated with the foundation of the Headache Center Zeeland (The Netherlands), University Hospital UZ Ghent (Belgium), and Kaunas University (Lithuania). He is a member of the Dutch Association of Neurology, the American Academy of Neurophysiology and Electrodiagnostic Medicine, and the Dutch Association Headache Centers.

He is involved in teaching electroneuromyography (ENMG) in various European countries. He obtained his degree in Medicine from Ghent University. He has authored several publications in peer-reviewed, international journals.

Surfing EMG Waveforms

Tudor Lupescu

Spitalul Clinic de Urgenta "Prof Dr Agrippa Ionescu"

Tudor Dimitrie Lupescu

MD, Ph.D.

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In the constantly developing field of clinical neurophysiology, in which technology and knowledge have made possible very precise and detailed diagnostic findings, as in intracranial EEG recordings or magnetoencephalography, and also therapeutic approaches with transcranial stimulation (for depression, migraine, neuropathic pain), EMG may look kind of old-fashioned and obsolete. Recently, I read an article by a Belgian author: "Pourquoi l'ENMG ne disparaitra pas en 2046...", and it made me more optimistic, because there are certain aspects in diseases of the peripheral nervous system that cannot be described yet by other means.

A purposeful, skilled, and logical electroneuromyographic examination that follows a thorough clinical examination, can lead to valuable and meaningful conclusions.

This presentation will try to exemplify some clinical situations in which the EMG recordings are helpful and revealing.

Tudor Lupescu obtained his medical degree from “Carol Davila” University of Medicine in Bucharest, in 1989. After 3 years of training at Colentina Clinical Hospital he became Specialist in Neurology in 1994. Since 2006 he is running the Neurology Department al Agrippa Ionescu Hospital in Bucharest. 1998, he qualified as Consultant Neurologist. Since his early years of training in Neurology, Tudor Lupescu has shown a special interest in Clinical Neurophysiology. In 2000 he earned a Competence in Clinical Neurophysiology (EEG, EMG, and Evoked Potentials). 1997 he was the first to use Transcranial Magnetic Stimulation in Romania. This was also the subject of his PhD thesis presented in 2005. Since 2008, Tudor Lupescu is President of ASNER – Romanian Society of Electrodiagnostic Neurophysiology. He is also founding member and vicepresident of the the Romanian Society of Diabetic Neuropathy.

Dr Tudor Lupescu is Fellow of the American Academy of Neurology, and associate member of the American Association of Neuromuscular and Electrodiagnostic Medicine. Between 2008 and 2014 he was also member of the Neurophysiology Subcommittee of ENS, and since 2015, he is member of the Neurophysiology Subcommittee of the European Academy of Neurology.

EEG Workshop - VideoEEG monitoring in drug rezistant epilepsy

The significance of interictal abnormalities

Ioana Mindruta[1]

[1] *Neurology Department, University Emergency Hospital, Bucharest, Romania*

The interictal spike/sharp is considered the hallmark of epilepsy, by demonstrating the cortical hyperexcitability and hypersynchrony, which may persists in the "normal" interictal state. The aim of the videoEEG workshop is to show and discuss changes and sensitivity of interictal EEG in demonstrating the pathological abnormality and evaluate the significance of paroxysmal activity of epileptiform discharges with clinically recorded seizure events.

Interictal findings will be interpreted in the large context of multimodal data of patients with drug resistant epilepsy

Ioana Mindruta

Lecturer, MD, PhD

ioanamindruta@me.com

Neurologist, with competence in electrophysiology and special interest in epileptology, mainly invasive presurgical exploration for epilepsy surgery, neurostimulation and brain connectivity. PhD thesis on "Sleep studies in epileptic syndromes" in 2006.

Current position at the University Emergency Hospital in Bucharest in the Epilepsy and Sleep Monitoring Unit and also hospital coordinator of the National Programs for Pharmacoresistant Epilepsy and Rare Disorders.

Academic affiliation - lecturer in neurology at the University of Medicine and Pharmacy "Carol Davila" of Bucharest.

Vicepresident of Romanian Association for Clinical Electrodiagnosis (ASNER) since 2009.

Nerve excitability testing. We have the guidelines. What next?

Mihai Moldovan (1,2)

1) *Copenhagen University DK;*

2) *Carol Davila University, Bucharest, RO*

Conventional nerve conduction studies provide information about the number of conducting axons as well as their conduction velocity along the investigated segment, a surrogate marker of myelination. In contrast, nerve excitability testing asses ion channel function and resting membrane potential at the site of stimulation providing an unique insight into the disease mechanisms.

