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ASOCIATIA SOCIETATEA DE NEUROFIZIOLOGIE
ELECTRODIAGNOSTICA DIN ROMANIA

Conferinta Nationala de Neurofiziologie Clinica

26 | 27 Septembrie 2009

Hotel JW Marriott, Bucuresti, Romania

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Duminica, 27 septembrie, atelierele practice for fi moderate de catre:

Sesiunea EMG
Dr. Tudor Dimitrie LUPESCU

Sesiunea EEG
Dr. Ioana MINDRUTA

Informatii Generale:
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Participantii sunt invitati sa poarte ecusoanele nominale. Aceste ecusoane asigura accesul in salile de conferinta, ateliere, la mesele de pranz si pauzele de cafea.
Diplomele de participare se elibereaza la inchiderea Conferintei Nationale 2009
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Conferinta Nationala de Neurofiziologie Clinica

2009

LECTORI (in ordine alfabetica)

Florin **AMZICA**	Canada,
Sandor **BENICZKY**	Danemarca,
Valentin **BOHOTIN**	Romania,
Pierre **BOUCHE**	Franta,
Dumitru **CONSTANTIN**	Romania,
Reinhard **DENGLER**	Germania,
Bogdan **FLOREA**	Romania,
Hessel **FRANSSEN**	Olanda,
Sergiu **GROPPA**	Germania,
Christian **KRARUP**	Danemarca,
Pierre **LOZERON**	Franta,
Tudor **LUPESCU**	Romania,
Ioana **MINDRUTA**	Romania,
Mihai **MOLDOVAN**	Danemarca,
Mircea **MOLDOVAN**	Romania,
Ayghiul **MUJDABA-ELMI**	Romania,
Valeriu **NESTIANU**	Romania,
Cristina **PANEA**	Romania,
Corinne **POTTIER**	Franta,
Dan **PSATTA**	Romania,
Stefano **SIMONETTI**	Italia,
Alexandru **SERBANESCU**	Romania,
Leon **ZAGREAN**	Romania

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SOCIETATEA DE NEUROLOGIE DIN ROMANIA

EUROPEAN CHAPTER INTERNATIONAL
FEDERATION of CLINICAL NEUROPHYSIOLOGY

SATURDAY, the 26th of September 2009

Mezzanine, Sala A si Sala B

8:30 - 9.00	National Romanian Conference Opening
9:00-11:00	**SCIENTIFIC SESSION**
	Chairpersons: Christian Krarup, Alexandru Serbanescu, Tudor Lupescu
9:00 - 9:30	Mihai Moldovan: Conduction and excitability studies in peripheral nerve degeneration and regeneration
9:30-10:00	Christian Krarup: Electromyography (EMG) as a tool in the investigation of neurogenic weakness or myopathy
10:00-10:30	Alexandru Serbanescu: Reserved Subject
10:30-11:00	Valeriu Nestianu: Mathematical analysis of surface electromyogram in characterization of muscular fatigue (Report)
11:00-11:30	Coffee Break, Pharmaceutical Companies Exhibition
11:30-13:00	**SCIENTIFIC SESSION**
	Chairpersons: Dan Psatta, Florin Amzica, Ioana Mindruta
11:30-12:00	Florin Amzica: Cellular bases of coma
12.00-12:30	Dan Psatta: Monopolar and source derivation recording of Auditory Evoked Potentials
12:30-13:00	Leon Zagrean: Cerebral ischameia/ reperfusion induced changes in neuronal excitability
13:00-13:30	Sponsor Symposium - Medison.
13:30-14:30	Lunch - Restaurant Cupola, Hotel JW Marriott
14:30-16:30	**SCIENTIFIC SESSION**
	Chairpersons: Dumitru Constantin, Vali Bohotin, Bogdan Florea
14:30-15:00	Dumitru Constantin: The rhythms of the brain and the rhythms of the nature
15:00-15:30	Cristina Panea: Neurological disorders with sleep alterations
15:30-16:00	Tudor Lupescu: Transcranial Magnetic Stimulation principles, mechanisms and clinical approaches
16:00-16.30	Valentin Bohotin: Motor area mapping by Transcranial Magnetic Stimulation; Technical considerations and clinical applications
16:30-17:00	Coffee Break, Pharmaceutical Companies Exhibition
17:00-18:30	**SCIENTIFIC SESSION**
	Chairpersons: Mihai Moldovan, Ayghiul Mujdaba-Elmi, Stefano Simonetti
17:00-17:30	Pierre Lozeron: Nerve conduction studies in presumed axonal neuropathies.
17:30-18:00	Stefano Simonetti: CIDP and related immune-mediated neuropathies.
18:00-18:10	Romanescu, M. Vasilescu, A. Nestianu, D. Georgescu, P. Badea, A Balseanu, V. Nestianu: Differences between force and endurance sportsmen evidentiated by SEMG analysis
18:10-18:20	J. Ciurea, A Rasina, Irina Ogrezeanu, Teodora Coman, C. Tancu, G. Lugoji, A. Barborica, B. Balanescu: Recording of deep cerebral micropotentials in Parkinson's disease surgery.
18:20-18:30	T. Lupescu, M. Bolog: Median nerve ecography.

SUNDAY, the 27th of September 2009

Mezzanine, Sala A - EMG SESSION

8:30 -10:30	**SCIENTIFIC SESSION**
	Chairpersons: Reinhard Dengler, Franssen Hessel, Pierre Bouche, Tudor Lupescu
8:30 - 9:00	Franssen Hessel: Electrophysiology of entrapment neuropathies for general neurologists.
9:00 - 9:30	Reinhard Dengler: The role of Clinical Neurophysiology in the Diagnosis of Motor Neuron Disease/ALS.
9:30-10:00	Pierre Bouche: Diagnosis and management of peroneal and ulnar nerve palsies.
10:00-10:30	Corinne Pottier: Chronic ataxic neuropathies - discussion about clinical cases and etiologic diagnostic.
10:30-11:00	Coffee Break, Pharmaceutical Companies Exhibition
11:00-13:00	**WORKSHOP** EMG, clinical cases (moderator: Tudor Lupescu)

Mezzanine, Sala "Ploiesti"

13.00-13:30	Driven tour posters session (moderators: Mihai Moldovan, Ioana Mindruta, Ayghiul Mujdaba-Elmi)

Mezzanine, Sala B - EEG and EP SESSION

8:30-10:30	**SCIENTIFIC SESSION**
	Chairpersons: Ioana Mindruta, Florin Amzica, Bogdan Florea
8:30 - 9:00	Sergiu Groppa: Transcranial magnetic stimulation in neurological practice and neurosciences.
9:00 - 9:30	Sandor Beniczky: Source analysis of epileptiform EEG discharges
9:30-10:00	Bogdan Florea: Quantitative EEG changes in migraine
10:00-10:30	Irina Ogrezeanu:
	A) Intraoperative electrocorticography for tailoring cortical resections in the treatment of medically intractable epilepsy.
	B) Vagus Nerve Stimulation principles, mechanisms and challenges Demonstration - courtesy of MTI Cyberonics.
10:30 - 11:00	Coffee Break, Pharmaceutical Companies Exhibition
11:00 - 13:00	**WORKSHOP** EEG, clinical cases (moderator: Ioana Mindruta).

Mezzanine, Sala "Ploiesti"

13.00 - 13:30	Driven tour posters session (moderators: Mihai Moldovan, Ioana Mindruta, Ayghiul Mujdaba-Elmi)
	Echipamentele din cursul demonstratiilor practice au fost puse la dispozitie prin grija companiilor SC ASCO 90 SRL si SC Medicomplex SRL, sponsori-parteneri ASNER.
13:30	Lunch - Foyer Hotel JW Marriott.

Mezzanine, Sala A

14:15	ASNER AWARDS 2009 for the best posters (Ioana Mindruta, Mihai Moldovan, Boehringer-Ingelheim delegate)
14:30	Closing of the National Conference 2009, followed by the General Assembly of the Romanian Society of Electrodiagnostic Neurophysiology members. (ASNER)

Prof. 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 - design 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 sleep 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.

Cellular bases of coma

Prof. Florin Amzica

Université de Montreal

This talk will present recent date concerning the cellular (neuronal as well as glial) behavior during anesthesia-induced coma. I will emphasize the relationship between cortical cells on the one hand, and field potentials and electroencephalogram (EEG) on the other hand. If loss of consciousness is initially associated with EEG waves similar to the ones recorded during sleep, deepening of anesthesia leads to specific patterns. One of them is called burst-suppression (BS) and is characterized by the alternation between groups of ample slow waves (the burst), and periods with isoelectric EEG (the suppression) (Swank & Watson, 1949). The BS pattern is common to comas of various etiologies (hypoxia, intoxications, hypothermia, childhood encephalopaties, anesthesia, etc.). Although extensively studied at the EEG level, little is known as to the cellular and ionic behavior during BS. Specifically, it is important to know whether bursts are spontaneous of triggered, and the mechanisms that impose their quasi-rhythmicity. In clinical practice, bursts are often associated with epileptic fits. Is there a base for claiming common mechanisms?

At the cortical level, EEG bursts are always associated with synaptic activities that depolarize neurons, while suppressions are due to the absence of any synaptic cortical activity (Steriade et al. 1994). Recently we have demonstrated that BS represents a distinct behavioral pattern during which the cortical networks are in a hyperexcitable state and bursts are triggered by subliminal stimuli (Kroeger & Amzica, 2007). The cortical hyperexcitability was demonstrated under various anesthetics ranging from those enhancing chloride-dependent inhibition (propofol, barbiturates) to those boosting the uptake of glutamate (isoflurane). In the latter case the hyperexcitability results from a reduction of the cortical inhibition accompanied by an increase in the extracellular chloride concentration, probably reflecting reduced GABAergic activities (Ferron et al. 2009). Thus, excitation dominates over inhibition during BS.
The duration of a burst is limited in time by the availability of the extracellular calcium, which progressively declines toward values that are incompatible with synaptic transmission. At this point the burst stops and is followed by a suppression period during which the extracellular calcium concentration is restored at normal levels. Once this is reached, any subliminal stimulus (extrinsic or intrinsic) suffices for triggering a new burst in the hyperexcitable cortex. This also justifies the quasi-periodic aspect of the BS pattern. The whole phenomenon is modulated by the general state of the nervous system, thus by the etiology and seriousness of the condition. As coma deepens, bursts become shorter while suppressions increase, evolving towards a continuous isoelectric line. The impairing of the cortical calcium homeostasis may be favored by the fact that isoflurane disrupts the blood-brain barrier during BS (Tétrault et al. 2008).

