5th World Congress on

Parkinsons & Huntington Disease

&

5th International Conference on

Epilepsy & Treatment

August 29-31, 2019 Vienna, Austria

Scientific Tracks & Abstracts

Day 1

Day-1

SESSIONS

Neurobiology of Epilepsy | Epilepsy in Paediatrics | Epilepsy Devices | Epilepsy & Pregnancy Prevention & Management of Epilepsy | Non-Surgical Treatment of Epilepsy | Herbal Treatments for Epilepsy Homeopathic Treatment of Epilepsy | Epilepsy Surgery | Cannabinoids in Treatment of Resistant Epilepsy Cognitive Disorders of Epilepsy | Epilepsy Therapeutics & Drug Therapy | Epilepsy Case Reports

Chair: **Liz Edenberg P. Quiles,** The Medical City, Philippines

SESSION INTRODUCTION

Title: **Refractory and super refractory status epilepticus in a tertiary hospital: A 10-year retrospective study**
Liz Edenberg P. Quiles, The Medical City, Philippines

Title: **The milk awareness campaign & the eight rules of epilepsy Italian Association Against Epilepsy – Italian Association Against Epilepsy -Veneto**
Stefano Bellon, University of Padua, Italy

Title: **Epilepsy and neurocutaneous syndromes in developmental age**
Michele Roccella, University of Palermo, Italy

Title: **Neuroprotective microglia and neurotoxic monocytes in epilepsy**
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Title: **Value of cathodal transcranial direct current polarisation in multidrug resistant focal epilepsy patient**
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Title: **Life after seizures and neurosurgery**
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Title: **Sleep macrostructure in Lennox-Gastaut Syndrome: A polysomnographic case-control study**
Marco Carotenuto, University of Campania "Luigi Vanvitelli", Italy

Refractory and super refractory status epilepticus in a tertiary hospital: A 10-year retrospective study

Liz Edenberg P. Quiles
The Medical City, Philippines

Super refractory status Epilepticus is an uncommon, but very important clinical problem that is associated with high morbidity and mortality. Studies concerning Super refractory status epilepticus has been limited. Up to present, there are no existing Philippine data. The study aims to determine the status of Refractory and Super refractory status epilepticus within a 10-year period in a Tertiary Hospital. This is a retrospective study of adult patients with prolonged seizures admitted at a Tertiary Hospital from January 2009- July 2018. Frequency, Mean and standard deviation was used in the Descriptive analysis. Multinomial Logistic Regression was used to assess probability of good or poor outcome. Significant Correlation is defined by P value of <0.05. The Incidence of Refractory Status Epilepticus is as high as 38% (n=64) and 35% (n=58) for Super Refractory Status Epilepticus. Mortality rate is 39.1% in Refractory and 62.1% in Super refractory status epilepticus. Poor functional outcome has been observed in RSE and SRSE whein the majority was Alive Dependent. Significant factor increasing likelihood of being Alive Dependent is the absence of Arrest. Factors associated with likelihood of being alive and independent includes Status Epilepticus which is more benign type of prolonged seizure and younger age therefore more aggressive control of seizures in preventing progression to SRSE will give higher likelihood of good functional outcome and elderly patients would need closer and more adept seizure control for better functional outcome.

Biography

Liz Edenberg has completed Bachelor of Science Major in Food Technology at the age of 20 years from University of Santo Tomas and Doctor of Medicine at the age of 24 years from Our Lady of Fatima Univeristy. She is currently a Resident undergoing training of Adult Neurology in The Medical City, Philippines.

Notes:

The milk awareness campaign & the eight rules of epilepsy Italian Association Against Epilepsy – Italian Association Against Epilepsy –Veneto

Stefano Bellon
University of Padua, Italy

The Milk Awareness Campaign, eight rules to respect in case of a seizure With half a million people living with Epilepsy, and 30,000 new cases found per year in Italy, this disease has become a very common pathology and a one worth of attention. This is why Aice (Italian Association Against Epilepsy Veneto), Lice (Italian League Against Epilepsy), and Lattebusche, joined forces to ease how to deal with an epileptic seizure, by printing on 300,000 Lateebusche cartons of milk the 8 rules to follow in case of a seizure. This awareness campaign aims at reaching at least 1.5 million people if not more. The campaign builds on the last national conference held in Padua, "Update in Epileptology", and aims at raising awareness, educate the population and patients, and break down false myths on this pathology.

