



STORZ MEDICAL
The Shock Wave Company

**9TH EDITION OF
INTERNATIONAL CONFERENCE ON**

NEUROLOGY **AND NEUROLOGICAL** **DISORDERS**

20-22

JUNE, 2024

PARIS, FRANCE

Venue:

Hotel CIS Paris Ravel

6 Av. Maurice Ravel, 75012, Paris, France

JUNE

20-22

9th Edition of International Conference on

Neurology and Neurological Disorders

BOOK OF
ABSTRACTS

INDEX	Page No
Keynote Speakers	5
Speakers	6
Welcome Messages	8
About Magnus Group	19
About Neurology 2024	20
Our Exhibitor	21
About CPD Accreditation	22
Table of Contents	23
Keynote Presentations	29
Workshop Presentations	49
Oral Presentations	55
Poster Presentations	117

Keynote Speakers



Ken Ware
NeuroPhysics Therapy Institute,
Australia



Juan Moreira
CNC / Gnosis Neurointegrative
Center, United States



Thomas J Webster
Interstellar Therapeutics,
United States



Frank Owen Bastian
Bastian Enterprises,
United States



Yong Xiao Wang
Albany Medical College,
United States



Joshua C Brown
Harvard Medical School,
United States



Ulrich Sprick
Heinrich Heine University,
Germany



Jacqueline Tuppen
Cogs Club,
United Kingdom



W S El Masri
Keele University,
United Kingdom



Torbjorn Backstrom
Umea Neurosteroid Research
Center, Sweden



Aldo Bruno
Vascular Dep PIO XI Clinic Rome,
Italy



Sergey Suchkov
The Russian University of
Medicine and The Russian
Academy of Natural Sciences,
Russia



Michael Ugrumov
Institute of Developmental Biology
RAS, Russia



Zhenhuan Liu
Guangzhou University of Chinese
Medicine, China

*Thank You
All...*

Speakers



Akankunda Veronicah
Golden Age Elderly Homes,
Uganda



Ali Riza Gunes
Alexius/Josef Hospital,
Germany



Bo He
The Third Affiliated Hospital of Sun
Yat-sen University, China



Chennakesavulu Dara
Esic Medical College,
India



Christian Stenor
Herlev Hospital, Denmark



Cristian Ravariu
Polytechnic University of Bucharest,
Romania



Daniel Baksa
Semmelweis University,
Hungary



Dilana Hazer-Rau
Storz Medical AG,
Switzerland



Dixie J Woolston
Mayo Clinic Arizona/Scottsdale,
United States



Emily R Rosario
Casa Colina Hospital and Centers for
Healthcare, United States



Estrella Rodríguez
Neuroimmunologist and Health
Consultant, Retired Doctor, Spain



Francesco Petragano
University of L'Aquila,
Italy



Harkomal Verma
Central University of Punjab,
India



Hiroko Tsukamura
Nagoya University,
Japan



Hyong-Yeong Park
Chungbuk National University,
Korea



Irene Fasciani
University of L'Aquila,
Italy



Jinghong Zhang
Beijing 301 Hospital,
China



John K Maesaka
NYU Grosman Long Island School of
Medicine, United States



Kaouther Selmi
University of Monastir,
Tunisia



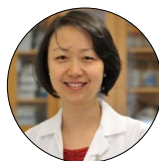
Kelsey Bonnici
University of Malta,
Malta