NOTES

Dr. Sandor BENICZKY

Dr. Sandor Beniczky, born on the 7th of May 1971, graduated "summa cum laudae" the Szent - Gyorgyi Albert Medical School, University of Szeged, Hungary, in 1997. He earned his PhD in 2004 with the disertation: "Functional consequences of basal ganglia pathologies."
He underwent his training in Neurology in Bekes County Hospital (1997-1999) and in the Neurology Department of the University of Szeged (1999-2002), becoming a Board Certificate Neurologist in 2002.
Dr. Beniczky was trained in Clinical Neurophysiology in Szeged, Copenhagen, Buffalo USA, Bergen (Norway), and is Specialist in Clinical Neurophysiology since 2006. Curently, he works as clinical neurophysiologist (consultant) at the Danish Epilepsy Centre, Dianalund, Denmark.
He won many awards at various meetings and conferences, such like the first prize at the lecture competition at the Annual Meeting of the Danish Epilepsy Society, 2008, the Kornyei prize granted by the University of Pecs, Hungary, in 2004, and the 2003 Award for Young Scientists, granted by the Hungarian Academy of Sciences.
He is author and co-author of many articles published in international neurology and neurophysiology journals.

Source analysis of epileptiform EEG discharges

Sándor Beniczky, M.D., Ph.D

Department of Clinical Neurophysiology
Danish Epilepsy Centre
Visbys Allé 5, 4293 Dianalund, Denmark

Digital EEG recording makes it possible to construct voltage-maps on the head. These data can be used to calculate the source of the electric signals in the brain. The classic source-analysis method (dipole-fitting) needed additional information (number and type of dipoles) that had to be introduced by the operator. As there was no objective way to determine these, a certain degree of subjectivity remained in the analysis. In addition dipole fitting could lead to erroneous results due to multiple local minima. More recent methods eliminate these problems. MUSIC (Multiple signal classification algorithm) is based on the decomposition of the data into the underlying components (the signal space). Distributed source models (LORETA, LAURA) are based on the reconstruction of the brain electric activity in each point of a 3D grid of solution points. Advantages and disadvantages of these methods will be presented, in a clinical setting with emphasis on the localisation of epileptiform EEG discharges.

NOTES

Dr. Valentin BOHOTIN

Valentin Bohotin, University of Medicine and Pharmacy, Iasi, Lecturer, Department of Neurology
E-mail: vbohotin@umfiasi.ro

Valentin Bohotin was born in September 1968 in Iasi. He graduated the University of Medicine in Iasi, became neurologist in 2001. In 2002 he earned the title of Master of Sciences of the Montreal University. In 2004 Dr. Bohotin earned a competence In Cerebral Doppler Ultrasonography. In 2007 he earned the title of PhD and in 2008 became Senior Neurologist. Member in different professional organizations in Romania and abroad, he was awarded for his thesis in Liege, Rome or New York.
Co-author of Oxford Handbook of Transcranial Stimulation. Eric Wassermann, Charles Epstein, Ulf Ziemann, Vincent Walsh, Tomás Paus, and Sarah Lisanby. (ISBN-13: 978-0-19-856892-6). Cap. 24 TMS in migraine. Jean Schoenen, Valentin Bohotin & Alain Maertens de Noordhout 2008
Co author of Neurology for Medical Students C.D. Popescu, PsihOmnia Publishing House 1998.

Mapping of motor area by using transcranial magnetic stimulation. Technical aspects and clinical applications

V. Bohotin, C. Bohotin, C.D. Popescu

University of Medicine and Pharmacy "Gr. T. Popa" Iasi

Functional organization of motor cortex is a permanent adapting cortical process at both physiological and pathological condition after certain brain aggression.
It is well known that cortical projection of the different muscle groups changes in physiological conditions (erg acquiring new motor acts - writing, singing to an instrument, riding a roller, etc) but also in certain pathological conditions such as immobilization of different limbs or impaired motor area consecutive of stroke, tumor, brain injury, etc. Representation of cortical motor area can be evaluated by functional imaging methods (functional magnetic resonance, positron emission tomography) and / or neurophysiological (magnetoencefalography, digital electroencephalography or transcranial magnetic stimulation).
Functional imaging techniques provide a good spatial resolution but lower temporal resolution and the costs are high. Neurophysiological methods provide a very good temporal resolution, a satisfactory spatial resolution and are generally less expensive

Transcranial magnetic stimulation technique used in neurology since 1985 enables non-invasive investigation of motor areas, especially for upper limb evaluation. The advantages of transcranial magnetic stimulation are: repeatability, good tolerance and low cost. The main disadvantages are the great interindividuals' variability and that the results depend on the examiner's experience. The appearance of new systems of neuro-navigation reduces the human error, but because of high cost and increase time of evaluation, use of these systems is almost exclusively in the research.
We'll be presented the data obtained in our clinic regarding evaluation of brain plasticity phenomena in physiological conditions (healthy volunteers) and pathological (patients with various brain disorders) and assessing the effectiveness of drugs or rehabilitation techniques (used in patients with different degrees of motor deficit) by transcranial magnetic stimulation.

NOTES

Prof. Dr. Pierre BOUCHE

Born: 15/03/1944 at Paris.
Actual position: Chief of the clinical neurophysiologic department at the Salpêtrière Hospital, Paris.

Diagnosis and management of peroneal and ulnar nerve palsies

P Bouche

Hôpital Salpêtrière. Paris. France.

Peroneal and ulnar nerve palsies are the most frequent mononeuropathies with the exception of median neuropathy at the carpal tunnel. In case of peroneal palsy, patients may be classified according to the course profile, the nature of the neuropathy: axonal or with conduction block and the causes. The electrophysiological examination is essential for the diagnosis and to evaluate the nature of the neuropathy. Patients with external compression due to a rapid weight loss and leg crossing have a good prognosis, mostly due to a reversible conduction block at the fibular head. Patients with compression due to coma, prolonged bed rest, surgery ... have a worse prognosis with usually an important axonal loss. Patients with a progressive course must be explored with imagery in order to detect a mass lesion, usually a cyst, sometimes mucoid. Surgery is indicated in these cases.

In case of ulnar palsy, the lesion is in most of the cases at the elbow, frequently due to compression in the ulnar tunnel. Electrophysiological examination is essential for the diagnosis and prognosis. Indication of surgical procedure is discussed according to the severity and cause of the neuropathy. The ulnar palsy at the wrist or in the hand is mostly due to a ganglion cyst either in the Guyon tunnel or in the hand. In some cases only the motor branch is involved. Imagery is essential to detect the cyst and surgery is indicated.

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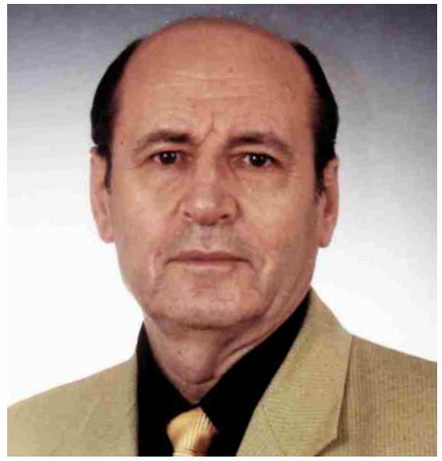
Prof. Dr. Dumitru CONSTANTIN



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.

The rhythms of the brain and the rhythms of the nature

Prof. Dr. Dumitru Constantin

The actual work proposes a different approach of RYTHMS concept as a fundamental property of the fenomena both micro-biological and natural in general. Some important examples are presented as rythmical manifestations of nature fenomena, which influence the human body or which are very similar with the biological intrinsec rythms. On the other hand, is analyzed the significance for the predictibility of the brain electric activity, considering the shape and express parameters.

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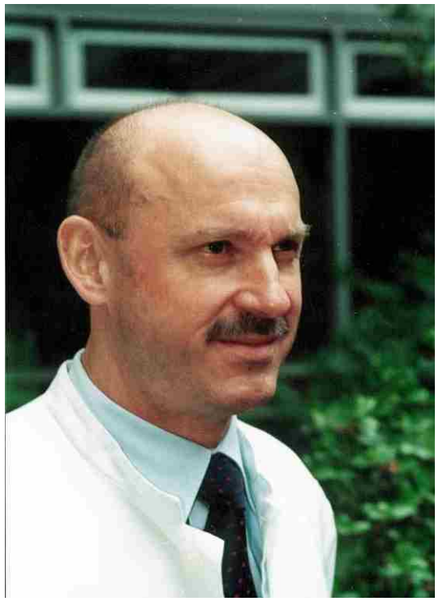

Prof. Dr. Reinhard DENGLER

Reinhard Dengler was born in Plattling, Germany, on the 12th of August, 1947.
He had important academic appointments throughout the years, i.e.: Lecturer in the Neurology Department of the Technival University in Munchen, betwwen 1983 and 1989, Professor of Neurology in the University of Bonn (1989-1992), and since 1992, Professor of Neurology and Director of the Neurology Department at Hannover Medical School. Between 1999 and 2004 he also functioned as Medical Director and Member of the Board of Directors at the above mentioned medical institution.
He is member of many professional associations, such as the German Society of Neurology, German Society of Clinical Neurophysiology, German Society of Muscle Diseases, European Neurological Society,Movement Disorders Society, AANEM, etc.
Professor Dengler is in the Executive Board of the German Society of Clinical Neurophysiology, German Society of Muscle Diseases, and of the IFCN - secretary, and from 2010 - treasurer).
Regarding the editorial activities, Professor Dengler is editor of "Klinische Neurophysiologie", associate editor of "Amyotrophic Lateral Sclerosis", member in the editorial boards of "Muscle and Nerve", and "Clinical Neurophysiology".
In 2005 he was awarded the "Theophile Gluge" Prize of the Academie Royale des Sciences de Belgique.
His major research interests are: clinical and experimental neurophysiology, neurodegenerative disorders, Motor Neuron Disease, motor and cognitive dysfunction, emotional communication.

The role of Clinical Neurophysiology in the Diagnosis of Motor Neuron Disease/ALS.