Biography

Stefano Bellon has graduated from Medical School at the University of Padua in 1984, and completed his PhD in Clinical Pharmacology and Therapeutic Medicine in 1993. He is a family doctor with its own practice, in addition of being a member of the Health Committee of the University of Padua Polyclinic and of the Ethical Committee for the clinical practice in Padua. He was the General Director of the Paediatric Research Institute Foundation "Citta della Speranza" and has also published several papers in reputed journals.

Notes:

Epilepsy and neurocutaneous syndromes in developmental age

Michele Roccella
University of Palermo, Italy

Background: The Neurocutaneous Syndromes (N.S.) are a rarther heterogeneous group of diseases from both a clinical and genetic point of view. Most N.S. reveal themselves through convulsive crises, wich sometimes do not respond to the pharmacological treatment. The purpose of this study is to evaluate the therapeutic and clinical aspects of and adequate therapeutic procedure.

Methods: 78 children have been studied, they are affected by: 33 children from neurofibromatosis; 23 children from tuberous sclerosis; 9 children from the Sturge-weber syndrome; 5 from Ito hypomelanosis; 4 from incontinentia pigmenti: | from Dubowitz syndrome; | from the Schimmelpenning-Feuerstin-mims syndrome;! from kippel-Trenaunay-weber syndrome, 1 from ataxia-telangiectasia. The anamnesis, the hystory of the cris and of the anti-epileptic therapy was recorder for each case.

Results: The initial critical symptomatology was divided into groups: infantile spasms; simple focal seizures; focal focal epilepsy; generalized crises. The age of onset at the beginning of the critical symptomatology is between 15 days and 5 years of age. The neuroradiological pictures observed with brain MRI are fairly heterogeneous. The evolution and the current state of epileptic symptoms has been evaluated: 40% of cases have generalized epilepsy: 60% of cases a focal epilepsy. The most used drugs are: VPA, CBZ, PB, LTG, BDZ. In some cases cycles of cortisone therapy (cases with infantile spasms, S. di Lennox-Gastaut) were also practiced. Conclusions: The neurocutaneous syndromes constitute a group of quite heterogeneous pathologies. The use of tools such as TAC and, above all, MRI are essential for a correct diagnostic classification. EEG changes are clearly correlated with the type and extent of the malformation pattern; it seems difficult to establish a specific and pathognomonic picture of a form of S.N. It remains however difficult to establish, in these pathologies, what is the evolution, the therapeutic strategy to be implemented and the prognosis of the epileptic symptomatology based on its time of onset and the associated neuroradiological framework. It is therefore important to underline how the use of new pharmacological therapies leads to a considerable reduction of critical episodes and consequentially to an improvement in the life of these subjects. Keywords: Epilepsy, Epilepsy and neurocutaneous syndromes, Antiepileptic drugs Biography Michele Roccella is Associate Professor of Child Psychiatry at the Department of Psychology, Educational Science and Human Movement, University of Palermo, Italy. It 'the author of over 450.

Biography

Michele Roccella is Associate Professor of Child Psychiatry at Department of Psychology, Educational Science and Human Movement, University of Palermo, Italy. Michele Roccella is the author of over 450 publications on National and International Journals.

Neuroprotective microglia and neurotoxic monocytes in epilepsy

Long-Jun Wu
Mayo Clinic, USA

Microglia are the principle immune cells in the central nervous system. They are highly dynamic and interact constantly with neurons. During neuronal hyperactivities under seizure conditions, we found an unique microglia-neuron interaction we named "microglial process extension", that is, an increased number of microglial primary processes toward hippocampal neurons. The mechanism of microglial process extension involves the activation of neuronal NMDA receptors, calcium influx, subsequent ATP release, and microglial response through P2Y12 receptors. The interaction is potentially neuroprotective because P2Y12 knockout mice exhibited reduced seizure-induced increases in microglial process numbers and worsened KA-induced seizure behaviors. Our recent studies further found that activated hippocampal microglia highly expressed chemokine CCL2 in kainic acid (KA)-induced seizure mice. Taking advantage of CX3CR1GFP/+:CCR2RFP/+ double-transgenic mice, we demonstrated that CCL2-CCR2 signaling plays a critical role in blood-derived monocyte infiltration. Moreover, seizure-induced degeneration of neurons in the hippocampal CA3 region was attenuated in mice lacking CCL2 or CCR2. We further showed that CCR2 activation induced STAT3 (signal transducer and activator of transcription 3) phosphorylation and IL-1β production, which are critical for promoting neuronal cell death after status epilepticus. Two weeks after KA-induced seizures, CCR2 deficiency not only reduced neuronal loss, but also attenuated seizure-induced behavioral impairments, including anxiety, memory decline, and recurrent seizure severity. Together, we demonstrated that resident microglia have the neuroprotective potential while infiltrated monocytes contribute mostly to neuroinflammation that is neurotoxic in epilepsy.