Michelle Melgarejo Da Rosa
Federal University of Pernambuco,
United States



Milton C R Medeiros
Irmandade Santa Casa de
Arapongas PR, Brazil



Ming Guo
UCLA David Geffen School of
Medicine, United States



Mohit Saxena
Northwestern University Feinberg
School of Medicine, United States

Speakers



Monika Sharma
AIIMS Jodhpur, India



Naser Gilani
Farabi Medical Laboratory,
Iran



Olga M Bazanova
State Research Inst. Neuroscience
and Medicine, Russia



Oliver Seemann
Psychiatriezentrum Breitenau,
Switzerland



Patrice Ntenga
University of Lubumbashi, Congo



Patrick Ganzer
University of Miami,
United States



Rahul Hajare
Sandip University,
India



Robert B Slocum
University of Kentucky HealthCare,
United States



Roger H Coletti
Interventional Health,
United States



Rwakiseta Herbert
Golden Age Elderly Homes
Kampala, Uganda



Saadia Sattar
Aga Khan University,
Pakistan



Salim Hirani
Ysbyty Gwynedd Hospital,
United Kingdom



Sarah Adelaide Crawford
Southern Connecticut State
University, United States



Sawsan Zaitone
University of Tabuk,
Saudi Arabia



Se-Na Jang
Chungbuk National University,
Korea



Shaoyuan Li
China Academy of Chinese Medical
Sciences, China



Shuhua Chen
Capital Medical University,
China



Stacey Main
Geisinger Medical Center,
United States



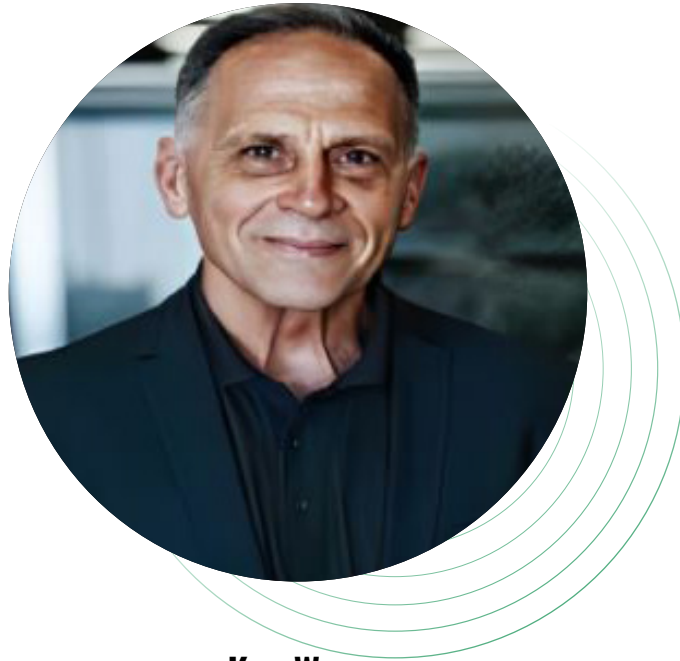
**Subatharshini
Sountharalingam**
Goulburn Valley Health, Australia



Yiwen Chen
University of Texas MD Anderson
Cancer Center, United States

*Thank You
All...*

Welcome Message



Ken Ware

NeuroPhysics Therapy Institute, Australia

Welcome to the 9th Edition of the International Conference on Neurology and Neurological Disorders (Neurology 2024)!

As we convene for this prestigious event, it is with great pleasure that I extend a warm welcome to all esteemed colleagues and attendees. On behalf of the distinguished members of the Scientific Committee and the diligent organizing team, I am honored to offer this message of welcome to Neurology 2024. Since its inception in 2017, the Neurology has been recognized for its commitment to showcasing a diverse array of distinguished speakers, each presenting innovative research, interventions, and therapies. Over the years, this conference has fostered invaluable collaborations, sparking inspiration and cross-pollination of ideas among attendees. Neurology promises to continue this tradition of excellence, offering a platform for fruitful discussions and knowledge exchange in the field of neurology and neurological disorders.

I encourage each of you to make the most of your participation in this conference, whether by sharing your own research or gaining insights from fellow speakers. May your contributions to Neurology be met with enthusiasm, and may you find both enlightenment and enjoyment in the wealth of knowledge shared by your peers.

Welcome Message



Juan A. Moreira, MD. FAAN

CNC / Gnosis Neurointegrative Center, United States

Welcome to the 9th Edition of the International Conference on Neurology and Neurological Disorders. Close to two hundred years from the birth of Jean Marie Charcot, the father of neurology, we're going to hear lectures on the Brain and the myriad of Neurological Disorders that affect the brain's performance. Charcot teaching lectures at Salpêtrière, Paris invited the world to listen to the birth of neurology. In the same way, the 9th Edition of the International Conference on Neurology and Neurological Disorders, in Paris, invite neurologist and researchers around the world to look for the existence of solutions to neurological conditions such as Alzheimer's disease, Stroke, Neuromotor Disease, Multiple Sclerosis, Pain, Traumatic Brain Injury, and others. Our colleagues may enrich and enlighten our understanding of neurological disorders and expand on what may be, the future's therapeutic modalities.

As Charcot once said; Symptoms are in reality nothing but a cry from suffering organs. (Les symptômes ne sont donc en réalité qu'un cri provenant d'organes souffrants.) What I hope for, is that professionals attending this conference-whether a researcher, neurologist, or neuroscientist- can not only use the knowledge that they will be gathering in the upcoming days, but also appreciate the birth of new therapeutic modalities to heal the cry from the suffering neurological patient.

Welcome Message



Prof. Thomas J. Webster

**Hebei University of Technology (Tianjin, China) and Interstellar
Therapeutics, Mansfield, MA, United States**

Dear Congress Visitors,

The brain has often been called the final frontier in medical research. From the intricacies of neural networks to the blood brain barrier, it still contains so many unknowns. Neurological disorders affect the body's autonomic, peripheral and central nervous system and include diseases such as multiple sclerosis, Alzheimer's disease and other dementias, Parkinson's disease, epilepsy, migraines, and so many others. Especially concerning are the number of new and prolonged psychological disorders that have emerged during COVID-19 as a result of COVID-19 isolation, lost diagnoses, missing treatment, and unfortunately lost research time. It is time to make up for this lost time! Our patients need and deserve it!

As we continue to emerge from COVID-19, we need to take advantage of every conference possible to push our field ahead. While COVID-19 kept us from interacting with one another to develop solutions in neurology, that time has stopped and we need to double-down and make up for lost time. Even though we could not meet over the past several years, healthcare problems in neurology continued and even grew, and the statistics are as alarming as ever. For example, in 2019, it was estimated that neurological disorders accounted for a total of 7.5 million years lost due to premature death and a total of 8.2 million years that people have lived with neurological disabilities (Burden of Neurological Conditions, www.PAHO.org, accessed Sept. 22, 2022). And the statistics are getting even worse due to lost diagnostic, treatment, and research time that occurred during COVID-19.

So, come to the city of lights. The city where big bold statements (like Liberte, Egalite, Fraternite) have been made throughout world history. Come to Paris to learn about the future of an ever growing Neurology World! Don't simply just be a part of the future, help create it.

Welcome Message



Prof. Dr. Yong-Xiao Wang
Albany, New York, United States

Dear congress visitors:

As the Chair, I am very honorable and pleasurable to write these welcome notes.