Reinhard Dengler

Department of Neurology, Hannover Medical School; Carl-Neuberg-Str. 1, D-20635 Hannover;
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The gold standard of ALS-Diagnosis are the recently revised El-Escorial-Criteria which appreciate the diagnostic role of EMG although EMG findings are not regarded equivalent to clinical findings. Therefore a group of experts in both EMG and ALS met in December 2006 in Awaji Island, Japan, and developed new views of the role of clinical-neurophysiological studies in the diagnosis of der ALS (summary in Dengler 2008).
The importance of conventional Electromyography and Electroneurography was confirmed. In addition, it was requested that signs of denervation in EMG should be regarded equivalent to clinical changes in the decision whether a given muscle is affected by the disease even if it appears clinically normal.
Furthermore it was recommended that fasciculation potentials, if seen in the clinical context of ALS, should be regarded as signs of denervation similarly to positive waves and fibrillations. The special diagnostic usefulness of unstable potentials of motor units was underlined.
These considerations would render the diagnostic category of „laboratory supported probable ALS" unnecessary. An assessment of these criteria with regard to changes in sensitivity and specificity of ALS-diagnosis in comparison with the revised El-Escorial-Criteria appears desirable.
The Awaji group did not yet come to an agreement on the role of clinical neurophysiology in detection of upper motor neuron involvement in ALS. Although conventional transcranial magnetic stimulation was regarded not sensitive enough its variant "triple stimulation technique" may have a great diagnostic potential.
Reference: Dengler R. New considerations on the clinical-neurophysiological diagnosis of ALS. The „Awaji-Criteria". Klinische Neurophysiologie 2008; 39: 164-168

NOTES

Dr. 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. Clinical neurophysiology fellowships in Italy Modena and Bologna, 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 also vortex magnetic fields effects on biological systems, neural networks, neuroplasticity.
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 as the Romanian Society of Neurology, European Neurological Societies and founder member of the Society for the Study of Neuroprotection and Neuroplasticity, where acts as Medical Programs Coordinator since 2007. Since 2009 he is the secretary of the Romanian Society of Electrodiagnostic Neurophysiology - ASNER.

Quantitative EEG changes in migraine.

Bogdan Florea MD

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The EEG abnormalities in patients with migraine have been described since 1940. The particular answer of the occipital cortex during the intermittent photic stimulation could make the difference between the migraine patients and patients with other types of headaches. Material and methods: 29 patient of control group, 27 patients with non-migraine headache and 18 patients with genuine migraine were registered, with Intermittent Photic Stimulation at 22 flash / s. Results: Total Power, Absolute Alfa Power and Alfa Space Diffusion were calculated and offer helpful supplementary data in migraine patients. The total score and the spatial graphic map show the Absolute Power increase in 88,8% of the genuine migraine patients compared with 31,03% of the control group patients. Absolute Alfa band power increases in 83,33% of the genuine migraine patients compared with 7,4% increase on patients with non-migraine headache and compared with 13,8% of the control group. Conclusions: The quantitative EEG proves to be very valuable especially when clinical examination is poor; simple protocol with intermittent photic stimulation on 22 Hz during registration could offer the possibility to differentiate the genuine migraine and the non-migraine headache.

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Prof. Dr. Hessel FRANSSEN

Hessel Franssen attended medical school in Leiden, the oldest university in the Netherlands. His training for Neurology and Clinical Neurophysiology was at a large non-academic hospital in the Hague. Following his training he was clinical neurologist in a small non-academic practice in Utrecht. In 1986 he defended his PhD thesis on cortical regulation of eye movements in the Catholic University of Nijmegen, The Netherlands.
Since 1987 he is associate professor Neurology and Clinical Neurophysiology at the University Hospital Utrecht, The Netherlands. He specialised in neuromuscular diseases and is currently responsible for electromyography in patients neuromuscular disorders and for the electrophysiological training of residents Neurology.
He was president of the Dutch Society for Clinical Neurophysiology and was instigator and a founder of the Dutch Clinical Neurophysiology Days, a yearly recurring teaching and scientific event.
He has written papers on criteria for demyelination and conduction block, temperature and nerve conduction, clinical value of electrodiagnostic studies, chronic idiopathic axonal neuropathy, multifocal motor neuropathy, chronic inflammatory demyelinating polyneuropathy and paraproteinaemic neuropathies. His research interests include mechanisms of axonal degeneration, computer simulation of axon Schwann cell interaction and ion channels.

Electrophysiology of entrapment neuropathies for general neurologists

Hessel Franssen, MD, PhD

Department of Neurology, Section Neuromuscular Diseases,
University Medical Center Utrecht, The Netherlands.

Technique. The emphasis of this contribution is on validated tests. For conduction studies (NCS), surface electrodes should be used for stimulation and recording. Sensory NCS should be antidromic as orthodromic tests of hand nerves are very painful. Most importantly, electrical stimulation with surface electrodes requires the same careful technique at each stimulation point: (i) place the cathode where the nerve most likely is, (ii) starting at 0mA, increase stimulus current in small steps, e.g., 5mA, until at current X a small response appears, (iii) displace the cathode a few mm lateral and perpendicular to the nerve and stimulate again with current X; repeat this with the cathode a few mm medial to the nerve; (iv) the site where current X gives the largest response is then used for supramaximal stimulation, (v) with supramaximal stimulation, sensory nerve action potentials (SNAPs) usually contain more artifacts and become smaller; the best SNAPs are obtained when stimulation is just about maximal.
Criteria for compression. (i) Conduction block or conduction velocity compatible with demyelination in the affected segment. (ii) Focal latency step or amplitude drop on inching. (iii) Increased latency difference with respect to a normal nerve. (iv) a decreased SNAP localizes the lesion in a peripheral nerve rather than in a root. (iv) Needle EMG abnormality of all muscles innervated by branches distal to the suspected lesion.
Carpal tunnel syndrome. Tests include: (i) sensory NCS with recording from the 3rd digit and median nerve stimulation in the palm and wrist; (ii) sensory NCS with recording from the 4th digit and stimulation of the median and ulnar nerve at the wrist; (iii) sensory NCS with recording from the 1st digit and stimulation of the median and radial nerve at the wrist. Clinical tests for nerve compression, sensory NCS to the 2nd digit, left-right comparison, and needle EMG of the thenar muscle have no value.
Ulnar neuropathy. Tests include: (i) motor NCS to the hypothenar and first dorsal interosseus muscle with stimulation at the wrist, 3-5cm distal to the elbow, and 5cm proximal to the elbow; (ii) inching over the elbow; (iii) SNAP from the 5th digit; (iv) needle EMG of the hypothenar, first dorsal interosseus, and flexor carpi ulnaris muscles. These tests may distinguish compression at the sulcus, forearm, Guyon's canal, and palm.
Peroneal neuropathy. Tests include: (i) motor NCS to the extensor digitorum brevis and tibialis anterior muscles with stimulation at the ankle, just distal and just proximal to the fibular head; (ii) inching over the fibular head; (iii) superficial peroneal nerve SNAP.
Radial neuropathy. Tests include: (i) needle EMG of radial nerve innervated muscles; (ii) radial nerve SNAP; (iii) motor NCS up to Erb's point with recording from the extensor carpi ulnaris muscle. These tests may distinguish compression at the humeral head, upper arm, and supinator canal.
Tarsal tunnel syndrome. No suitable electrodiagnostic tests exist. Ultrasound may become the method of choice.

NOTES

Dr. Med. Sergiu GROPPA

Dr. Med. Sergiu Groppa, born in Chisinau, Moldavia received his medical education in two prestigious medical universities in Germany, Friedrich-Wilhelms-University in Bonn (2000 - 2003), and Christian-Albrechts-Universität in Kiel (2003 - 2007). In May 2007 he passed the German Bard Examinatin and since June 2007 he works as Resident for Neurology/Research fellow in the Neurology Clinic at the University of Kiel, under the guidance of Prof. Dr. G. Deuschl.
In 2008 Dr Sergiu Groppa sustained with “magna cum laudae”, his MD-Thesis (Dr. med.), "Excitability of the Motor Cortex in Photosensitive Subjects With and Without Idiopathic Generalized Epilepsy".
Dr Sergiu Groppa is specialized in epilepsy, movement disorders and clinical neurophysiology, and shows a particular scientific interest in neural networks, neuroplasticity, transcranial magnetic stimulation and structural imaging.
He is author and co-author of many original articles and review articles in medical journals and textbooks.

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Transcranial magnetic stimulation in neurological practice and neurosciences

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Transcranial magnetic stimulation (TMS) has been used in research (e.g. brain mapping), diagnostics (integrity of motor and sensory nerve pathways) and clinical treatment of various diseases (Parkinson's, Depressions, Stroke) for the last two decades. The underlying mechanisms of the stimulation relies on the electro-magnetic coupling of the stimulated tissues with the induced fields. This overview will present information on the stimulation techniques and parameters used in clinical routine and scientific approaches.
Single pulse TMS can be applied to study of the integrity of cortico-spinal tracts (study of muscle evoked potentials, MEP or central motor latency, CML) as well as a tool for characterisation the inhibitory circuits (cortical silent period, CSP). Double pulse paradigms are well established to study the inhibitory (i.e. short latency cortical inhibition, SICI) and excitatory (i.e. short latency cortical facilitation, ICF) networks. Similar double pulse paradigms can be use in a multi-focal stimulation approach for probing cortical connectivity. The method of interhemispheric inhibition (IHI) will be presented as a distinct example for interaction of different cortical areas studied by TMS. Premotor-to-motor paradigms and own studies on intra-hemispheric connectivity will complement the methodological use of TMS in mapping studies.
Moreover repetitive TMS will be introduced as a tool to induce temporary alterations in the excitability of the brain in healthy subjects and patients with neurological pathologies. Several studies on reorganisation and plasticity changes in the healthy motor system will be presented and discussed in term of modulation of adaptive mechanisms after injury such as ischaemic stroke or Parkinson's disease.
Through a combination of different neuroscience tools a better temporal and spatial characterisation of the brain function can be achieved. A synergetic use of TMS with EEG or TMS and neuroimaging techniques allows us a direct induction of local or systemic perturbations in distinct brain areas that can be tracked and characterised at a very fine topographic level. By a combination of TMS with neuronavigation a precise targeting of the brain area is possible. Issues on simultaneous use of TMS and above mentioned neurophysiologic tools will be presented.
An accurate and well skilled use of TMS assure a safe and large range of diagnostic and scientific potential. Good planed and hypotheses driven studies are advisable for a proper interpretation of the achieved results.