Biography

Long-Jun Wu completed his PhD in neurobiology from University of Science and Technology of China in 2004. He was trained as postdoctoral fellow at University of Toronto and Harvard Medical School (2004-2010). Dr. Wu was appointed as an Instructor at Harvard Medical School (2011-2012) and an Assistant Professor at Rutgers University (2012-2016). Since 2016, Dr. Wu is an Associate Professor in Department of Neurology at Mayo Clinic. His research interests mainly focus on neuroimmune interactions in normal and diseased brain. He has published more than 95 peer-review research papers, including those in Nature Neuroscience, Nature Communicaitons, Science Translational Medicine, Neuron, PNAS, Cell Reports etc.

Notes:

Value of cathodal transcranial direct current polarisation in multidrug resistant focal epilepsy patients

Ann Hanafy
Cairo University, Egypt

Background: Epileptic seizures are resistant to pharmacotherapy in approximately 1/3 of all instances, a statistic that has not changed despite the introduction of >20 new antiepileptic drugs in the late twentieth and early twenty-first century. Accordingly, neuromodulation protocols are emerging as potentially valuable tools for seizure control. In focal epilepsy, the capacity of cathodal transcranial direct current polarisation to reduce cortical excitability has prompted research into this technique's antiepileptic potential. Purpose to investigate whether cathodal transcranial direct current polarisation can modify seizure frequency in drug resistant focal epilepsy patients assessed by clinical evaluation, seizure diary and electroencephalography.

Methods: A randomized, double blind, placebo controlled clinical trial on 20 patients diagnosed with multidrug resistant focal epilepsy was enrolled in our study. The patients were randomized into 2 groups. Group A received real 5-day sessions of cathodal tdcs over the area of most frequent interictal epileptiform discharges or the area of suspected ictal onset inferred by MRI findings, ictal EEG and clinical seizure semiology. Group B received sham sessions. Outcome indicators were baseline and post sessions seizure diary as well as EEG (epileptiform discharges were counted per hour).

Results: There were no significant differences in age and gender between patients and controls ($p > 0.05$). The percentage reduction of epileptiform discharges was greater for real stimulation group versus the placebo group ($p = 0.0124$). In addition, the percentage reduction of seizure frequency was greater for real stimulation group versus the placebo group ($p = 0.0308$). It is noted that cathodal direct current stimulation can improve control of focal drug resistant epilepsy patients. Conclusion our study shows that cathodal tdcs is a promising therapeutic tool for short term seizure reduction in chronic drug resistant focal epilepsy patients.

Biography

Ann Ali Abdelkader Hanafy has completed her MD at the age of 30 years from Cairo University and postdoctoral studies from Cairo University School of Medicine. She is a Professor of Clinical neurophysiology & the President of Egyptian Clinical Neurophysiology Society. She has published more than 100 papers in local and international journals.

Notes:

Life after seizures and neurosurgery

Joey Gaines
USA

A febrile seizure began the 30 year journey from captivity of seizures to freedom after neurosurgery: Left Anterior Temporal Lobectomy/ Left Hippocampus removal had to be considered for best end result. 80% of patients after surgery were seizure free one year post op and 90% showed marked improvement.(neuro.mcg.eduepisurg.htm) It was suspected that he had been having petite mal seizures all along. At age 14 and 16 years of age, he experienced seizure activity that put him into a coma for 3 days leaving him with some memory loss. By the time the "subject" was 32, medication was no longer effective, having approximately 800 seizures a year. It was determined at this time that surgery was his only option if he was to continue to live. Because of the extent of the surgery, it was thought it would leave him a nonfunctioning adult that he would be bound to a wheelchair and unable to care for himself, when he opened his eyes after surgery he had no memory. No memory of the ability to function in everyday living, or who or what people surrounding him in hospital were. He had no memory of family or friends, that he had children or a wife and had difficulty retaining short term memory without continual repetition. But he learned again how to eat, walk, use the toilet and care for his personal needs. He returned to work, drives and lives on his own. The one thing he did retain was his craft as a master welder.