The current conference, Neurology 2024, will bring together leading researchers, scientists, clinicians, and industry professionals from the neurology field around the world to discuss the latest, energizing, and innovative basic, translational, and clinical developments as well as discoveries in every facet of dementia.

More than 55 million people have dementia worldwide with that number to triple by 2050. The cost of dementia is \$1.3 trillion globally and is projected to increase to US\$ 2.8 trillion by 2030 ([who.int/news-room/fact-sheets/detail/dementia](https://www.who.int/news-room/fact-sheets/detail/dementia)). There is no cure for this disease, and the current treatments are neither specific nor always effective. Moreover, the molecular mechanisms underlying dementia are not fully understood.

This conference will include outstanding keynote sessions, fantastic plenary lectures, invited speeches, research presentations, technical demonstrations, and panel discussions around the world. One can expect that all these latest cutting-edge presentations and demonstrations will significantly advance almost all aspects of dementia including molecular geneses, signaling pathways, cellular processes, basic and clinical technologies, new drug discoveries, clinical manifestations, laboratory and clinical diagnoses, treatment options, and predictive prognosis.

Welcome Message



Prof. Dr. Ulrich Sprick
Neuss, Germany

Dear visitor of the Neurology 2024

Neuroimaging techniques are taking up more and more space in both research and clinical practice in uncovering the functional and effective mechanisms of neuronal networks in the brain. In the last two years, significant advances have been made in neural imaging, for example in the areas of Functional Magnetic Resonance Imaging (fMRI) and Positron Emission Tomography (PET). These technologies make it possible to study the activity and functioning of the brain in real time and allow researchers to gain insights into how the brain works and establish connections between specific activity patterns and cognitive processes thus unraveling the mysteries of the brain. In addition, new methods are also being developed to improve the spatial resolution and accuracy of the images. There are also advances in combining neuroimaging with other techniques such as Electroencephalography (EEG), Transcranial Magnetic Stimulation (rTMS) or MRI- navigated transcranial stimulation with shock waves (TPS) to cure neurodegenerative diseases. It is important to note that the development of neuroimaging techniques is an ongoing process and new advances are constantly being made. Innovations from different fields of the above will be presented at the Neurology 2024 conference in Paris. We are very pleased to discuss these innovative techniques with you and the speakers.

Welcome Message



Jacqueline Tuppen

Admiral Nurse and Specialist Practitioner, Cogs Club, United Kingdom

Dear, conference visitors and delegates, I am honored to write a few words of welcome. Whilst the world seeks for an accurate and timely diagnosis to provide optimal treatment for people living with dementia, the impact on families and carers can be overwhelming. Services need to address the growing gaps in support, such as day centres, access to social, financial and legal assessments. These now take months not weeks. Meanwhile families are coping alone and their mental health and family support networks are under great strain. Since 2011, Cogs clubs have been turning research into action by filling the gap in the services for people with mild dementia. They provide a much needed day of respite for carers and a day of stimulation for the person with dementia. They have been and can be adapted for people with moderate to severe dementia.

Welcome Message



Prof. W El Masri
Keele University, United Kingdom

Dear Colleagues

I am pleased to welcome you all to the Neurology 24 Congress which is being held in one of the most beautiful cities of the World. You will all be aware that Science is advancing at an unprecedented pace, technology is similarly improving and Clinicians need to update themselves and demonstrate evidence based value for the clinical management they provide. It is with this in mind that the Conference Organisers have invited some eminent speakers from around the globe. You are also invited and welcome to contribute. I believe Clinicians, Health Care Professionals, scientists, academicians, students, scholars, fund holders and government representatives will benefit from the opportunity to meet, discuss and exchange knowledge, experience and challenges they face in the field of neuroscience.

Welcome Message



Aldo Bruno

Vascular Dep PIO XI Clinic Rome, Italy

Dear colleagues, it is an honour and pleasure to write a few welcome notes.

Venous system of the brain could open a new and interesting prospective regarding the diagnosis and therapy of many brain diseases. I am a vascular surgeon. In 2011 I began to perform diagnosis and treatment of venous lesion in some neurodegenerative disease. In 2013 I began to evaluate lesions of the venous system of the brain and of the neck in patients with inner ear disease. I began to work together with various neuroradiologists and ENTs in Italy to investigate brain and neck venous system in patients with Meniere's disease and also other neurodegenerative disease with inner ear symptoms. At the moment I have evaluated over one thousand patients with inner ear disease with ultrasonography and MRI followed by endovascular treatment. The results with a long follow-up have been positive.

Welcome Message



Sergey Suchkov

**Institute for Biotech & Global Health of RosBioTech and
A.I. Evdokimov MGMSU, Russia**

Dear Colleagues, Partners and Friends,

We look forward to welcoming you to the 9th Edition of International Conference on Neurology and Neurological Disorders (Neurology 2024), to be held in June 20-22, 2024, in Paris as a Capital of France, and the historical and cultural Centre of Europe as well. Understanding the activity of a healthy and an altered brain is a vital focus of scientific research. Making progress in the field of personalized and precision neurology is thus one of the most significant global challenges of our time, with a lot of questions remaining. Medical doctors, fundamental, translational and applied researchers, biodesigners and bioengineers, government officials, partners from the biopharma industry will come together in order to obtain and exchange information on advances in targeted and smart treatment of the next step generation being controlled via applications of the upgraded preventive, prophylactic and rehabilitative manipulations. Advances in fundamental, translational and clinical research and the availability of biomarkers are beginning to transform the clinical neurology to make it personalized and precision, and healthcare landscape as a whole. Biomarker platforms and targeting principles construe the work that goes into bringing the most promising experimental therapies, diagnostic and monitoring technologies to the personalized and precision neurology.