NOTES

Prof. Dr. Christian KRARUP

Christian Krarup, M.D. D.M.Sc., F.R.C.P.
Department of Clinical Neurophysiology,
National Hospital, Rigshospitalet,
9 Blegdamsvej, 2100 Copenhagen, Denmark

Academic appointments:
Starting as instructor in Anatomy and Physiology, University of Copenhagen in 1974, Professor Krarup stepped on different academic positions, Assistant Professor, then Associate Professor of Neurology, Harvard Medical School, Research Associate, Massachusetts Institute of Technology (MIT), Cambridge, MA, USA, Professor of Neuromuscular Physiology and Chairman, Department of Clinical Neurophysiology, Rigshospitalet, Copenhagen, Denmark, Visiting Professor of Surgery/Neurosurgery (Neuroscience) Duke University, Durham, NC, USA, Professor of Clinical Neurophysiology, University of Copenhagen, Copenhagen, Denmark

Awards and Honors:
1978 - First Prize for research proposal, Muscular Dystrophy Group of Denmark
1988 - Annual Prize of the Polio Foundation of Denmark
1991 - Elected member (corresponding) of the American Neurological Association (ANA)
1999 - Muusfeldt-prize for research in Electrophysiology
2003 - President of the European Neurological Society
2003 - Honourary Fellow of the Royal College of Physicians London (FRCP)

Administrative Responsibilities:
Director of Clinical Neurophysiology, Medical Director of EMG, Brigham and Women's Hospital.
Head of the Department of Clinical Neurophysiology, University Hospital, Rigshospitalet, Copenhagen, Denmark.
Serving on the board (secretary) of the "Foundation for Neurological Research" (the Mogens Fog Foundation).
Editorial board member of Muscle Nerve, Eur J Neurol, J Neurol (1994 - 2001). Ad Hoc reviewer for neurological and basic research journals (incl. Brain, J Neurol Neurosurg Psychiatry, J Physiol, Clin Neurophysiol, Diabetes, J. Gen. Physiol., J. Neurosci, J. Oncology).
Publications - Articles, proceedings, chapters 97, abstracts 125

Electromyography (EMG) as a tool in the investigation of neurogenic weakness or myopathy

C. Krarup

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Differentiation between neurogenic weakness and myopathy can be complicated in motor neuron disease, motor neuropathy, certain types of muscular dystrophy, inclusion body myositis, polymyositis and neuromuscular transmission disorders. EMG is considered a helpful tool in the differential diagnosis but it should be borne in mind that several EMG abnormalities are non-specific, i.e. the abnormality may be present in both myopathy and neurogenic disorders. In most instances it is therefore necessary to obtain several criteria to arrive at the most precise diagnosis. In this presentation it is the aim, 1) to discuss the methodology of recording EMG, 2) to present mechanisms for the pathophysiological changes, and 3) to discuss the diagnostic criteria of the EMG.
The conventional, routine EMG is carried out using concentric or monopolar needle electrodes, although the potentials differ considerably due to recording characteristics. The potentials are amplified at 2 (or 20) Hz-10 kHz frequency cut-off. The concentric EMG-electrode consists of a cannula within which is placed an insulated recording wire with a bared tip of 0.07 mm2, and they are connected to the differential amplifier. The muscle action potential is recorded from the wire referenced to the cannula, such that the spiky part of the potential is recorded from the few muscle fibers closest to the electrode. In special instances potentials are recorded using an even smaller electrode (single fiber EMG), and in other instances the aim is to record from the whole motor unit using a large electrode (macro EMG).
In conventional EMG, the studies are carried out at rest (to record spontaneous activity), at weak effort (to record motor unit potentials, MUPs), and at maximal effort (MVC to record the recruitment pattern). This allows analysis of single MUPs to distinguish pathological changes. In addition, EMG is carried out in some settings at submaximal effort to quantitatively analyze the interference patter (turns-amplitude analysis).
Some spontaneous activity occurs in normal muscle due to end-plate potentials. At denervation of muscle fibers fibrillation activity and positive sharp waves from individual muscle fibers occur with variable frequency. MUPs represent the compound potential from all fibers in the motor unit, and their characteristics vary within the individual muscle, between muscles and according to the age of the subject. Hence, MUPs must be recorded at several sites to ascertain whether the muscle is abnormal. Most EMG machines now have tools to isolate and measure MUPs allowing quantitative evaluation. The pattern at MVC shows full interference in normal muscle; however, care should be taken to evaluate whether the patient exerts maximal or submaximal effort. Denervation activity occurs in neurogenic disorders but they are also present in several types of myopathy. MUPs are enlarged with prolonged duration and increased amplitude in neurogenic disorders representing reinnervation and collateral sprouting during chronic partial denervation. The MVC demonstrates reduced or discrete recruitment in neurogenic lesions due to loss of motor units. It should be considered that the development of denervation and of MUP changes is time dependent, whereas changes in MVC also occur in acute lesions. In myopathy muscle fibers are lost or blocked, and accordingly the MUPs are reduced in duration and sometimes in amplitude. The MVC typically shows full recruitment pattern with reduced amplitude.

NOTES

Dr. Pierre LOZERON

Pierre Lozeron was born on the 23rd of June 1967.
He graduated the Medical University in Paris, 1993. Between 1993 and 1999 he trained to become specialist in Neurology, completing this task with a medical thesis, the topic of which was: "Heterogeneity of neuropathies in diabetic patients", under the guidance of Prof G Said. Also in 1993 Pierre Lozeron earned a Masters Degree in Immunology, later in 1997 a Postgraduate Degree in Immunology, and also a Certificate in Neuropsychology.
Between 2001 and 2005 he worked on a post graduate position as neurologist at Bicetre Hospital, in the Neurology Department led by Prof Said, and since 2005 as Consultant Neurologist in the same place.
He worked in research together with important personalities in the field of Clinical Neurophysiology (Prof Krarup, Prof Schmallbruch) and Immunology (Prof Bach).
Dr Lozeron is the author of many articles printed in neurological journals, and of many presentations at international conferences and congresses. He is also member of the Editorial Board of the Journal of Neurology.

Nerve conduction studies in presumed axonal neuropathies

Pierre Lozeron

Nerve conduction study is an essential part of the evaluation of peripheral neuropathies. Its primarily allows distinction between axonal and demyelinating neuropathies or the longitudinal monitoring of disease with multiple studies.
An axonal neuropathy in sometimes highly suspected on clinical grounds especially in front of a length dependant sensory peripheral neuropathy or a mononeuritis multiplex. In such situations one can argue that nerve conduction studies are of limited value. Furthermore, it is now recognised that nerve conduction studies are not mandatory in diabetic patients with typical diabetic polyneuropathy.
However, in numerous cases a comprehensive diagnostic procedure based on NCS or histology can lead in such patients to other diagnosis such as demyelinating neuropathies.
On the other hand, in neuropathic patterns such as amyloïdosis recognised as primarily axonal in type misleading nerve conduction results can lead to other diagnosis and delayed appropriate treatments.

NOTES

Dr. Tudor Dimitrie LUPESCU

Tudor Dimitrie Lupescu was born on the 21th of March 1964 in Bucharest. He attended the Carol Davila Medicine University in Bucharest, and graduated in 1989.
In 1992 he began his training in Neurology at Colentina Hospital in 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 shown 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, and 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 the secretary of the Romanian Society of Clinical Neurophysiology, and since 2008 - President of the Romanian Society of Electrodiagnostic Neurophysiology : ASNER.
Starting with 2008 Dr. Tudor Dimitrie Lupescu is also a member of the Subcommittee for Neurophysiology of the European Neurological Societies.
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 - principles, mechanisms, clinical approaches.

Tudor Lupescu

Neurology Department, Agrippa Ionescu Hospital, Bucharest

Transcranial magnetic stimulation has become in the latest years a very important diagnostic tool that evaluates the functional state of the central nervous system. Furthermore it has therapeutical properties, first observed in patients with depression, but also in neurorehabilitation. The aim of this presentation is to introduce the basic physical and biological principles that underlie this method, the neural mechanisms involved in the appearance of the motor evoked potentials and clinical situations where this investigation provides relevant informations.

Median nerve echography

T. Lupescu, Mihaela Bolog

Agrippa Ionescu Hospital, Bucharest

Peripheral nerve ultrasonography can be valuable aid in the diagnosis of some compression neuropathies, completing the functional informations provided by the neurophysiological examination. We present in this short report some images that show alterations of median nerve imaging with ultrasounds in carpal tunnel syndrome.

NOTES

Dr. 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. 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.

Conduction and excitability studies in peripheral nerve degeneration and regeneration

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Extended Abstract (401 words /500 max)
Nerve conduction studies are routine electrodiagnostic procedures used to measure by supramaximal electrical stimulation of the nerve trunk, the conduction velocity and amplitudes of compound motor (CMAP) and sensory (SNAP) responses of the sub-population of large myelinated fibers that are able to propagate action potentials. Timing and interpretation of conduction studies should account for the ability of the injured peripheral axons to degenerate and regenerate, both in context of complete lesions and partial lesions.
Injury of peripheral axons occurs in various pathogenic conditions ranging from mechanical loss of axonal continuity to energy deficiency. The axonal segment distal to injury undergoes Wallerian degeneration in several phases. In the initial 'latent' phase that could extend over several days, action potential propagation and structural integrity of the distal segment are maintained challenging the electrodiagnosis of acute axonal injury. Following Wallerian degeneration, peripheral myelinated axons have the ability to regenerate and, given a proper pathway, establish functional connections with targets. Conduction velocity of regenerated axons recovers slowly and only incomplete over several years, however, this conduction slowing should be distinguished from that observed during other pathogenic conditions such as acquired demyelination. Furthermore, CMAP amplitude could eventually be restored in spite of motor unit loss, due to enlargement of motor units by collateral sprouting, a process that could also be observed during chronic partial denervation.
In recent years, nerve excitability studies by threshold-tracking were developed as electrodiagnostic procedures complementary to conduction studies. By investigating the changes in submaximal stimulation current required to evoke a threshold CMAP or SNAP response, these methods provide a non-invasive insight into the function of voltage-dependent ion channels and pups present at the node of Ranvier and under the myelin. Using excitability studies in patients and animal injury models, we found that ion channel dysfunction may precede loss of axonal conduction during Wallerian degeneration and that membrane function of regenerated axons remains persistently abnormal indicating that axonal regeneration should be regarded as an acquired channelopathy. Further development of nerve excitability testing methods is expected to generate clinically relevant biomarkers of axonal dysfunction and identify new therapeutic targets in peripheral nerve disorders.

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NOTES

Prof. Dr. Valeriu NESTIANU

Valeriu Nestianu, born on the 3rd of December 1926 graduated the Medicine University in Bucharest in 1951. 1972 he became Ph D. He underwent many courses in electroencephalography and clinical neurophysiology in Moscow, Sankt Petersburg, Salzburg, Berlin, Stockholm, Basel, Milano, Budapest, Belgrad, Barcelona. He worked as an intern in endocrinology and neurology (1950), researcher at the Neurology Institute of the Romanian Academy (1951), principal researcher (1953); head of the Physiology Department at the Medical University in Craiova (1970 - 1997), Professor since 1979, advisor for the National Council of Scientific Research (1966-1968).
Author of 785 scientific papers, 230 of these articles were published in romanian and foreign journals. He performed scietific research in Physiology, Electroneurophysiology, Epilepsy, Neuropharmacology, Neuroendocrinology.
Prof. Nestianu performed the first multichannel EEG recording in 1952, he had important contributions in electromyography, evoked potentials in cats, EEG Mapping.
He is member of the Academy of Medical Sciences, IBRO (International Brain Research Organization). He was President of the Medical Informatics Committee of the Romanian Academy between 1991-1997, member of IFSCN (International Federation Society for EEG and Clinical Neurophysiology).