From the patients's perspective, excitability testing is a simple continuation of conventional studies. The test is commonly performed on the median nerve motor and sensory axons stimulated at wrist. A test takes about 15 minutes and consists of a sequence of measures controlled automatically by a computer: 1) charge-duration, threshold electrotonus, current-threshold and recovery cycle. Results are given as a set of numeric excitability indices derived from the measures. Deviations from control values is interpreted based on a increasing number of literature reports in different pathologies. A mathematical model is available to aid the interpretation.

The presentation will focus on the recent consensus guidelines on the clinical use of axon excitability testing and discuss future developments.

Measurement of axonal excitability: Consensus guidelines 2019

https://www.sciencedirect.com/science/article/pii/S1388245719311708?via%3Dihub

Mihai Moldovan

Assoc. Prof., MD, Ph.D.

moldovan@sund.ku.dk

Mihai Moldovan obtained his medical degree from "Carol Davila" University Bucharest in 1999 and PhD degree in neurophysiology from Copenhagen University in 2004 where he continues his academic career.

2019 Organizer of the Nerve excitability hands on course at the Congress of the European Academy of Neurology EAN2019, https://www.ean.org/oslo2019

2019 Faculty at the Master Course Electrodiagnostic techniques (University of Barcelona) https://edxneuro.com)

2019 Co-Chair of the Federation of European Neuroscience Societies (FENS) forum 2019 https://www.fensfrm2019.rs

•2016, 'P.K.Thomas' prize of the European Academy of Neurology.

• Since 2014, elected full member in the European Dana Alliance for the Brain (EDAB).

• Since 2013, serving on general council of Federation of European Neuroscience Societies (FENS) and International Brain Research Organization (IBRO).

• Since 2012, President of the National Neuroscience Society of Romania (SNN), a FENS member.

• 2012-2018, editorial board member for Clinical Neurophysiology, the official scientific journal of the International Federation of Clinical Neurophysiology (IFCN).

• Since 2009, Scientific director of the Romanian society for electrodiagnostic neurophysiology (ASNER), an IFCN member.

• Since 2009, Invited professor and research director associated to the Department of Physiology and Fundamental Neurosciences, "Carol Davila" University of Medicine and Pharmacy, Bucharest Romania;

Proximal, symmetrical, reversible tetraparesis, in the presence of chronic kidney disease

Mircea Moldovan*

Dr Cezar Dumitrache, Dr G Nedelcovski, Dr Ionel Codita*

Neurology Department of Elias University Emergency Hospital, Bucharest

In case of chronic kidney disease (CKD), the azotate retention and the hydroelectric and acido-basic modifications lead to multiple perturbations of the vital functions, which are difficult to explain, given the multitude of etho-pathogenical factors involved.

A 36yrs old female patient with progressive CKD in the dialysis stage, presented pro-gressive, proportional tetraparesis predominantly proximally (3/5 BMRC).

The ENMG examination revealed a symmetric, predominantly demielinizating poli-neuropathy, without significant axonal loss, with proximal conduction blocks.

The muscular evaluation – the motor deficit being predominantly proximal – did not re-veal any pathological aspects, besides a reduced recruiting level.

We took under consideration – and differentiated – the length-dependant sensory-motor neuropathies (dying back), painful neuropathies (burning feet), radicular diseases (f waves), endocrine conditions related to the parathormone variation, diselectrolithemia (increase of K, decrease of Na and P), medication-related neuropathies (entecavir) with acidosis and mitochondrial toxicity, and uremic myopathies.

The symptomatology remained fluctuating from 2012 until 2014, when she received a re-nal transplant. Subsequently, the neurographic and motor deficit were significantly ame-liorated, with the resumption of social activities.