The Conference provides a unique opportunity for the leaders, educators, clinicians, bioengineers and biodesigners, experts and scholars from all over the world to convene novel ideas on crucial issues and trends in the area of personalized and precision neurology, brain research, neurology-related drug discovery and drug development. Together, we will become a stronger voice and global force with the ultimate goal of succeeding in decreasing the world-wide burden of the illness.

Personally I am convinced that the international partnership and collaboration would play a crucial promoting role for the jointly set projects from any points of view. We do hope that your interaction with your colleagues from many different countries will stimulate a creative exchange of ideas and will be personally rewarding.

Warmest and productive wishes and hope to meet and to see you soon in Paris!

Welcome Message



Prof. Dr. Michael Ugrumov

Institute of Developmental Biology RAS, Russia

I am pleased to welcome participants to the 9th Conference on Neurology and Neurological Disorders (Neurology 2024), which will consider new fundamental data on the molecular mechanisms of the pathogenesis of neurological diseases, as well as innovative technologies for their diagnosis and treatment. Such conferences are especially important as the number of patients with brain diseases, such as depression, Alzheimer disease, and Parkinson's disease, is rapidly growing, which is considered an epidemic of the 21st century. I am especially pleased to welcome the conference participants to Paris, as I have had an opportunity of working in this city for many years. I wish the organizers and participants of the conference successful work.

Welcome Message



Prof. Dr. Khue Vu Nguyen

Centre for Molecular Biophysics, CNRS, Orleans, France

**School of Medical Imaging, Jiangsu Vocational College of Medicine,
Yancheng, Jiangsu, China**

**School of Medicine, University of California, San Diego, California,
U.S.A. (Former Institution Attended)**

Dear congress visitors, it is an honor and pleasure for me to writing some welcome notes. Understanding the activity of a healthy and an altered brain is a vital focus of scientific research. Research in neurology and neurological disorders such as Alzheimer's disease, Parkinson's disease, depression, etc. continues to grow in size and scope. Recently, epigenetic processes have been linked to a broad range of diseases such as cancer and cardiovascular diseases. More recently, they have been connected to neurological and psychiatric disorders. Epigenetic alterations are believed to play a significant role in disease susceptibility, especially in the context of the interplay between genetic and environmental risk factors. The study of epigenetics offers novel insights into disease etiology, progression, and opens the door for the development of potential therapies in both neurological and psychiatric contexts. The conference will provide the ideal forum to stimulate ideas and establish collaboration as well as to initiate intense and valuable discussion. Graduate students, postdoctoral fellows, or other early-stage scientists can take advantage of this opportunity to accelerate their knowledge and becoming an expert in this exciting field.



ABOUT MAGNUS GROUP

Magnus Group, a distinguished scientific event organizer, has been at the forefront of fostering knowledge exchange and collaboration since its inception in 2015. With a steadfast commitment to the ethos of Share, receive, grow, Magnus Group has successfully organized over 200 conferences spanning diverse fields, including Healthcare, Medical, Pharmaceuticals, Chemistry, Nursing, Agriculture, and Plant Sciences.

The core philosophy of Magnus Group revolves around creating dynamic platforms that facilitate the exchange of cutting-edge research, insights, and innovations within the global scientific community. By bringing together experts, scholars, and professionals from various disciplines, Magnus Group cultivates an environment conducive to intellectual discourse, networking, and interdisciplinary collaboration.

Magnus Group's unwavering dedication to organizing impactful scientific events has positioned it as a key player in the global scientific community. By adhering to the motto of Share, receive, grow, Magnus Group continues to contribute significantly to the advancement of knowledge and the development of innovative solutions in various scientific domains.

The background of the page features a grayscale photograph of a person in a dark suit and tie, shown from the chest up. Overlaid on this image is a white network diagram consisting of several circular nodes, each containing a stylized human silhouette. These nodes are interconnected by thin white lines, creating a web-like structure that suggests global connectivity or a professional network.

ABOUT

Neurology 2024

Magnus Group is delighted to announce the forthcoming 9th **International Conference on Neurology and Neurological Disorders**, slated for **June 20-22, 2024**. This distinguished event will convene both physically in **Paris, France**, and **virtually**, offering attendees a hybrid format that accommodates diverse participation preferences.

Under the theme *Neurological Frontiers: Exploring Disorders and Therapies*, the conference aims to assemble a multifaceted audience comprising esteemed academics, accomplished researchers, distinguished neurologists, proficient healthcare professionals, and esteemed industry experts. With a focused exploration of brain informatics research and the applications thereof in brain and mental health, the event will feature keynote addresses and scientific presentations spanning an extensive array of neuroscience specialties.

Through meticulously curated scientific sessions, compelling keynote presentations, and engaging panel discussions, Neurology 2024 endeavors to address emergent challenges and trends within the field. Serving as an invaluable platform for knowledge dissemination, collaborative endeavors, and the exchange of groundbreaking ideas, the conference is poised to shape the trajectory of neurology's future.

Anticipated outcomes include the cultivation of novel insights and the catalyzation of advancements, significantly contributing to the ongoing progression of neurology and its allied disciplines.

EXHIBITOR



Founded in 1987, Storz Medical AG is an independent partner company of the Karl Storz Group. From our headquarters in Switzerland, we develop innovative shock wave systems.