Mathematical analysis of surface electromyogram in characterization of muscular fatigue (Report)

F. Romanescu, P. Badea, A. Nestianu, D. Georgescu, GL., Popescu, V. Nestianu

UMF Craiova, Romania

The mathematical processing of surface electromyogram (SEMG) on 2 channels of the same muscles in effort resulted in 45 parameters and 9 indices.
Each parameter was reduced to a straight regression of the values obtained during repeated maximal contractions until exhaustion, which has a fair value initial intercept and a slope change (slope).
After statistical processing of the intercepts, slopes, and the 9 indicators of each parameter, were obtained high statistic characteristic differences between provided lots of different subjects such as: youth elderly; unsportsmanlike - the same age athletes; athletes effort of resistance strength; joint ankylosis patients with rheumatism, orthopedic, etc.. and even some neurological diseases involving muscle activity; and between right hand and left hand.

These differences between our groups have indicated precisely the speed of installation of muscle fatigue, the predominant activity of red or white fibers, the evolution of synchronization between the 2 channels, the cross-correlation and an index indicating the original size of the relationship between electrical activity (frequency) and strength of contractions.

NOTES

Conf. Dr. Cristina-Aura PANEA

Cristina - Aura PANEA, Associate Professor,
Medicine and Farmacy University "Carol Davila"; Neurology Department, Elias University Emergency Hospital Head of the Department
After the graduate of Medicine and Farmacy University "Carol Davila" in 1986, Dr. Cristina PANEA became resident in Neurology and later on, specialist in Neurology. Certified in Neurophysiology and Pain therapy, with the PhD thesis "The role of the polisomnography in the neurological disorders diagnostic" - Magna cum Laudae, is the author and co-author of more than 150 papers, reports and scientific oral presentations.
Under her lead, the Neurology department is involved in several research contracts: 18 finalised, 4 undergoing.
Activ Member in the following scientific societies:
European Society of Neurology
Movement Disorders Society
American Academy of Neurology
Romanian Neurological Society: founding member, former treasurer
Romanian Stroke National Association
Romanian Society for Pain Study: founding member and member of the Society's National Council

Neurological disorders with sleep alterations

Cristina Panea, MD, PhD

Elias Emergency University Hospital, Bucharest

Any pathologic alterations of the brain structures will have a profound effect on sleep and wake mechanisms because the structures that intervene more directly in the generation of sleep and wakefulness are the pons, midbrain, hypothalamus, thalamus and cortex, which serve as a target organ. Any neurological disorder, such as stroke, epilepsy, neurodegenerative diseases, trauma or tumor, can disrupt / change the normal sleep and modifies usual clinical manifestation. In such conditions it is important for neurologist to perform a sleep study.
Polysomnography (PSG), also known as a sleep study, is a multi-parametric test used in the study of sleep and as a diagnostic tool in sleep medicine. The test result is called a polysomnogram.
Polysomnography is a comprehensive recording of the biophysiological changes that occur during sleep. It is usually performed at night, when most people sleep, though some labs can accommodate shift workers and people with circadian rhythm sleep disorders and do the test at other times of day. The PSG monitors many body functions including brain (EEG), eye movements (EOG), muscle activity or skeletal muscle activation (EMG), heart rhythm (ECG) during sleep, breathing functions respiratory airflow and respiratory effort, peripheral pulse oximetry.
Polysomnography is used to diagnose, or rule out, many types of sleep disorders including narcolepsy, restless legs syndrome, REM behavior disorder, parasomnias, and sleep apnea. It is often ordered for patients with complaints of daytime fatigue or sleepiness that may be caused by interrupted sleep. Although it is not directly useful in diagnosing circadian rhythm sleep disorders, it may be used to rule out other sleep disorders.
The presentation will provide the diagnostic tools in neurological sleep disorders using PSG method.

NOTES

Dr. Corinne POTTIER

Born in Rouen, France, Dr. Pottier graduated the Medical School in Rouen and Broussais Hôtel-Dieu, Paris, became Master of Medicine and Biological Sciences and Pierre et Marie Curie University of Paris. Involved in neuroscience research, she obtained the post-graduate degree in Neurophysiology Clinical Investigation.

Current position:
Neurologist, Assistant Professor, providing patient care, thrombolysis, electromyography, teaching and consulting in the Department of Neurology of Pontoise Hospital and in Pitié-Salpêtrière Hospital, Department of Neurophysiology (France)

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Chronic ataxic neuropathies: discussion about clinical cases and etiologic diagnostic

Corinne Pottier, MD, Neurologist

The main causes of chronic ataxic neuropathies are ganglionopathies, characterized by degeneration of peripheral sensory neurons in dorsal root ganglia. Among ganglionopathies, acquired causes are the most frequent with Goujerot Sjogren syndrome and others dysimmune diseases and, paraneoplasic syndroms. Genetic causes as Friedreich diseases, Spinocerebellar atrophies and POLG mutations are less frequent. The third cause is idiopathic.
Dysimmune neuropathies are a common cause of ataxia but very often associated with a motor deficit. Chronic inflammatory demyelinated polyradiculoneuropathy (CIDP), in particular, some sensitive forms with ataxia could be a cause in which demyelinisation could be proximal and distal sensory potentials are normal. Anti MAG neuropathies have an electrophysiologic pattern of distal demyelinisation, clinic could be non evident and it exists a frequent treatment resistance.
A third group of patients have a chronic ataxia and have a neuropathy non demyelinated non neuronopathy. It is very difficult to find the cause and to find an efficient treatment.
Through clinical and electromyographic observations, we propose to discuss these etiologies.

NOTES

Dr. Dan PSATTA

D. M. Psatta MD, PhD: Cercetator Stiintific principal gr I. A lucrat pana in 1995 in Institutul de Neurologie al Academiei Romane, apoi, ca Sef de Laborator, in Centrul de Neurostiinte din cadrul Spitalului Colentina. A elaborat 128 lucrari stiintifice originale, bazate pe studii de neurofiziologie experimentala si clinica si un curs de Neurofiziologie Aplicata. Este Doctor in Medicina (cu teza „Diferente functionale intre Hipocampul Dorsal si Ventral") si Laureat al premiului Gheorghe Marinescu al Academiei. Intre 1990 si 2002 a fost Presedintele Societatii Romane de Neurofiziologie Clinica.

Monopolar and source derivation recording of Auditory Evoked Potentials

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Conferinta reliefeaza importanta majora a determinarii generatorilor sursa ai componentelor potentialelor evocate, pentru utilizarea lor ulterioara in studiul functiilor creierului, sau al localizarii leziunilor cerebrale. Investigatia este relativ mai usoara in cazul potentialelor vizuale decat al celor auditive. Singurele componente PEA care au generatori bine stabiliti sunt cele de trunchi cerebral (I V). Componentele VI, VII au o origine inca incerta. Dintre componentele de latenta medie mai bine studiat este numai potentialul miogen (Po-Na-Pa). Componentele auditive sunt rareori exploatate si recunoscute. Componentele considerate tardive (N1, N2) sunt slab definite din punct de vedere functional si anatomic. Mult studiata este componenta P3 (P300).
Studiul morfologic al PEA se poate efectua pe inregistrari de potentilale medii obtinute in derivatia din sursa sau in monopolar. Se considera ca pentru inregistrarea monopolara studiul potentialului obtinut dela vertex (cu referinta la lobul urechii corespunzatoare stimularii) este suficient si reprezentativ, iradierea prin volum conductie a raspunsurilor fiind ubicuitara (cu deosebiri nesemnificative). Generatorii acestui tip de raspuns pot fi stabiliti prin corelatie electro-clinica, la subiectii cu leziuni cerebrale constituite (asociata la investigatia RMN). Al doilea tip de investigatie se bazeaza pe examenul Mapping de amplitudine PEA. Se arata ca acesta nu este relevant decat in cazul inregistrarilor din Sursa. Se descrie metoda proprie a laboratorului constand dintr-un program bazat pe autoregresie.
Din coroborarea celor doua metode se ajunge la urmatoarea ordine a generatorilor PEA: a) Componentele timpurii: I Nerv acustic, II - Nuclei cochleari, III Oliva pontina, IV Nucleul lemniscului lateral, V Colicului inferior, VI Talamus (CGM), VII Radiatia talamica. b) Componentele medii: Po-Na-Pa raspuns miogen modulat vestibular, N16, N25, N50 componente auditive ale cortexului temporal dispuse antero-posterior. Componentele tardive: N1 origine incerta, posibil miogena. N2 unda bifida constand dintr-o componenta N150 cu generator reticulat, si o componenta N220-P300 generata in Lobul Temporal (Hipocamp). Componenta N400 are, in proiectia Mapping, o origine frontala.

NOTES

Dr. Stefano SIMONETTI

Dr. Stefano Simonetti was born in Genoa, Italy, on the 14th of April 1961. He obtained a Degree in Medicine and Surgery at Genoa University in 1985, and 4 years later he became a specialist in Neurology at the same university. In 1992 Dr Simonetti earned the title of specialist in Neurophysiopathology. He worked as Assistant Neurologist at the Neurological Division of Galliera Hospital, Genoa, from 1991 to 1992, as Assistant Neurophysiologist, Research Associate and Senior Registrar at the Department of Clinical Neurophysiology "Rigshospitalet" University Hospital in Copenhagen, from 1996 to 1997, and as Director of the Department of Neurophysiopathology at Galliera Hospital, Genoa, between 2002 and 2008.
Currently, Dr Simonetti is Responsble of Neurophysiology Unit at Clinica Villa Montenegro, Genoa.
Dr Stefano Simonetti is author and co-author of numerous scientific articles and chapters dealing with neurological and neurophysiological subjects, and also speaker, organizer and coordinator of several neurological and neurophysiological meetings.