Reevaluated at 7 years after the first examination and 5 from the renal transplant, it was concluded that the remission was clinically and electrophysically complete, with func-tional and locomotor independence, The literature mentions that – post transplant – the motor deficit is rapidly ameliorated clinically, the paresthsias disappear in 1-3 months, and the neurography reverts to normal

Mircea Moldovan

MD, PhD

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Dr. Mircea Moldovan, graduate of the “Carol Davila” University Bucharest, Doctor of Medical Sciences, MD is a neurologist at the Hospital “Elias” Bucharest since 1968. Throughout his career, he had a continuous interest for clinical neurophysiology. In the 80s, his main interest was the EEG and evoked potentials under the guidance of Prof Dr V Voiculescu. In the 90s, his interest expanded to the peripheral conduction studies and EMG. During his pioneering work in Romanian clinical neurophysiology, Mircea Moldovan advocated the diagnostic importance of clinical neurophysiology for neurological practice through talks at national scientific meetings and scientific publications. Most importantly, however, through his wealth of practical experience and didactic spirit, he helped initiate in clinical neurophysiology generations of young neurologists. During the last decade, with the transformation of “Elias” hospital neurology into a university department and re-formalizing his skills in EMG (2003) and EEG (2004), Dr. Mircea Moldovan developed his preoccupation for clinical neurophysiology teaching. Together with Dr. Ionela Codita he carries out practical demonstrations of post-graduate courses organized by Professor Dr. Panea EMG. In addition, Dr. Mircea Moldovan contributed to re-launch of the clinical neurophysiology society in Romania as founding member of ASNER 2009.

Commentary 1: On June 24, 1833, at a conference of the British Association for the Advancement of science, the poet Samuel Taylor Coleridge pointed to the difference between the philosophers, with their intellectual exercises, and the researchers, which use scientific experiments. In this context, the Cambridge student William Whewel proposed the use of the term "men of science" for researchers, instead of "philosophers of nature" used previously. (Blog Laura Snyder The Philosophical Breakfast Club).

Commentary 2: The term serendipity was invented by Horace Walpole in 1754. Serendipity is a common occurrence in the history of scientific discoveries. Other examples, besides Newton's dis-covery of gravity mentioned above, are: Alexander Fleming's discovery of penicillin in 1928, Percy Spencer's invention of the miowave oven in 1945, or the invention of the sticky Post-it note by Spencer Silver 1968.

Neuromonitoring in lumbar spondylolisthesis surgery: benefits and limits

Ionela Codita

Alexandru Thiery, Mihai Adrian Cristescu, Mihai Sabin Magurean, Raluca Ghita, Andrei Spatariu, Cristina Aura Panea

Neurology Department of Elias University Emergency Hospital, Bucharest

Ionela Codita

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Spondylolisthesis refers to a pathologic slippage of one vertebra against another. Surgical treatment of spondylolisthesis is recommended in patients with back pain refractory to conservative treatment, slippage progression, or severe slippage to presentation.

During the correction procedures lumbar roots may be affected, L5 root damage being often reported.

Intraoperative neuromonitoring is useful in order to minimize the risk of neurological damage during these interventions.

We will present some cases of surgical treatment for high-grade dysplastic spondylolisthesis using intraoperative electrophysiological monitoring with : transcranial electric motor evoked potentials , somatosensory evoked potentials , continuous spontaneous electromyography and triggered electromyography and the challenges of spinal root monitoring will be discussed.

Ionela Codita is currently working as a Senior Neurologist in the Neurology Department of Elias University Emergency Hospital and in the Ponderas Academic Hospital in Bucharest

She earned a Competence in Clinical Neurophysiology in 2005. During her practice, dr. Codita attended many courses and teaching programs in the field of Clinical Neurophysiology such as: scholarship in Neurophysiopathology field at Policlinical Institute of San Donato Milanese, Italy (2002-2004), "Training Course in EMG and Neurography"-Uppsala, Sweden (2009), International SFEMG and QEMG Course–Kobe, Japan (2010), VIREPA distance learning courses on "EEG in the diagnosis and management of epilepsy – Basic Course 6th edition" (September 2011- March 2012) and "EEG SCORE course-1st edition"(November 2012-March 2013), the international educational course "Dinalund Summer School on EEG and Epilepsy" (July 2012) , educational course: "Brainstem and Peripheral Nervous System-Neurophysiological Monitoring"- Groningen, Netherlands (Nov 2016) , educational course organized by International Societhy of Intraoperative Neurophysiology , in Seoul, Korea (Nov 2017) and "Update in Neuromuscular Disorders", London (24-25 May, 2018).

She manifests interest in Peripheral Neuropathies, Motor Neuron Diseases, Myopathies and Intraoperative Neuromonitoring. Dr. Ionela Codita is a member of the Romanian Society of Neurology and of the International Society of Intraoperative Neurophysiology and she is the Secretary of ASNER-The Romanian Association for Clinical Electrodiagnosis, since 2013.