Biography

Joey Gaines was born a perfectly healthy baby boy May 15, 1967, the last of 4 children. Epilepsy was not listed in the familial health history. At age 2, he became ill running a high fever causing seizures. It was not until puberty that it became clear that he had been affected by the illness as a toddler. He became afflicted with grand mal and complex partial seizures. After high school he went to work for his uncle and became a skilled craftsman, a 100 % x-ray welder. He retained his ability to weld even after the surgery and has been actively working his craft for 33 years.

Notes:

Sleep macrostructure in Lennox-Gastaut Syndrome: A polysomnographic case-control study

Marco Carotenuto[1], **Francesco Precenzano**[1], **Ilaria Bitetti**[1] and **Michele Roccella**[2]
[1]University of Campania "Luigi Vanvitelli", Italy
[2]University of Palermo, Italy

Lennox-Gastaut syndrome (LGS) is an epileptic encephalopathy defined by a triad of multiple drug-resistant seizure types, a specific EEG pattern showing bursts of slow spike-wave complexes or generalized paroxysmal fast activity, and intellectual disability. The prevalence of LGS is estimated between 1 and 2% of all patients with epilepsy. The relationship between sleep disturbances and refractory epileptic encephalopathies (EEs) are still scarce. The aim was to assess, by means of nocturnal polysomnography, if children with LGS present with objective alterations in sleep macrostructure. 33 children with LGS (21 males; mean age: 7.9 ± 1.4 years) and 33 healthy controls (22 males; mean age: 8.1 ± 1.1 years) underwent an overnight full polysomnography (PSG). Relative to controls, children with LGS showed a significant reduction in all PSG parameters related to sleep duration time in bed (TIB-min; $p< 0.001$), total sleep time (TST-min; $p<0.001$), and sleep percentage (SPT-min; $p <0.001$), as well as significantly higher REM latency (FRL-min $p<0.001$), rate in stage shifting ($p = 0.005$), and number of awakenings/hour ($p = 0.002$). Relative to controls, children with EEs also showed significant differences in respiratory parameters (AHI/h, $p<0.001$; ODI/h, $p<0.001$; SpO2%, $p<0.001$; SpO2 nadir%, $p<0.001$) and a higher rate of periodic limb movements with an index per hour >5 (PLMs%, $p<0.001$). Our findings suggest that sleep evaluation could be consideredmandatory in children with Lennox-Gastaut syndrome in order to improve the clinical management and the therapeutic strategies.

Biography

Marco Carotenuto completed his Degree in Medicine and Surgery in 2000 and Specialist degree in Child Adolescent Neuropsychiatry in 2005. In 2008, he completed Doctorate in Behavioural and Learning Disorders Sciences. From 2008 to 2011, he was a Junior Researcher and from 2011 to 2017, he was a Senior Researcher in Child and Adolescent Neuropsychiatry and. In December 2017, he became Associate Professor at Università della Campania Luigi Vanvitelli. He is the Chief of the Clinic of Child Neuropsychiatry and his research and clinical areas of interest have been focused on pediatric sleep disorders, pediatric primary headaches, and pediatric rehabilitation.

SESSIONS

Parkinson Disease | Neuromuscular Disorders | Risk Factors of Parkinson's Disease | Insights and Therapeutics: Parkinson's Disease | Managing life with Parkinson's Disease

Chair: **Muthukumara Sabesan,** Annamalai University, India

SESSION INTRODUCTION

Title: **Therapeutic use of the curcumin and its derivative, (tetrahydrocurcumin) on MPTP induced parkinson's disease in male mouse**
Muthukumara Sabesan, Annamalai University, India

Title: **Transdifferentiation of human umbilical cord-derived mesenchymal stem cells to dopaminergic neurons in three-dimensional culture**
Hatef Ghasemi Hamidabadi, Mazandaran University of Medical Sciences, Iran