CIDP and related immune-mediated neuropathies

Dr Stefano Simonetti

Chronic inflammatory demyelinating polyneuropathy (CIDP) is an immune-mediated neuropathy defined by the occurrence of symmetrical weakness in both proximal and distal muscles that progressively increases for more than two months. The condition is associated with impaired sensation, diminished or absent tendon reflexes, raised cerebrospinal fluid proteins, and signs of demyelination in nerve-conduction studies and nerve-biopsy samples. The course can be relapsing or chronic progressive.
The first line, equally effective, treatments for CIDP consist of intravenous immunoglobulins (IVIg), plasma exchange (PE), and corticosteroids.
Since the initial description of CIDP by Austin in 1958, variations in the classic clinical presentation have been described.
These variants have distinctive clinical features related to the site of nerve pathology and association with specific antibodies, and distinct response to specific immunotherapies, thus suggesting different pathogenetic mechanisms.
A possible variant called multifocal acquired demyelinating sensory and motor neuropathy with conduction block (MADSAM) was described in 1982 by Lewis, Sumner and colleagues.
In this variant, sensorimotor involvement asymmetrically affects the distribution of individual nerves, and persistent conduction blocks are found on nerve conduction studies. Over time, MADSAM can evolve into a symmetric neuropathy that may be indistinguishable from CIDP. Furthermore, the response to immune-mediated treatment is similar to CIDP and it is therefore likely that MADSAM and CIDP are closely related diseases.

A purely motor variant with conduction blocks asymmetrically confined to motor axons mainly of the upper limbs, has been successively depicted during the 1980s. This progressive disorder, associated with anti-GM1 antibodies in 30-60% of patients, was termed multifocal motor neuropathy with conduction block (MMN).
MMN does not respond to steroids and PE but may respond to IVIg and cyclophosphamide, and, thus, must be distinguished by motor neuron diseases.
Demyelinating polyneuropathy associated with IgM monoclonal gammopathy with antibodies against myelin-associated glycoprotein (MAG) is another variant who has a distinctive clinical phenotype consisting of distal, chronic, progressive, symmetric demyelination predominantly of sensory axons.
Despite the evidence of an autoimmune mechanisms underlying this disease and a causative link between anti-MAG antibodies and the neuropathy, all the commonly available immunotherapies are modestly and transiently effective.
The efficacy of Rituximab, a genetically engineered chimeric murine/human monoclonal antibody directed against the B-cell surface membrane marker CD20, has been suggested by uncontrolled small series, and, very recently, by a randomized, controlled trial (Dalakas et al. 2009).
We report our experience of Rituximab on seven cases with neuropathy associated to IgM monoclonal gammopathy of uncertain significance (MGUS) and anti-MAG antibodies.
All the 7 patients had progressive sensorimotor polyneuropathies and previous ineffective treatments with various combination of IVIg, PE, prednisone, and cytotoxic drugs.
Quantitative assessment included modified Rankin disability score, MRC strength score, four limb sensory score, electrodiagnostic studies and autoantibodies serum concentration.
All the seven patients noted a subjective improvement within 3 months while a variable objective improvement was observed after 6 months.
In four patients, a clinical and neurophysiological improvement persisted for 24-36 months while in one patient M-protein and anti-MAG antibodies disappeared, the improvement still being present after 36 months. No significant side effects were reported.

NOTES

Prof. Dr. Alexandru SERBANESCU

subiect rezervat

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Cerebral ischemia/reperfusion induced changes in neuronal excitability

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Neuronal excitability, as a sine qua non condition for the coordination and integration functions of the brain, results from the convergent action of multiple factors on the membrane ionic transport system (MITS). MITS is conceived as an integrative molecular system providing the ionic basis of cellular electric activity. The increased oxygen consumption in the cerebral energetic metabolism and the use of about 70% from the produced energy for the neuronal ionic transport, explain why changes in the cerebral blood flow represent an important cause of altered excitability and cerebral function.

NOTES

Titluri lucrari

CONFERINTE

Florin Amzica - Cellular bases of coma

Sandor Beniczky - Source analysis of epileptiform EEG discharges

V. Bohotin, C. Bohotin, C.D. Popescu - Motor area mapping by Transcranial Magnetic Stimulation; Technical considerations and clinical applications

Pierre Bouche - Diagnosis and management of peroneal and ulnar nerve palsies

Dumitru Constantin - The rythms of the brain and the rythms of the nature

Reinhard Dengler - The role of Clinical Neurophysiology in the Diagnosis of Motor Neuron Disease/ALS.

Bogdan Florea - Quantitative EEG changes in migraine

Hessel Franssen - Electrophysiology of entrapment neuropathies for general neurologists

Sergiu Groppa - Transcranial magnetic stimulation in neurological practice and neurosciences

Christian Krarup - Electromyography (EMG) as a Tool in the Investigation of Neurogenic Weakness or Myopathy

Pierre Lozeron - Nerve conduction studies in presumed axonal neuropathies

Tudor Lupescu - Transcranial Magnetic Stimulation principles, mechanisms and clinical approaches

Mihai Moldovan - Conduction and excitability studies in peripheral nerve degeneration and regeneration

Cristina Panea - Neurological disorders with sleep alterations

Corinne Pottier - Chronic ataxic neuropathies: discussion about clinical cases and etiologic diagnostic

Dan Psatta - Monopolar and source derivation recording of Auditory Evoked Potentials

F. Romanescu, P. Badea, A. Nestianu, D. Georgescu, GL., Popescu, V. Nestianu - Mathematical analysis of surface electromyogram in characterization of muscular fatigue (Report) UMF Craiova, Romania

Stefano Simonetti - CIDP and related immune-mediated neuropathies

Alexandru Serbanescu - subiect rezervat

Leon Zagrean: - Cerebral ischameia/ reperfusion induced changes in neuronal excitability

COMUNICARI STIINTIFICE

Differences between force and endurance sportsmen evidentiated by SEMG analysis

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By comparing the various parameters and indices in high mathematical processing of SEMG in a lot of 6 sportsmen with effort of strength and 10 sportsmen with effort of endurance, of the same age, have been resulted: contraction durations until exhaustion is higher in the endurance sportsmen by 38%, muscular force higher in the strength sportsmen, integrated force is greater in endurance lot due to a longer duration, PET values higher meaning exhaustion greater in strength athletes, time for PET decreasing by 1 unit longer in endurance sportsmen energy obtained greater in endurance sportsmen

Intraoperative electrocorticography for tailoring cortical resections in the treatment of medically intractable epilepsy

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Objective - Surgical treatment in patients with medically intractable epilepsy aims to completely control the seizures. This aim could be achieved when the epileptogenic zone is delineated and completely resected. In fact, the epileptogenic zone is a theoretical concept, defined as the minimum cortical region whose resection is sufficient to cure seizures. Its deliniation is discussed according to the epileptogenic lesion, the pacemaker, irritative, ictal symptomatogenic and functional deficit zone. We

analyse the role of intraoperative electrocorticography in delineating the epileptogenic zone, although its place regarding the postoperative outcome is still controversial.

Clinical Presentation - We describe our experience using intraoperative elctrocorticography, during craniotomy, in 3 cases with DNET associated with intractable epilepsy. Surgery was performed under general anesthesia, using pre-and postresection electrocorticography. In two cases only interictal recordings were obtained. In one case, during preresection electrocorticography, three habitual seizures were recorded. The intraoperative electrocortiocography protocol and the role of interictal and ictal recordings in deliniation of cortical resections is dicussed.

Conclusion - The cases we describe sustain the use of intraoperative electrocorticography in tailoring resections for medically intractable epilepsies.

Median nerve ecography

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Peripheral nerve ultrasonography can be valuable aid in the diagnosis of some compression neuropathies, completing the functional informations provided by the neurophysiological examination. We present in this short report some images that show alterations of median nerve imaging with ultrasounds in carpal tunnel syndrome.

Recording of deep cerebral micropotentials in Parkinson's disease surgery

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Introducere - In cazul bolnavilor parkinsonieni, implantarea de electrozi in nucleul subtalamic (STN) prin procedeul de stimulare cerebrala profunda (DBS) este deja recunoscuta ca fiind o metoda eficienta. S-a mai demonstrat de asemenea ca inregistrarea micropotentialelor cerebrale (MER) si analiza lor este benefica, insa ramane inca neclar cat de mult cresc eficacitatea clinica.

Metoda - In ultimii 5 ani au fost implantati un total de 14 pacienti parkinsonieni. Toate interventiile au fost efectuate pe baza imaginilor RMN fuzionate cu CT. La toti pacientii au fost inregistrate micropotentialele cerebrale, initial cu „Leadpoint" si ulterior cu „Guideline 2000" FHC. Identificarea tintei s-a efectuat prin calcularea coordonatelor cu ajutorul „Framelink" (morfologic) si prin intregistrarea micropotentialelor (functional). Micropotentialele ajuta la definirea nucleului subtalamic prin folosirea unuia sau mai multor trasee paralele. Pentru stabilirea locului final de implantare s-au folosit micro si macrostimularea.

Rezultate - Diferenta dintre tinta anatomica si cea bioelectrica a fost de mai putin de 1 mm. Dupa interventia chirurgicala toti pacientii au prezentat o imbunatatire a starii clinice.

Discutii - Numarul maxim de trasee ce poate fi utilizat este 5. Noi am folosit 5 trasee intr-un singur caz, iar in restul situatiilor 2 sau 4. In majoritatea cazurilor, pentru situatia implantarii celui de-al doilea electrod s-a utilizat un singur traseu, bazandu-ne pe simetrie. In ceea ce priveste locul definitiv de implantare a electrodului de stimulare, subiectul este inca dezbatut in literatura. Sunt analizate mici ajustari in cazul traseelor electrozilor.

Concluzie - Inregistrarea micropotentialelor prin microelectrozi este optionala, dar ea ofera mai multa acuratete pentru tehnica implantarii stimulatoarelor cerebrale profunde.

LUCRARI DE TIP POSTERS

Leziune de plex brahial prin modificari degenerative cu osteofitoza voluminoasa a regiunii scapulo-humerale drepte

Mircea Moldovan, Ionela Codita, Simona Petrescu, F. Antonescu

Simptomatologia dureroasa a membrului superior ,deficitele motorii si sensitive globale sau localizate la primele sau ultimele degete sunt suferinte frecvente , determinate de etiologii multiple
Evaluarea etiologica si topografica necesita aplicarea unui algoritm de diagnostic clinic si electrofiziologic amanuntit pentru stabilirea localizarii la nivelul n ulnar,cordonului medial,trunchiului inferior al plexului brahial sau radacina C8
Se prezinta cazul unui pacient de 73 de ani cu dureri la nivelul regiunii umerale drepte si parestezii pe marginea interna a bratului , antebratului si ultimele 2 degete
Ex imagistic a pus in evidenta in vecinatatea articulatiei scapuloumerale o osteofitoza marginala voluminoasa de 1cm intinsa anteroposterior pe circa 3,4 cm cu extindere superior si la nivelul tuberozitati mari humerale
Corelarea examenul clinic si imagistic cu emg si studiu de conducere ,comentat pe etape, a apreciat simptomatologia in cadrul unei leziuni a cordonului medial cu expresie clinica la nivelul n ulnar si cutan antebrahial medial drept asociate cu prezenta modificarilor osteoarticulare

Study for Optimizing Values for Latency and Amplitude of Visual Evoked Potentials.