In the 1990s, we discovered the effectiveness of shock waves in the treatment of peripheral neurological diseases such as post-traumatic spasms and polyneuropathy. The first treatment of Alzheimer's patients with shock waves took place in 2014.

In 2018, Transcranial Pulse Stimulation with the NEUROLITH system was the first of its kind to receive approval for the treatment of the central nervous system of Alzheimer's patients. As a result of this success, neurological diseases such as Parkinson's, stroke and spinal cord injuries are a focus of our development activities.

Contact Information:

Email: info@storzmedical.com

Telephone: +41 71 677 4545

ABOUT CPD Accreditation



Continuing Professional Development (CPD) credits are valuable for Neurology 2024 attendees as they provide recognition and validation of their ongoing learning and professional development. The number of CPD credits that can be earned is typically based on the number of sessions attended. You have an opportunity to avail 1 CPD credit for each hour of Attendance. Some benefits of CPD credits include:

Career Advancement: CPD credits demonstrate a commitment to ongoing learning and professional development, which can enhance one's reputation and increase chances of career advancement.

Maintenance of Professional Credentials: Many professions require a minimum number of CPD credits to maintain their certification or license.

Increased Knowledge: Attending Neurology 2024 and earning CPD credits can help attendees stay current with the latest developments and advancements in their field.

Networking Opportunities: Neurology Conference provide opportunities for attendees to network with peers and experts, expanding their professional network and building relationships with potential collaborators.

Note: Each conference attendee will receive 27 CPD credits.

Table of Contents

Title: Role of care homes & assisted living facilities in caring for people with neurological disorders	56
Akankunda Veronicah, Golden Age Elderly Homes Kampala, Uganda	
Title: Neuroinflammation and venous lesion of the neck veins role in inner ear disease	44
Aldo Bruno, Vascular Dep PIO XI Clinic Rome, Italy	
Title: Clinical improvement of visual complaints in Benson's syndrome with TPS-treatment: A case series on atypical dementia	50
Ali Riza Gunes, Alexius/Josef Hospital Neuss, Germany	
Title: Transcriptome analysis of mRNA altered after different induction time of induced schwann-like cells from adipose-derived stem cells	58
Bo He, The Third Affiliated Hospital of Sun Yat-sen University, China	
Title: Acute encephalitis and its mimics in the critical care unit	59
Chennakesavulu Dara, ESIC Medical College, India	
Title: Immune checkpoint inhibitor-related cns vasculitis – report of four cases and excerpt from a systematic review	60
Christian Stenor, Herlev Hospital, Denmark	
Title: CNS vasculitis caused by lyme neuroborreliosis – The value of black blood MRI	62
Christian Stenor, Herlev Hospital, Denmark	
Title: Transistor based biosensors for dopamine detection	64
Cristian Ravariu, Polytechnic University of Bucharest, Romania	
Title: Impact of XBP1-mediated PINK1 transcriptional regulation to mitophagy control in parkinson's disease	116
Cristine Alves Da Costa, Institute of Molecular and Cellular Pharmacology, France	
Title: Opposite effects of CGRP-related genes on migraine and depression	52
Daniel Baksa, Semmelweis University, Hungary	
Title: The reorganization features of the corticospinal tract in postanoxic states in children	65
Daria Kanshina, Research Institute of Emergency Pediatric Surgery and Traumatology, Russia	
Title: Transcranial pulse stimulation for the treatment of patients with Alzheimer's dementia	66
Dilana Hazer Rau, Storz Medical AG, Switzerland	
Title: Brain health update: Current trends and future directions	68
Dixie J Woolston, Mayo Clinic Arizona/Scottsdale, United States	
Title: Utilizing computerized cognitive testing in neurology practices	70
Dixie J Woolston, Mayo Clinic Arizona/Scottsdale, United States	

Title: Genetic and cytokine influences on cognitive recovery following traumatic brain injury: A longitudinal study	71
Emily R Rosario, Casa Colina Hospital and Centers for Healthcare, United States	
Title: MOGAD, a view from the inside	31
Estrella Rodriguez, Neuroimmunologist and Health Consultant, Retired Doctor, Spain	
Title: The detrimental effect of light on dopaminergic neurons: Implications for PD onset	117
Francesco Petragano, University of L'Aquila, Italy	
Title: A novel extreme thermoacidophilic bacterium (<i>Spiroplasma sp.</i>) is the cause of CJD and other TSES	73
Frank Owen Bastian, Bastian Enterprises, United States	
Title: Personalized care in hemorrhagic stroke: Application efficacy and rehabilitation strategies	75
Guanghui Deng, Yongchuan People's Hospital of Chongqing, China	
Title: In vitro investigation of neuroprotective effects: Unveiling the impact of Aβ25-35-induced oxidative stress on SH-SY5Y cells and the therapeutic potential of phytochemicals	76
Harkomal Verma, Central University of Punjab, India	
Title: The brain mechanism regulating mammalian reproduction	77
Hiroko Tsukamura, Nagoya University, Japan	
Title: Towards brain-computer interface based communication tool utilizing EEG signals integrated with large language model	33
Hyeong Yeong Park, Chungbuk National University, Korea	
Title: In vitro investigations of the antiparkinsonian drug ropinirol properties on muscarinic receptors: A possible link to in vivo side effects	78
Irene Fasciani, University of L'Aquila, Italy	
Title: Turning research into action - Cogs Club	118
Jacqueline Tuppen, COGS Club, United Kingdom	
Title: Quantitative evaluation of factors contributing to the results of 3hz RNS test on ALS patients	34
Jinghong Zhang, Beijing 301 Hospital, China	
Title: New pathophysiologic approach to hyponatremia yields revolutionary results, identification of natriuretic protein that causes renal salt wasting and new syndrome of renal salt wasting in alzheimers disease	35
John K Maesaka, NYU Grossman Long Island School of Medicine, United States	
Title: Synaptic plasticity induced by transcranial magnetic stimulation	79
Joshua C Brown, Harvard Medical School, United States	
Title: Terminating the terminator: Glioma/ glioblastoma orthomolecular destruction as a new possible therapeutic intervention	80
Juan Moreira, CNC / Gnosis Neurointegrative Center, United States	
Title: Impact of neuron with two dendrites in heart behavior	36
Kaouther Selmi, University of Monastir, Tunisia	