Colaborarea intraoperatorie între neurofiziolog și neurochirurg - mapping cortical, subcortical și radicular

Filip Dan

Filip Dan , MD, PhD

<ildaro@yahoo.com

Spitalul European Polisano Sibiu

Senior neurologist since 2005

Certificate of complementary studies in electromyography - Bucharest, 2013

International Course on Intraoperative Spinal Disease - Istanbul 2014

Intraoperative Neuromonitoring Course - "The Essentials" - EANS Verona 2015

Cerebral Intraoperative Neuromonitoring Course - Groningen 2016

Physician Doctor - ULB Sibiu - 2017, with the theme "The contribution of intraoperative neurophysiologic monitoring in neurosurgery"

Experience gained in Neurophysiologic Intraoperative Monitoring with the Polisano Hospital Brain Team - over 100 cases since 2014 - of which 42 brain tumors, 35 cases with cervicodorsal pathology, 10 cases with subtentorial pathology and 13 cases with complex lumbosacral conditions.

Member of ASNER (Asociația Societatea de Neurofiziologie Electrodiagnostică din România) and ISIN (International Society of Intraoperative Neurophysiology)

Introduction to Quantitative EEG

Livia Livinț Popa, MD, PhD

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Livia Livinț Popa

Dana Slăvoacă, Gianina Maria Balea, Ștefan Strilciuc, Dafin Mureșanu

UMF "Iuliu Haţieganu" Cluj-Napoca, Institutul RoNeuro - Centrul de cercetare și diagostic al bolilor neurologice, Cluj-Napoca, Romania

Teaching Assistant in Neurology, Department of Clinical Neurosciences, "Iuliu Haţieganu" University of Medicine and Pharmacy Cluj-Napoca, Romania (September 2014 – present);

Neurologist at "RoNeuro" Institute for Neurological Research and Diagnostic, Cluj-Napoca, Romania (September 2013 – present);

PhD in Neurology with the thesis "Role of functional electrical stimulation and of transcranial magnetic stimulation in improving motor performances in Parkinson's disease", "Gr. T. Popa" University of Medicine and Pharmacy Iași, Romania (March 2013);

- Consultant Neurologist (June 2019);
- Neurologist (October 2012);
- Resident in Neurology (January 2006 – October 2012):

2 years of Neurology and EEG at Saint-Luc Bouge Clinic (1.01–30.09.2009) and at Refractory Epilepsy Center, William Lennox Neurologic Center, Ottignies-Louvain-la-Neuve, Catholic University of Louvain, Belgium (1.10.2007–31.12. 2008);

1 year of Psychiatry at Jolimont-Lobbes Hospital Center, Haine-Saint-Paul, Catholic University of Louvain, Belgium (1.10.2006–30.09.2007);

- Internship (January – December 2005);
- Medical Doctor (September 2004).

Quantitative EEG (QEEG), a concept that appeared in the 70's along with "digital revolution", is defined as the mathematical processing of digitally recorded EEG.

QEEG presents a large area of applications in neuropsychiatric pathology and with each study it brings forward new variables and methods of analysis illustrating electrophysiological brain alterations that are invisible to the conventional EEG.

Raw EEG data is recorded and undergoes through the preprocessing stage which contains the following steps: re-reference, filtering, segmentation and artefact rejection. QEEG brings new techniques of EEG feature extraction: analysis of specific frequency bands, analyses of signal complexity, analyses of connectivity and network analyses. The role of QEEG is not to immediately indicate a diagnosis, but to be complementary to other investigations, to generate additional objective information for a precise diagnosis and to facilitate patient outcome assessment.

As a functional neuroimaging tool relatively inexpensive, QEEG might provide biomarkers for connectivity pathologies or seizure detection, diagnostic criteria in neuropsychiatric disorders or patterns in treatment response evaluation.

Although there is a vast literature on QEEG, it is not known yet to be widely used, and there are many scientific and controversial debates about its contribution to the diagnosis of neurological and psychiatric diseases.