Title: **Derivation of dopaminergic neurons from embryonic stem cells using a silk nanofibrous scaffold**
Maryam Nazm Bojnordi, Mazandaran University of Medical Sciences, Iran

Title: **Nursing perspective on the care of patients suffering from parkinson's disease**
Tabassum Nauman, Foundation University, Pakistan

Title: **Possible mechanism of antiepileptic effect of the vagus nerve stimulation in the context of recent results in sleep research**
Ivan Pigarev, Russian Academy of Sciences, Russia

Title: **NeuroEPO in parkinson's disease**
Ivonne Pedroso Ibañez, International Center for Neurological Restoration, Cuba

Title: **Genetic landscape of malformations of cortical development with refractory epilepsy in Taiwan**
Yo-Tsen Liu, National Yang-Ming University, Taiwan

Therapeutic use of the curcumin and its derivative, (tetrahydrocurcumin) on MPTP induced parkinson's disease in male mouse

Muthukumara Sabesan
Annamalai University, India

Curcumin (diferuloylmethane), a polyphenol extracted from the plant Curcuma longa, is widely used in food both in India and China. It is also used in therapeutic uses. In this study we used curcumin and its derivative first time to treat neurodegenerative disease, Parkinson's disease (PD). In this disease the increased reactive oxygen species (ROS) accumulation and oxidative damage of lipids, nucleic acids and proteins occur. Therapeutic use of curcumin for this neurodegenerative disease appears multifactorial which regulates the enzymes, cytokines, monoamine oxidase-B inhibition, and transcription factors. We investigated free radicals, enzymatic and non-enzymatic antioxidants in on methyl 4-phenyl 1, 2, 3 4 tetra hydro pyridine (MPTP). In this model depletion of dopamine (DA) and DOPAC (3, 4 dihydroxy phenyl acetic acid) occurs with increased activity of monoamine oxidase (MOA-B). We used HPLC with electrochemical detection to measure DA and DOPAC respectively while MAO-B was assayed by spectroflourimetry using the conversion of fluorogenic substrate, kyuramine. Systemic administration of curcumin (80 mg/kg i.p) and tetrahydro curcumin (60mg/kg ip) significantly reversed the MPTP induced depletion of DA and DOPAC. The MOA-B activity was also significantly inhibited by these compounds. The results showed that curcumin and its derivative reversed the MPTP induced depletion of DA and DOPAC which may in part be due to inhibition of MAO-B activity. This result also supported by free radical estimation, antioxidant assay and electron microscopical observations. In conclusion both curcumin and its metabolite exert neuroprotection against MPTP induced neurotoxicity.

Biography

M Sabesan has completed his PhD from Bharathidasan University and Postdoctoral studies from Freiburg University, Germany. He worked as Professor and Head with Dean, Faculty of Science, Annamalai University, India. He worked on PD and published 20 papers in these neurodegenerative diseases in the high impact factor journals. He guided seven students for PhD in the same field. He has completed four major research projects in this subject.

Notes:

Transdifferentiation of human umbilical cord-derived mesenchymal stem cells to dopaminergic neurons in three-dimensional culture

Hatef Ghasemi Hamidabadi[1], **Rafieh Alizadeh**[2], **Maryam Nazm Bojnordi**[1] and **Ali Niapour**[3]
[1]Mazandaran University of Medical Sciences, Iran
[2]Iran University of Medical Sciences, Iran
[3]Ardabil University of Medical Sciences, Iran

Possible production of dopaminergic neurons from human umbilical cord-derived mesenchymal stem cells (HUC-MSCs) is a big promise for neural tissue engineering and clinical treatment of neurodegenerative diseases, such as Parkinson's disease. The main goal of the current study was to determine the differentiation potential of HUC-MSCs toward dopaminergic neuron-like cells. HUC-MSCs were isolated and cultured on Matrigel and induced with a cocktail of dopaminergic neuron differentiation factors. The capacity of HUC-MSCs for differentiation into dopaminergic neuron-like cells was assessed by real-time PCR, immunocytochemistry and high-performance liquid chromatography (HPLC) and compared to the cells differentiated in cell culture plate. The differentiation assessment at the level of mRNA and protein illustrated that Matrigel significantly increased the markers related to dopaminergic neurons compared to the culture plate. Taken together, the results suggest that HUC-MSCs can successfully differentiate into dopaminergic neuron-like cells on Matrigel and may have a promising potential for treatment of dopaminergic neuron-related diseases.