Title: Exploring the enablers and barriers to implementing evidence-based practice in acute stroke care	37
Kelsey Bonnici, University of Malta, Malta	
Title: Highlights of the adverse effects of popular 'Whole body vibration' machines on the central and peripheral nervous systems	82
Ken Ware, NeuroPhysics Therapy Institute, Australia	
Title: Development of the early diagnosis of parkinson's disease at the prodromal stage	120
Michael Ugrumov, Institute of Developmental Biology RAS, Russia	
Title: Exploration of natural products and newly synthesized compounds as potential alternatives for alleviating symptoms of psychological conditions	84
Michelle Melgarejo da Rosa, Federal University of Pernambuco, Brazil	
Title: Post-dural puncture headache treated with greater occipital nerve block	85
Milton C R Medeiros, Irmandade Santa Casa de Arapongas PR, Brazil	
Title: Neurodegeneration, aging & mitochondria	86
Ming Guo, UCLA David Geffen School of Medicine, United States	
Title: Recent advances in brain imaging	88
Mohit Saxena, Northwestern University Feinberg School of Medicine, United States	
Title: The neurological challenges of schizophrenia: A study on Extrapyramidal symptoms in schizophrenia	89
Monika Sharma, AIIMS Jodhpur, India	
Title: A novel deletion variant in CLN3 with highly variable expressivity is responsible for juvenile neuronal ceroid lipofuscinoses	53
Naser Gilani, Farabi Medical Laboratory, Iran	
Title: Individualized neurofeedback	90
Olga M Bazanova, State Research Inst. Neuroscience and Medicine, Russia	
Title: TPS vs TMS - A power comparison	92
Oliver Seemann, Psychiatriezentrums Breitenau, Switzerland	
Title: Kiza-ntenga syndrome	93
Patrice Ntenga, University of Lubumbashi, Congo	
Title: Targeted plasticity therapy & new targets	94
Patrick Ganzer, University of Miami, United States	
Title: Understanding academic and educational problems fit for purpose in the contributing to attentional and learning difficulties in our children	96
Rahul Hajare, Sandip University, India	
Title: Narrative medicine: A communication therapy for the communication disorder of Psychogenic Non-Epileptic Seizures (PNES)	121
Robert B Slocum, University of Kentucky HealthCare, United States	
Title: Treatment of chronic muscle spasm and pain with the CMECD® procedure	122
Roger H Coletti, Interventional Health, United States	

Title: Tailored care homes for neurological disorders: A person-centered approach	97
Rwakiseta Herbert, Golden Age Elderly Homes Kampala, Uganda	
Title: Computer-aided detection and classification of ischemic strokes from MRI images in LMIC– A retrospective cohort study	99
Saadia Sattar, Aga Khan University, Pakistan	
Title: Validation of InstaDx, a clinical decision support tool information technology based application for ischemic stroke sub-type diagnosis	100
Saadia Sattar, Aga Khan University, Pakistan	
Title: A study to further develop and refine Carpal Tunnel Syndrome (CTS) nerve conduction grading tool	103
Salim Hirani, Ysbyty Gwynedd Hospital, United Kingdom	
Title: Neurophysiological grading tool of ulnar nerve entrapment across wrist and across elbow with case presentation	123
Salim Hirani, Ysbyty Gwynedd Hospital, United Kingdom	
Title: Caffeic acid improves locomotor activity and lessens inflammatory burden in a mouse model of rotenone- induced nigral neurodegeneration: Relevance to parkinson's disease therapy	38
Sawsan Zaitone, University of Tabuk, Saudi Arabia	
Title: Towards neurolinguistic processing transformer using EEG tokenization for smart brain-computer interaction	104
Se Na Jang, Chungbuk National University, Korea	
Title: Antibody-proteases as the upgraded translational tools of the next-step generation in personalized and precision neurology practice to monitor multiple sclerosis at clinical and subclinical stages	107
Sergey Suchkov, The Russian University of Medicine and The Russian Academy of Natural Sciences, Russia	
Title: Personalized and Precision Medicine (PPM) as a unique healthcare model to be set up to secure the human healthcare, wellness and biosafety through the view of public health	108
Sergey Suchkov, The Russian University of Medicine and The Russian Academy of Natural Sciences, Russia	
Title: Transcutaneous auricular vagus nerve stimulation: A novel therapy connecting central and peripheral system	124
Shaoyuan Li, China Academy of Chinese Medical Sciences, China	
Title: EEG application pre-and post-cerebral cortex disconnection surgery in intractable epilepsy	110
Shuhua Chen, Capital Medical University, China	
Title: In patients with multiple sclerosis, does the transition from brand name tecfidera to generic dimethyl fumarate result in statistically significant shifts in laboratory surveillance data, MRI imaging, patient-reported side effects, and compliance?	101
Stacey Main, Geisinger Medical Center, United States	