Heart rate variability parameters as indicators of epileptic seizure severity

Anca Adriana Arbune,

Jesper Jeppesen, Philippe Rivlyn, Sándor Beniczky

Institutul Clinic Fundeni, Bucuresti, Romania

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Seizure severity is one of the parameters desired to be monitored through automated detection of epileptic seizures. Previous studies have shown that ictal autonomic changes are associated with seizures, with possible implications in sudden unexpected death in epilepsy patients (SUDEP). The current literature holds promising results for automated seizure detection using ictal autonomic changes. In this study we aimed to define objective parameters that reflect seizure severity that could be implemented into wearable devices. Materials & Methods: We explored the peri-ictal (preictal and postictal) changes in heart rate variability (HRV), normalized to their interictal values. We calculated parameters reflecting the activity of the parasympathetic nervous system: high-frequency power (HF) and root mean square of successive RR intervals that differ by more than 50 ms (RMSSD). For measuring changes in the sympathetic nervous system, we used cardiac sympathetic index (CSI) and the ratio of LF-to-HF power (LF/HF). We also determined the mean heart rate value (HR-mean), that reflects both an increase in sympathetic and decrease in parasympathetic activity. For seizure severity we measured the duration of the postictal generalized EEG suppression (PGES), seizure duration and the intensity of ictal muscle activity, expressed as the duration of tonic bursts with frequent exceeding the detection threshold for zero-crossings (ZC-above). We included 40 patients who had 77 motor seizures recorded in the epilepsy monitoring unit: 61 generalized tonic seizures (GTCS) and 16 other major motor seizure types. Results and Conclusions: For all major motor seizures we found a significant decrease in the parasympathetic activity and increase in the sympathetic activity in the postictal period. Increase in postictal sympathetic activity was significantly higher for GTCS compared with non-GTCS. Peri-ictal decrease in parasympathetic activity and increase in sympathetic activity were correlated with long PGES (over 20s), seizure duration and the intensity of ictal muscle activity (ZC-above).

Neurophysiological Overview of Acute Sleep Deprivation Impact

Floriana Boghez

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Insufficient sleep is a hallmark of our modern busy society and it has becoming a public health concern. The first sleep deprivation study was published over 100 years ago (1896) and since then many studies have searched the impact of sleep deprivation on healthy functioning. Sleep deprivation can be acute or chronic, total (sleep deprivation) or partial (sleep restriction and sleep fragmentation) or it can intend a selective sleep stage deprivation (NREM or REM suppression). Common repercussions to each of them include increased subjective and objective sleepiness, deficits of vigilance, attention, perception and cognition, mood fall and changes to glucose metabolism, heart rate and blood pressure. Sleep fragmentation frequently arises due to sleep disorders, obstructive sleep apnea (OSA) or periodic limb movements in sleep (PLMS), but it can also be reproduced by experimental conditions with frequent waking or arousals episodes. There are numerous ways to measure sleepiness, ranging from subjective self-report, EEG/PSG parameters, such as the latency and quantity of slow wave sleep (which reflects the sleep pressure) and objective sleepiness size, such as the Multiple Sleep Latency Test (MSLT) and the Maintenance of Wakefulness Test (MWT). The ability to sustain attention and maintain vigilance is reduced following even one night without sleep, a substantial factor which increases the risk for accidents or low performance and errors during shift-nights. Lapsing of attention occurs when microsleeps intrude into the waking state and may potentially generate events.

Autosomal Recessive Axonal Motor Neuropathy with Neuromyotonia

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Autosomal recessive axonal neuropathy with neuromyotonia is a rare disease caused by mutations of histidine triad nucleotide binding protein 1 (HINT1) gene. This distinct (clinically and genetically) entity ranks among the most common subtypes of axonal, motor-predominant Charcot-Marie-Tooth (CMT) neuropathy.

We present a 13-year-old girl with progressive lower limb weakness, gait impairment, distal muscular atrophy combined with muscle stiffness and cramps in hand and legs, beginning at age 6.

Cerebral MRI, lumbar spine MRI, voltage-gated potassium channel (VCKCs), acetylcholine antibody, genetic testing in spinal muscular atrophy (SMA) was negatives.

Nerve conduction studies was compatible with motor axonal polyneuropathy. Concentric needle EMG show neuromyotonic discharges occurring spontaneously or provoked by needle movement or muscle contraction and chronic neurogenic MUAP.

A homozygous, pathogenic variant was identified in HINT1 gene.

This case illustrates the importance of identifying the correct phenotype to avoid unnecessary and costly evaluations.

EEG changes encountered in current neurological practice

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Objective: Review of current knowledge regarding EEG changes associated with systemic metabolic disorders and brain structural changes encountered in other neurological disorders other than epilepsy.