Biography

Hatef Ghasemi Hamidabadi has completed her Graduation at Tehran University of Medical Sciences in 2011. He is a Member of German Neurosciences and Immunogenetic Research Center. He has published more than 25 articles in the field of stem cells.

Notes:

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Derivation of dopaminergic neurons from embryonic stem cells using a silk nanofibrous scaffold

Maryam Nazm Bojnordi[1], **Ebrahimi-Barough S**[2], **Vojoudi E**[2] and **Ghasemi H**[1]
[1]Mazandaran University of Medical Sciences, Iran
[2]Tehran University of Medical Sciences, Iran

The limited capcacity of the central nervous system in repairmen of neuronal population such as dopaminergic neuron cells suggests stem cell therapy for neurogenesis in Parkinson's disease. Also, stem cell therapy accompanied with scaffolds, is a promising treatment in neural tissue engineering to induce neural differentiation in damaged tissue of brain. Here we fabricated and used a silk nano fibrous scaffold for differentiation of embryonic stem like cells in to dopaminergic neuron cells. Embryonic stem cells, were cultured on fabricated Silk scaffolds. The neural differentiation was induced using a modified technique includes; culturing in the presence of Retinoic acid and neurobasal medium with 10 ng/ml epidermal growth factor, 20 ng/ml basic fibroblastic growth factor for 10 days. The neural differentiation was investigated using the evaluation of specific markers via immunocytochemistry and real-time technique. Our dates proved that silk scaffold support the differentiation of embryonic stem cells cells in to dopaminergic neuron. The expression of neural specific markers were significantly higher in the cells were cultured on fabricated Silk scaffolds in compare to monolayer control group. Electrospun silk nano fibrous scaffold is considered as a biological substitutes for neural differentiation of stem cells that is a crucial step in tissue engineering for neural tissue repair and regeneration.

Biography

Maryam Nazm Bojnordi has completed his PhD at Tarbiat Modares University. She is a Member of Scientific Staff of Anatomical Science at Mazandaran University of Medical Sciences. She has published more than 32 papers and has been serving as an Editorial Board Member of journals.

Notes:

Nursing perspective on the care of patients suffering from parkinson's disease

Tabassum Nauman
Foundation University, Pakistan

The review is aimed at all those involved in care of patients suffering from parkinson's disease, regardless of their place of work: traditional hospitalization, home, day hospital, nursing home, retirement homes etc. The current study discusses the care of patients suffering from parkinson's disease by setting nursing goals which includes improving functional mobility, maintaining independence in performing ADLs, achieving optimal bowel elimination, attaining and maintaining acceptable nutritional status, achieving effective communication and developing positive coping mechanisms. Parkinson's disease is a neurodegenerative disorder characterized by a progressive loss of dopaminergic neurons in the substantia nigra. From the clinical point of view, the motor symptoms include: involuntary tremor, bradykinesia and rigidity. The prevalence of the disease is around 10 million people in the world. The neurological degeneration triggered by this disease gradually causes great disability in patients. This progression can be reduced to a limited extent through the available medication. However, due to the current incurability of the pathology is essential the presence of a nurse figure that addresses effectively the different needs presented by patients and their caregivers, since these are extended, in addition to the physiological factor, to the social, economic, psychological and behavioral of these people. Nursing is presented as a fundamental part for the care of patients suffering from the disease and their caregivers, establishing interventions aimed at improving the patient's quality of life. Nursing is presented as a fundamental part for the care of patients suffering from the disease and their caregivers, establishing interventions aimed at improving the patient's quality of life. The patient who needs this type of treatment requires the application of specific care. For this reason, it is imperative to update the level of care as an orientation and provide a guide that can be useful in clinical practice and allows identifying possible nursing problems. A correct approach requires an individualized care plan to the patient's personal situation, to favor their self-care with optimum quality to adress the areas highlighted in the figure below.

Biography

Having extensive research experience and sereral published papers in reputed journals on topics rangings from nursing to psychology and research. Currently serving as Lecturer in the College of Nursing, Foundation University, Islamabad, Pakistan. I have had the oppertunity and honour to review several articles and supervised 4 dessertations at graduate level. Currently aspiring to enroll in an esteemed programe for gaining a degree in research.