Title: Unveiling the unforeseen: Unusual presentation of acute motor and sensory axonal polyneuropathy in a regional Victorian Hospital	40
Subatharshini Sountharalingam, Goulburn Valley Health, Australia	
Title: Analysis of the role of the innate immune system in brain cancer in a research model of pediatric cancer/glioblastoma, drosophila melanogaster	41
Sarah Adelaide Crawford, Southern Connecticut State University, United States	
Title: Neural nanomedicine: Fighting stroke, improving stem cell delivery, healing nerves and using artificial intelligence	42
Thomas J Webster, Interstellar Therapeutics, United States	
Title: Memory impairment and dementia is enhanced with GABA-A receptor modulating steroids but antagonized by GABA-A receptor modulating steroid antagonists	44
Torbjorn Backstrom, University of Umea, Sweden	
Title: Effects of neuronavigated TPS: A novel tool of Non Invasive Brain Stimulation (NIBS)	126
Ulrich Sprick, Heinrich Heine University, Germany	
Title: Neurological recovery and its prognostic indicators following traumatic spinal cord injuries	127
W El Masri, Keele University, United Kingdom	
Title: The additive impact of obstructive sleep apnea syndrome and atrial fibrillation on the long-term outcomes in patients with ischemic stroke	112
Wenqiang Tao, Chongqing Traditional Chinese Medicine Hospital, China	
Title: Clinical research on acupuncture calming the mind in treating patients with post-stroke depression	46
Xiong Yujin, People's Hospital of Chongqing City, China	
Title : Multiomics analyses reveal DARS1-AS1/YBX1–controlled posttranscriptional circuits promoting glioblastoma tumorigenesis/radioresistance	48
Yiwen Chen, The University of Texas MD Anderson Cancer Center, United States	
Title: Novel signaling mechanisms and therapeutic options for diabetic vascular dementia	46
Yong Xiao Wang, Albany Medical College, United States	
Title: Neuroimaging by evaluation nerve repair and remodeling of acupuncture in children with cerebral palsy	48
Zhenhuan Liu, Guangzhou University of Chinese Medicine, China	

JUNE

20-22

9th Edition of International Conference on

Neurology and Neurological Disorders

KEYNOTE PRESENTATIONS

Neuroinflammation and venous lesion of the neck veins role in inner ear diseases

Purpose: To evaluate the relationship between Meniere's disease and Chronic Cerebrospinal Venous Insufficiency (CCSVI) using ultrasonography, magnetic resonance imaging, and venography and the effectiveness of angioplasty for reducing the symptoms of inner ear disease.

Materials and Methods: A total of 1112 patients diagnosed with definite MD who had not experienced improvement with medical and surgical therapy underwent duplex ultrasonography and MRI to diagnose the presence of venous stenosis of the neck.

Results: A total of 867 (80%) MD patients were diagnosed with venous lesion of the neck. In the healthy population, was evident in only 12% of patients. Venography was performed in 434 patients to confirm the diagnosis of CCSVI. In 80% of these patients, PTA of the IJVs and/or azygos veins was effective for treating the signs and symptoms of CCSVI and MD.

Conclusions: Venous lesion of the neck was prevalent in patients with MD. Most patients responded favorably to PTA. Our results suggest a possible etiological relationship between venous stenoses and MD that warrants further investigation.

Keywords: CCSVI – Chronic Cerebrospinal Venous Insufficiency, PTA – Percutaneous Transluminal Angioplasty, IJV – Internal Jugular Vein.



Aldo Bruno

Vascular Department PIO XI
Clinic Rome, Italy

Biography

Dr. Aldo Bruno studied Federico II University in Naples (Italy). Graduated in 1986. Specialist in General Surgery in 1991 and Vascular Surgery in 2007. At the moment he is a surgeon in Pio XI clinic in Rome. From over ten years he has been working on the role of the venous system in inner ear diseases. He has published more 40 research articles

A novel extreme thermoacidophilic bacterium (*spiroplasma* sp.) is the cause of CJD and other TSEs