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Simptomatologia dureroasa a membrului superior, deficitele motorii si sensitive globale sau localizate la primele sau ultimele degete sunt suferinte frecvente, determinate de etiologii multiple. Evaluarea etiologica si topografica necesita aplicarea unui algoritm de diagnostic clinic si electrofiziologic amanuntit pentru stabilirea localizarii la nivelul nulnar, cordonului medial, trunchiului inferior al plexului brahial sau radacina C8. Se prezinta cazul unui pacient de 73 de ani cu dureri la nivelul regiunii umerale drepte si parestezii pe marginea interna a bratului, antebratului si ultimele 2 degete. Ex. imagistic a pus in evidenta in vecinatatea articulatiei scapuloumerale o osteofitoza marginala voluminoasa de 1 cm intinsa anteroposterior pe circa 3,4 cm cu extindere superior si la nivelul tuberozitati mari humerale. Corelarea examenul clinic si imagistic cu emg si studiu de conducere, comentat pe etape, a apreciat simptomatologia in cadrul unei leziuni a cordonului medial cu expresie clinica la nivelul nulnar si cutan antebrahial medial drept asociate cu prezenta modificarilor osteoarticulare.

Raspunsul simpatic cutanat

Mircea Moldovan, F. Antonescu

Raspunsul Cutanat Simpatic (RCS) reprezinta modificarea potentialului electric tegumentar care rezulta in urma activarii sistemului nervos simpatic. Posterul descrie si exemplifica, printr-o prezentare de caz, modalitatea de obtinere si inregistrare a RCS, test care desi are aplicatii clinice limitate este totusi simplu de efectuat si poate completa examenul electrofiziologic, cu precadere in evaluarea neuropatiilor. Sunt prezentate amplasamentul electrozilor, modalitatile de stimulare, parametrii tehnici, modul de interpretare al rezultatelor precum si cazurile in care inregistrarea RCS isi dovedeste utilitatea. Este prezentat cazul unei paciente cu diabet zaharat tip II complicat prin neuropatie si angiopatie severa.

Reactivity of burst-suppression EEG patterns to visual stimuli

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Discontinuous EEG patterns consisting in "bursts" of activity alternating with periods of electrical "suppression" emerge in the omatose brain during various pathologies. Generally this burst-suppression (BS) pattern is associated with an ominous prognosis, however, a "reactive" BS (ie, a BS pattern that can be modulated by external stimulation) has been suggested to predictict a better outcome. To date, the mechanisms underlying the "reactivity" of BS patterns remain poorly understood. We developed a rat model to cinvestigate the reactivity of BS patterns induced by Chloral Hydrate (CHL) anesthesia to monocular visual flashes. In rat, visual projections are mainly crossed, so visual evoked potentials (VEPs) in response to flash stimulation can be recorded almost exclusively over the contra-lateral hemisphere. Therefore, the ipsi-lateral recordings could be used to detect bursts "uncontaminated" by VEP components. During BS, the primary VEP component was followed by a large negative-positive wave lasting ~1 second resembling a K-complex. At the peak of the negative wave (~220 ms), a bilateral "burst" was triggered so that nearly all bursts appeared synchronized with visual stimulation at the rate of 0.5 Hz. Nevertheless, not all stimuli were able to trigger bursts and this "refractoriness" to external stimulation appeared to increase with anaesthetic depth. Our data suggest that flash stimulation may be an effective way to test the reactivity of BS patterns. More importantly, clinical protocols designed to standardize testing of BS reactivity should account for refractoriness to external stimulation.

Post-ischaemic EEG delta activity reflects adenosine A1 receptor activation

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Emergence of slow EEG rhythms within the delta frequency band (< 4Hz) following an ischemic insult of the brain has long been considered a marker of irreversible anatomical damage. With increasing availability of EEG monitoring in stroke units it was recently recognized that post-ischemic delta activity can be rapidly attenuated upon successful thrombolysis, thus indicating a reversible component. Previous experimental work from our group and others suggested that the adenosine released in the extracellular space during cerebral ischemia and reperfusion is able to inhibit excitatory synaptic transmission via A1 receptor activation (A1R) to an extent that disrupts EEG generation. Here we tested whether A1R activation contributes to post-ischemic delta activity on a rat model of non-injuring transient global cerebral ischemia under anaesthesia. We found that 10 seconds of cerebral ischemia were enough to cause a burst of high amplitude slow waves ~1Hz. This post-ischemic EEG slowing did not occur in the presence of an A1R antagonist. Similar EEG slowing could be induced in the non-ischemic rat by a central A1R agonist and not by a peripheral A1R agonist. Taken together, these data suggest that post-ischemic delta activity reflects, at least in part, the A1R activation. It is likely that the functional, thus potentially reversible, synaptic disconnection by adenosine promotes slow oscillations in the cortical networks. This should be accounted for in the interpretation of early post-ischemic EEG changes, especially in the context of ischemic neuroprotection clinical trials.

Stimulare magnetica externa pe vezica neurogena atona

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Scopul - Simptomele vezicii neurogene variaza de la functie redusa a detrusorului la hiperfunctia acestuia, in functie de locul leziunii neurologice. Sfincterul urinar deasemenea poate sa fie afectat, acest lucru ducand la hipo sau hiperfunctia sfincterului si la o pierdere a coordonarii functiei vezicii urinare. Golirea normala a vezicii este un reflex spinal care este modelat de sistemul nervos central care coordoneaza functia vezicii urinare si a uretrei. In cazul vezicii motorii neurogene, individul simte atunci cand vezica este plina dar detrusorul nu se contracta, fenomen cunoscut ca areflexie de detrusor.

Material si metoda: prezentam o noua abordare terapeutica in cazul unui pacient cu vezica neurogena motorie, sechela unei hernii de disc operate cu sindrom de coada de cal aparut secundar.Metode de diagnostic: cistometrograma de umplere stabileste capacitatea vezicii, complianta precum si prezenta contractiilor fazice; cistometrograma de evacuare inregistreaza simultan presiunea detrusorului de evacuare precum si rata fluxului urinar, masurarea rezidului postmictional. Evacuarea voluntara nu a fost posibila: detrusorul neavand contractie, iar rezidul postmictional urinar fiind de 350 de ml.Am incercat sa obtinem o evacuare urinara voluntara dupa stimularea magnetica externa la nivelul radacinilor nervoase sacrate. Stimularea magnetica a fost aplicata la nivelul radacinilor nervoase sacrate folosind un stimulator magnetic multi-puls.

Rezultate: Dupa o terapie care a durat 3 zile starea pacientului a fost imbunatatita semnificativ. Pacientul a inceput sa isi recapete controlul mictional.

Concluzii: Abilitatea stimularii magnetice externe (EMS) in a obtine contractia voluntara pentru evacuarea urinei a fost reafirmata. Protocolul stimularii magnetice externe urmarit este esential pentru succesul terapiei.

Functional and molecular characterization of glioblastoma multiforme-derived cancer stem cells

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PurposeBrain tumours are the leading cause of cancer mortality in children and remain incurable despite advanced in surgery and adjuvant therapy. The failure of malignant gliomas to respond to conventional treatment reflects the unique biology of these tumours, linked to a small population of stem-like precursors and responsable for it's progression, matastasis, recurrence and drug resistance. This study describes the characteristics of cancer stem cells isolated from glioblastoma multiforme and gives insight into the mechanism of brain tumorigenesis.Materials and Methods.Tumour stem-like precursors were identified from the primary human glioblastoma multiforme derived cell culture using immunocytochemistry and revers transcription polymerase chain reaction. Cells were cultured in vitro in stem cell medium supplemented with growth factors and then the capacity of the surviving stem-like precursors to form tumour spheres and to continue to proliferate after chemoradiotherapy were tested.ResultsThe tumour cells isolated from the brain cancer biopsy expressed the cellular markers CXCR4 and Octamer 3/4, had a high proliferative potential despite chemotherapy and irradiation and also had the abilty to form spheroids in suspension.ConclusionsThis study reveales that high grade gliomas contain stem-like precursors, which exhibit neural stem cell properties with tumorigenicity, establishing a novel developmental paradigm in the study of brain cancerogenesis and providing a powerful tool to develop patient-tailored therapy for this devastating disease.

Comparative study of compound muscle action potential and motor nerve velocity between profesional sportsmen

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Objective: Electroneurophysiologic characterization of performance sportsmen, including the selection of future participants, objective evaluation of the quality of training and highlighting the existence of subclinical lesions that may influence sporting performance.

Methods: The study included 27 performance sportsmen, who practicised handball, volleyball and fencing, with an average age of 18 and a sporting activity of at least 5 years. For each subject of the studied group peripheral motor response and motor conduction velocity for the median nerve, symmetrical, were recorded.

Results: When statistically analyzing the peripheral motor response the most numerous statistically significant differences were recorded, when comparing the group of sportsmen with that of sportswomen. Also, when comparing data obtained for the entire group with the subgroups of tested sports, as well as intersports, highlights significant differences for amplitude, area and duration. Comparing the values of motor conduction does not show significant differences, with the exception of comparing handball-fencing subgroups.

Conclusions: The present study allows the highlighting of specific functional adaptations, obtained by training, which might shape a neurophysiologic profile for performance sportsmen

Durerea la nivelul coloanei vertebrale la pacientii cu Boala Parkinson: corelatii clinico-neurofiziologice

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Introducere - Durerea la nivelul coloanei vertebrale este frecventa la pacientii cu Boala Parkinson (BP), studiile publicate relevand o prevalenta pana la 74 %. Durerea poate face parte din spectrul simptomelor nonmotorii sau poate fi datorata modificarilor degenerative de la nivelul coloanei vertebrale. In multe cazuri se poate asocia un sindrom radicular, evidentiat clinic sau electroneurografic.

Scopul acestui studiu a fost de a analiza caracteristicile clinice si aspectul electroneurografic al durerii de spate la un lot de pacienti cu Boala Parkinson.

Pacienti si metoda: Au fost luati in studiu 74 de pacienti cu BP internati consecutiv in Clinica Neurologie I din Cluj-Napoca. Durerea a fost cuantificata pe scala vizuala analoga. S-a notat de asemenea durata si localizarea durerii precum si asocierea cu un sindrom radicular. Prezenta sindromului radicular a fost stabilita pe criterii clinice si/sau in functie de aspectul electroneurografic.