Possible mechanism of antiepileptic effect of the vagus nerve stimulation in the context of recent results in sleep research

Ivan N. Pigarev[1], **Marina L. Pigareva**[2] and **Ekaterina V. Levichkina**[1,3]
[1,2]Russian Academy of Sciences, Russian Federation
[3]The University of Melbourne, Australia

Vagus nerve stimulation is widely used for seizure prevention in otherwise incurable epilepsy. Vagus nerve is engaged in bidirectional information transfer between internal organs and the brain, but how activity of the visceral pathways may be related to paroxysmal events in the brain remained unclear. It has been recently shown that during sleep signals from internal organs are directed towards all areas of the cerebral cortex for comprehensive analysis and restoration of body functionality. Visceral organs often have rhythmic activity and neuronal messages from such organs to the cerebral cortex are also rhythmic. Epileptogenic effect of rhythmic sensory stimulation is well known. Thus it is possible that during developing sleep and in deep sleep rhythmic visceral afferentation may provoke paroxysmal activity in cerebral cortex. Stimulation of vagus nerve can change the frequency of this seizure-promoting activity of internal organs from the resonance range thereby blocking paroxysmal activity. Proposed mechanism of epileptiform activity resulting from visceral signaling do not exclude that paroxysmal activity can be initiated in otherwise healthy brain. The cause of this type of epileptic events may be related to a deviation from the normal rhythmical working of some internal organs and transmission of these signals to the cerebral cortex during local or total sleep.

Biography

Ivan Pigarev, electrophysiologist, graduated from biological department of Moscow State University in 1963. Since that time till the present he is working in the Institute for Information Transmission problems (Kharkevich Institute) of Russian Academy of Sciences in Moscow, at present as leading scientist. His studies were mainly concentrated in the field of vision. Since 1991 Pigarev began to investigate sleep. He proposed and confirmed by direct experiments the visceral theory of sleep according to which cortical sensory areas during sleep switch to processing of the visceral information thus supporting animal homeostasis. Pigarev has published more than 90 papers.

Notes:

NeuroEPO in parkinson's disease

Ivonne Pedroso Ibañez
International Center for Neurological Restoration, Cuba

Introduction: Strategies to treat patients with Parkinson's disease cannot stop the progression. In Cuba, the Center for Molecular Immunology is a cutting edge scientific center where recombinant human erythropoietins with low sialic acid (NeuroEPO) are produced. We are looking for different alternatives that modify the natural course of the disease and recent research has demonstrated the neuroprotective properties of erythropoietin.

Objective: Assess safety and the positive results of the cognitive tests of recombinant human erythropoietin with low sialic acid in a group of Parkinson's disease patients.

Methods: The study was conducted in PD patients from the outpatient clinic of CIREN, including n = 26 patients between 60 and 66 years of age, in stages 1 to 2 of the Hoehn and Yahr Scale. The study employed an intranasal formulation of neuroEPO. All patients were evaluated with a battery of neuropsychological scales composed to evaluate global cognitive functioning, executive function, and memory. Safety was evaluated by recording adverse events (by intensity and causality). Hematological parameters and blood pressure were also measured because of their direct relationship to the medication's action.

Results: Five patients experienced mild adverse events with a possible causal relationship in the five patients that were neither life-threatening nor required hospitalization. The results in the study showed a positive response to the cognitive functions in patients, who were undergoing pharmacological treatment with respect to the evaluation ($p < 0.05$) before the intervention which could be interpreted as an effect of the neuroprotective properties of these molecules.

Keywords: Parkinson disease, erythropoietin, clinical trial, safety, NeuroEPO.