Methods: Electroencephalography, by objectifying intercritical or ictal changes, is the most important paraclinical investigation in supporting the diagnosis of epilepsy. Numerous disturbances of rhythm, amplitude or of graphoelements may occur, however, in the case of other pathologies with an impact on the central nervous system with or without a specific etiological pattern.

These can be classified into: structural abnormalities caused by lesions at the brain level (post-surgical status, tumors, strokes, infections) and metabolic / toxic disorders (hyperammonemia, hypoglycaemia, renal failure, hypothyroidism, etc.).

We illustrate a series of cases encountered in our clinic with electroencephalographic changes in patients without epileptic seizures but with altered cognitive status, which led to the request for a neurophysiological investigation.

Conclusion: Electroencephalography is a useful tool in the evaluation and monitoring of patients with other pathologies that influence brain metabolism and implicitly electrical brain activity. The electrical changes must always be integrated in the clinical-paraclinical picture of each patient in order to establish a correct diagnosis.

Epilepsy and migraine, coincidence or pathophysiological connection: clinical and neurophysiological aspects

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Epilepsy and migraine are two of the most common neurological disorders: for example in the general population, migraine has a prevalence of up to 18%. Although it is less common than migraine, epilepsy is one of the most important neurological pathologies with a prevalence of up to 1%. Moreover, the two disorders appear to be related. The risk of migraine is twice as high in epilepsy patients compared to the general population - a risk that remains high in each subgroup of epilepsy (defined by the type of seizures, age of onset, etiology or family history). This association supports the existence of a pathophysiological, genetic or environmental risk factors link between the two entities, thus being able to provide indications on the etiology of both epilepsy and migraine.

Both represent heterogeneous groups of pathologies with a very varied natural history, clinical picture and therapeutic response, both of which may have repeated episodes of neurological dysfunction, sometimes accompanied by headaches and symptoms such as post-ictal fatigue, cognitive or visceral phenomena, dizziness, paresthesia and aphasia or transient hemiparesis. In typical patients, anamnestic data usually allow the separation of the two entities. However, in the absence of convulsive phenomena or in the presence of atypical migraine symptoms, differential diagnosis can be difficult, even more so considering the well-known possibility of the occurrence of EEG changes in migraine patients, which can lead to diagnostic errors.

The present paper, based on the latest studies and articles in the field, aims to discuss the interaction between epilepsy and migraine, integrating clinical, genetic and pathophysiological aspects, as well as the concept of migralepsy. Finally, some cases will be presented with the desire to exemplify the clinical principles presented, as well as possible diagnostic pitfalls.

Neurophysiology in deep brain stimulation (DBS)

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Deep brain stimulation (DBS) is a therapeutic neurosurgical procedure which consists of the stimulation of deep structures in the brain by means of implanted electrodes, which are connected to an external electronic device, with the purpose of inducing changes in electric brain activity as to improve functions degraded by the pathological condition.

Other than choosing the perfect candidate, perhaps the most determinant of success in patients undergoing DBS surgery is the optimal placement of the electrode.

Magnetic resonance imaging and stereotactic methods are employed to conduct preoperative localization of the target. Later high-precision implantation of the DBS electrodes relies on functional localization via intraoperative microelectrode recordings.

Testing seizures that we record during video-EEG

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Long term video-EEG monitoring is an important step in the presurgical evaluation for patients with focal drug resistant epilepsy. Seizures that we record let us perform electroclinical correlations and better define the epileptogenic network. Therefore, during this step, we must test/interact with the patient during a typical seizure. In this workshop, we will present examples of epileptic seizures recorded in our unit and try to understand the epileptogenic network through seizure semiology.

Electrophysiologic diagnosis in radiculopathies, mononeuropathies and lumbosacral plexopathies

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Differential diagnosis between an L3 radiculopathies or femoral nerve neuropathies or L4-L5 radiculopathies and common peroneal nerve lesion is often difficult or clinically impossible.

Structural or nonstructural lesions are evolving into motor and sensory deficits which can easily mimic lumbo-sacral plexopathy.

Besides the localizing value of the electrophysiologic studies, such investigation will enable the assessment of severity and prognosis.

Analysis of ictal recordings – an electrographic perspective

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Seizures recorded during long term video-EEG monitoring offer a critical value towards a correct localization hypothesis.
A thorough analysis of the electrographic ictal discharge and its correlation with the anatomo-clinical picture often allow us to zero in on the epileptogenic network. In this workshop we exemplify such a proceeding, reviewing a tricky presurgical case.

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