Rezultate: Varsta medie a pacientilor luati in studiu a fost de 67,56 ± 8,18 ani. 48 de pacienti (64,86 %) au prezentat durere, cu o intensitate de 61,66 pe VAS. Durerea a fost localizata mai ales la nivelul coloanei cervicale si lombare, iar la 34 (70,83 %) dintre pacienti a fost asociata cu sindrom radicular. La o proportie dintre acesti pacienti, sindromul radicular a fost evidentiat doar in urma examenului electroneurografic.

Concluzii: Durerea la nivelul coloanei vertebrale este frecventa la pacientii cu BP. Explorarea neurofiziologica a acestor pacienti completeaza examenul clinic prin precizarea etiologiei durerii, cuatificarea afectarii radiculare si monitorizarea obiectiva a evolutiei simptomelor algice.

Electromyographic findings in patients with acute inflammatory demyelinating or axonal polyneuropathy

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Introduction: The acute inflammatory demyelinating or axonal polyneuropathy, also referred as Guillain-Barre Syndrome (GBS), is the most common cause of acute or subacute generalized paralysis with cellular and antibody mechanisms playing a role.

Abnormalities of nerve conduction studies are dependable diagnostic indicators of GBS.

Material and methods - We would like to present 7 consecutive cases of confirmed GBS and their EMG examinations, hospitalized within 7 months. Nerve conduction studies were assessed on the median, tibial and sural nerves, taking as evaluating parameters the amplitude, latency, duration, motor and sensory conduction velocities and F wave parameters. Also the blink reflex was considered. The examinations were made at admision and after one week disregarding the clinical evolution and treatment received.

Results - In 3 of our cases the early EMG examination showed little changes in the parameters considered. Late examinations revealed the reduction in the amplitude of CMAP was seen in 100% of patients, delayed distal motor latencies and temporal dispersion in 71,4%. The motor conduction velocities were slowed in 85,7% patients with a mean of 36,24% reduction, the sensory conduction velocities were decreased in 57,1% and sensory nerves were inexcitable in 71,4% of cases. F wave was absent in 71,4% and delayed in 28,57%. The facial nerve and blink reflex studies were abnormal in 42,8% of cases.

Conclusion - 1) An early EMG examination can show little or no changes in the parameters followed, so a second EMG is mandatory; 2) Late EMG examinations show a more pronounced reduction of the amplitude of the muscle action potentials, temporal dispersion of CMAP, widespread slowing in sensory and motor nerves; 3) In cases with clinical paucicity, the EMG is essential regarding the establishment of the diagnosis and also as a prognostic indicator.

Peripheral neuropathy in patients with Chronic Peripheral Arterial Occlusive Disease

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Objectives - Chronic Peripheral Arterial Occlusive Disease (PAOD) is commonly seen in patients older than 50 year and it is one of the manifestation of a systemic disease process - atherosclerosis. Impaired hemodynamics at tissue level affects muscle groups but also the peripheral nervous system of the lower limbs.
The aim of study was to correlate CMAP and SNAP amplitudes, motor and sensory velocities with clinical manifestation of Chronic Peripheral Arterial Occlusive Disease.
Methods - All patients included in the study had clinical manifestation of PAOD in the lower limbs. We assessed severity of intermittent claudication by quality of life, walking impairment and intermittent claudication questionnaires. CMAP, SNAP, motor and sensory velocities, F waves have been recorded in all 25 patients with chronic peripheral arterial occlusive disease. All patients did not suffer from any other disease that could affect the nerves conduction study. We were recorded CMAP and F waves from common peroneal and tibial nerves and SNAP from sural and saphenous nerves.
Results - Sensory parameters were abnormal in 65% of patients with intermittent claudication and motor parameters were abnormal in 50% of cases. Also morphology of CMAP and SNAP were distorted at patients with severe simptomatology.
Conclusions - Electroneurography of lower limbs is useful in assessment the severity of intermittent claudication in patients with chronic arterial insufficiency.

Varsta a III-a
din perspectiva studiului parametrilor neurofunctionali

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Procesul de imbatranire este definitoriu pentru toate fiintele vii, fiind efectul scurgerii unidirectionale a timpului din universul nostru material. Este caracerizat de deteriorare si dezorganizare (de crestere a entropiei), este un proces progresiv, care se realizeaza atat prin mecanisme intrinseci si extrinseci. Sunt afectate toate nivelele de organizare, de la molecule, la schimburile celulare si pana la nivelul organelor (cord, ficat, creier, etc). Procesul de imbatranire antreneaza modificari morfologice si functionale ale organismului. Acestea sunt considerate in momentul depistarii lor indicatori (markeri/criterii) ai procesului de imbatranire pe baza carora se poate aprecia varsta biologica a unui subiect, care in conditii ideale se confunda cu varsta normala sau ortogera. Varsta biologica depinde de factori genetici, factori de mediu (ecosistem, sistem social, sistem educational, cultural, tehnologic) si factori patologici, acestia din urma duc la o imbatranire accelerata.
Modificarille morfo-functionale noi aparute, generate de diverse afectiuni determina pe langa imbatranire accelerata si o imbatranire patologica. Din punct de vedere psihic incepand cu decada a sasea de varsta se constata o scadere a atentiei si memoriei mai ales pentru numele proprii. In decada a saptea se observa fatigabilitate spontana, instabilitate emotionala, crestere a egocentrismului, tendinta la depresii, o accentuare a caracteristicilor negative a personalitatii din perioada tanara si de adult. Sunt modificari are starii de somn-veghe, cu somnolenta diurna cu disomnie nocturna. Se constata si o scadere a capacitatii fizice in special a celei care necesita eforturi moderate (ortostatism prelungit, munca de noapte) pana la o reducere drastica a acesteia. Capacitatea intelectuala se poate mentine in conditii normale chiar si la longevivi. Acestea sunt cateva aspecte legate de procesul normal de imbatranire, care insa
sunt greu de diferentiat uneori de semnele incipiente ale unei stari depresive sau a unor afectiuni organice cerebrale.
Astazi SNC este evaluat electrofiziologic prin tehnici moderne, performante, de inalta acuratete si precizie datorita computerizarii aparaturii medicale de ultima generatie, dand o noua perspectiva de abordare a studierii parametrilor neurofunctionali. In urma efectuarii numeroaselor studii cu privire la activitatea SNC s-au constatat modificari fiziologice la subiectii de peste 50 de ani comparativ cu subiectii adulti.

Rezultatele obtinute in urma studiului realizat in cadrul Laboratorului de EEG-rafie si explorari neurofiziologice - INGG «Ana Aslan», prin investigarea a peste 50.000 de subiecti cu varsta cuprinsa intre 50 - 90 de ani, (au fost exclusi din studiu subiectii a caror EEG-rame pot fi influentate de factori de ordin extern si intern - ex.: fumat, hipercolesterolemie, etc), de-a lungul a peste 20 de ani de cercetare, precum si prin studiile recente si analizate in cadrul laboratorului nostru, ne-au determinat sa concluzionam ca stuctura relativa a traseelor EEG la varstnici au urmatoarele caracteristici:

- frecventa medie a ritmului de fond, alfa, la varsta a III-a a crescut de la 8- 9 c/s (8,5c/s) la 8-10 c/s (9-9,5 c/s) astfel ca la longevivi, subiecti cu varsta 80 de ani, se inregistreaza trasee cu frecventa intre 8-11c/s, predominant 9-10c/s, sporadic 11c/s, corelata si cu o amplitudine a structurii traseului mediovoltata, normovoltata,
- existenta unui ritm subalfa cu frecventa de 7,5 c/s cu amplitudine mediovoltata, deosebit de ritmul kappa cu aceeasi frecventa, dar o amplitudine hipovoltata accentuat, monomorf, care apare in regiunile frontale in timpul unei activitati mentale intense cu efort sustinut, care apare la adult,
- ritmul subalfa, in functie de incidenta lui pe traseu poate determina granita intre normal si patologic.

Studiile recente au fost coroborate si cu datele obtinute in urma efectuarii MMSE, EGG. S-au eliminat din studiu subiectii a caror EEG-rame pot fi influentate de factori de ordin extern si intern (ex.: fumat, hipercolesterolemie, etc). Coroborarea acestor date pot da o anumita perspectiva cu privire la expresia procesului de senescenta la nivel cerebral si o noua re-evaluare din punct de vedere al interpretarii electroencefalografice cu aplicatie directa in vederea cunoasterii unor noi date exacte cu privire la explorarea neurofunctionala si a limitei de trecere de la normal la patologic la varsta a III-a. Modificarile EEG oarecum caracteristice varstei a III-a in stare de veghe (repaus psiho-senzorial, ochi inchisi) sunt: incidenta si amplitudinea ritmului de fond, alfa, scad, dar dupa 65-70 de ani, ritmul alfa are tendinta de a migra spre derivatiile anterioare, creste incidenta ritmului lent de tip teta, dar nu mai mult de 10-12%, pe derivatiile temporale posterioare se pot inregistra elemente lente teta ample, care survin de regula dupa activarea prin hiperpnee, raspunsul la activarea prin hiperpnee este redus sau se inregistreaza areactivitate, raspunsul la activarea prin deschiderea ochilor e normal (reactia de blocare a ritmului alfa si inlocuirea acestuia cu elemente rapide de tip beta).
Speranta de viata va creste in urmatorii 40 de ani - in Romania speranta de viata, conform statisticilor actuale, la femei in 2005 era de aproximativ 75 de ani si se preconizeaza ca in anul 2050 aceasta sa ajunga la aproximativ 84 de ani.
Datele statistice furnizate de ONU arata ca numarul populatiei varstnice va atinge cifra de un milard in 2025, ceea ce reprezinta un procent de 14% din populatia planetei.

Imbatranirea populatiei, costurile ridicate al noilor tehnologii medicale, cresterea exigentelor populatiei sporesc cererea de servicii de sanatate. Pe baza acestor investigatii non-invazive, cu cost redus, timp minim se pot obtine date cu privire la starea de sanatate.

Multumim sincer sponsorilor-parteneri al caror sprijin financiar si logistic a facut posibila organizarea Conferintei Nationale de Neurofiziologie

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Responsabilitatea bunei functionari a Societatii de Neurofiziologie in acest mandat este asumata de urmatoarea echipa:

Dr. Tudor Dimitrie LUPESCU presedinte ASNER;
Dr. Ioana MINDRUTA vicepresedinte ASNER;
Dr. Ayghiul MUJDABA-ELMI trezorier ASNER;
Dr. Mihai MOLDOVAN director medical ASNER si webmaster;
Dr. Bogdan FLOREA secretar ASNER.

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