Notes:

Genetic landscape of malformations of cortical development with refractory epilepsy in Taiwan

Yo-Tsen Liu
National Yang-Ming University, Taiwan

Malformations of cortical development (MCD) are a group of developmental disorders frequently causing epilepsy. Although next generation sequencing can help identify substantial genetic variants, a correct genetic diagnosis of MCD relies on the correlations with neuropathology. I will report the genetic landscape of MCD with refractory epilepsy (RE) whose diagnosis were firmly established in a multidisciplinary epilepsy team at Taipei Veterans General Hospital in Taiwan. Sixty-six patients were recruited. Their MCD types include: FCD (51, 77.3%), heterotopia (4, 6.06%), polymicrogyri, Dandy-Walker malformation and lissencephaly. Tuberous sclerosis complex was not included. These patients were first screened by targeted sequencing (TS) of 66 genes causative for MCD and epilepsy encephalopathy. For those with a potential candidate variant identified, they were submitted to whole exome sequencing to confirm the variant is the best pathogenic candidate. Reported pathogenic variant or novel but potentially disease-causative variants were identified in 28 patients (42%). Among them, nine were familial cases (32%). In the 38 genetic not-assigned individuals, only two had a positive family history (5.3%). Nine variants (32/1%) occurred in the GATOR1 complex genes (DEPDC5/NPRL2/NPRL3). The hit rate was the highest, reaching 78% (7/9), in severe and diffuse MCD, like Dandy-Walker malformation and lissencephaly. For FCD, the hit rate was 55% (28/51). Our results supported that rapid screening by tTS of known disease-causative genes is efficient to enhance genetic diagnosis of MCD, particularly in severe and diffuse MCD and FCD. Brain MRI and neuropathology are essential to determine the pathogenicity of identified variants.

Biography

Yo-Tsen Liu earned her MD at National Taiwan University, Taiwan and completed her neurological residency training and became a neurology consultant at Taipei Veterans General Hospital (TVGH). After winning "Studying Abroad Scholarship" supported by Taiwan's Ministry of Education, she studied her PhD at Institute of Neurology, University College London, London, UK in 2010~2014. She is now a neurology consultant at Division of Epilepsy, Neurological Institute, TVGH and Assistant professor at Faculty of Medicine and Institute of Brain Science, National Yang-Ming University, Taiwan. Her research interests are the applications of next-generation sequencing in neurological diseases, focusing on epilepsy and movement disorders.

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Video Presentation

Day 1

Epileptic discharge and global representation: Impairments in motor plan execution

Denis Larrivee
Loyola University Chicago, USA

Current evidence indicates that several prevalent cognitive diseases affect the phenomenal construct of self, diminishing the capacity to unify brain and bodily operation. For example, disturbances of the self mark the clinical determination for schizophrenia, which are characterized by symptoms of an abnormal sense of the bodily awareness, loss of ego boundary, and a confused sense of agency. Similarly, degeneration of the default mode network (DMN) in Alzheimer's Dementia progressively diminishes control of self circuitries regulating regional brain states. By extension, the disruption of global operation seen in epileptic discharges, are likely to affect self representation. Increasing evidence indicates that universal constructs like the self emerge from the activity of global brain states that are mediated via recurrent interactions ordered to self-organization. Fundamentally, these dynamical models of cognition link constitutive operational features to properties of stability, flexibility, and hierarchy, which are required for performance and that, give rise to the construct. Among the key mechanisms likely to be affected are those linking motor planning and execution to self agency. Neural representation of the self appears to be configured by somatotopic input, where bodily mapping generates a three dimensional postural image that is invested with protagonist features. This bodily image undergirds neural self representation and is critical to operationalizing motor events. Several observations indicate that epilepsy may influence this construct since a) epilepsy affects global oscillatory events, b) these appear to be evoked through the global workspace, a phenomenal feature needed in goal directed action, and c) epilepsy affects the basal ganglia, a central subcortical structure mediating motor actions. Accordingly, this talk will explore current evidence pertaining to how epilepsy influences neural self representation in executing the motor plan.

Biography

Denis Larrivee is a Visiting Scholar at the Mind and Brain Institute, University of Navarra Medical School and Loyola University Chicago and has held professorships at the Weill Cornell University Medical College, NYC, and Purdue University, Indiana. A former fellow at Yale University's Medical School he received the Association for Research in Vision and Ophthalmology's first place award for studies on photoreceptor degenerative and developmental mechanisms. He is the editor of a recently released text on Brain Computer Interfacing with InTech Publishing and an editorial board member of the journals Annals of Neurology and Neurological Sciences (USA) and EC Neurology (UK). An International Neuroethics Society Expert he is the author of more than 70 papers and book chapters in such varied journals/venues as Neurology and Neurological Sciences (USA), Journal of Neuroscience, Journal of Religion and Mental Health, and IEEE Explore. In 2018 he was a finalist in the international Joseph Ratzinger Expanded Reason award.

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