Creutzfeldt Jakob Disease (CJD) is a fatal Transmissible Spongiform Encephalopathy (TSE) similar to diseases occurring in animals. Management of these diseases has been a disaster over the past fifty years since there has been total reliance on a flawed theory regarding pathogenesis. Since the transmissible agent possessed unusual biologic properties including survival after significant radiation, boiling, autoclaving and formalin treatment, the idea of a replicating protein arose despite the irrationality of the concept. The theory would not have happened if the Archaea microbes had been known at the time since they possess similar extreme biologic properties. However the novelty of the 'prion theory' despite lack of supporting data caught on and the idea became dogma consuming all research funds. The result was essentially no progress over the past fifty years. Not a problem when only a few CJD patients died of the disease, but the problem became more apparent when the faulty science was applied to handling the outbreak of Chronic Wasting Disease (CWD) in deer. Our laboratory has over this same time-period shown presence of a novel bacterium in TSE-affected tissues. The microbe was first demonstrated by electron microscopy in a CJD brain biopsy (Bastian, 1979), then by molecular means such as Polymerase Chain Reaction (PCR). More recently we have isolated the microbe from 100% of TSE-affected tissue samples. It is noteworthy that unique fibrillar proteins discovered by negative stain Electron Microscopy (TEM) in synaptosomal fractions from ultracentrifuged disrupted TSE tissues is a biological marker of TSE infection. These ultrastructural unique fibrillar proteins are referred to as Scrapie Associated Fibrils (SAF). SAF are found in 100% of TSE-affected tissues. The SAF fibril proteins are identical to fibril proteins seen by negative stain Electron Microscopy (TEM) in disrupted novel *Spiroplasma* sp. It is noteworthy that rabbit sera specific for SAF has immune reacted with internal *Spiroplasma* fibril proteins, which are part of the mechanism of locomotion for this microbe. We and others have grown this novel bacterium from 100% of TSE-affected tissues in *Brucella* media of low oxygen tension and as subsurface colonies on agar plates made with that culture medium. We have shown that this novel TSE isolate possesses the identical biologic properties attributed to the transmissible agent of the TSEs. We have confirmed Koch's postulates of causality in our animal inoculation experiments. We are proceeding to fully characterize this microbe, which we believe to be the causal agent of CJD and the other TSEs. Currently our laboratory is planning to develop accurate live diagnostic tests for the TSEs based upon detection of this novel microbe and potentially develop a cure for these now lethal conditions. An accurate live diagnostic test for CWD would be extremely important in handling the ongoing panzootic CWD infection in deer.



Frank O. Bastian, MD

Research Professor Adjunct,
Tulane Medical School, New
Orleans Louisiana, United States
70115

CEO, Bastian Enterprises LLC

Biography

Dr. Bastian (Neuropathologist, Duke School of Medicine) while on faculty at Baylor College of Medicine examined a brain biopsy from a patient with CJD. At that time (1976) the transmissible agent was stopped by a 100 nm filter, which is huge for an electron microscopist. He examined sections in grid-like pattern by TEM and found a coiled structure consistent with a *Spiroplasma* sp. *S. mirum* had produced spongiform encephalopathy experimentally in suckling rats. He then examined CJD autopsy by TEM and found a pristine coiled structure easily differentiated from surrounding autolyzed membranes. This convinced Dr. Bastian he was on the right track. He is developing a live diagnostic test for CJD and other TSEs based upon the novel bacterium.

Audience Take Away Notes

- Audience will better understand why we have not solved this problem
- It is important to realize that there is no such a mechanism as replicating protein and the infection of CJD is more conventional
- Those involved in management of these diseases either medical or wild life will be more encouraged that the problem can be solved
- The misinformation of the prion theory will show others that there may be other possibilities of research on the disease
- This revelation will show a wrong approach could disable the progress in resolving an issue such as TSE
- It is interesting how to compare research showing presence of a bacterium vs an unsupported theory suggesting the presence of a replicating protein. For example, the one experiment that has been put forward to support the prion theory is that if you remove the normal prion isoform on the surface of cells, you can prevent TSE. However, Japanese researchers have shown that the surface prion normal isoform serves as a receptor for Brucella bacterium. Thus if you remove the receptor protein for a bacterium, you cannot produce the disease. Presumably Spiro plasma sp. uses the prion receptor
- Future research based upon the bacterium will lead to resolution of the problem with development of diagnostic tests and therapies

Turning research into action - Cogs club

The NICE guidelines in November 2006 stated: People with mild / moderate dementia of all types should be given the opportunity to participate in a structured group cognitive stimulation programme. This should be commissioned and provided by a range of health and social care workers with training and supervision. This should be delivered irrespective of any anti-dementia drug received by the person with dementia.

Cognitive Stimulation Therapy (CST) is such an evidence based group programme. It's basis is activity and stimulation grounded in person centred care which is normally run as a two hour session, twice a week, over seven weeks. Cogs Clubs are based on and run in the same structured way as a Cognitive Stimulation Therapy session, but instead of two hours a COGS Club offers a day of activity, stimulation, music and fun for a person with mild dementia. Importantly, the Clubs provide the family/carer/significant other with a day's respite. COGS Clubs use a variety of approaches and is consistent with Everybody's Business (2005) which is committed to improving people's quality of life, meeting complex needs in a co-ordinated way, providing a person-centred approach and promoting age equality. The coordinated approach is due to the structured activities, the person centred approach is about the person's needs and abilities not their age or the type of dementia they may have. There are always going to be people that we cannot help but there are some that others turn down, who can be supported if only people can remember that one person with dementia is not the same as they next person with dementia. Stigma still exists around ageism and also the word dementia. The presentation will include case studies from members who were perceived as inappropriate for Day Centers or other clubs due to their complex needs. They tell how the Clubs have changed their lives and the lives of their significant other.

Audience Take Away Notes

- Attendees would have a greater understanding of the value and clinical worth of Cognitive Stimulation Therapy
- Attendees of the conference would gain awareness of the COGS Club initiative
- To raise awareness that there is still stigma attached to the word Dementia and Ageism
- Attendees would gain greater appreciation of the clinical worth of a variety of interventions for People with mild to moderate dementia



Jacqueline Tuppen

RN, BSc Hons & Specialist Practitioner, Mental Health and Admiral Nurse Community and Dementia UK, United Kingdom

Biography

Mrs. Jaqueline Tuppen, graduated in 1997 with a BSc Hons and Specialist Practitioner from the University of Greenwich, London. She worked with the local Community Mental Health team, ending as their Acting Community Services Manager. She became an Admiral Nurse in 2008, and retired from the NHS in 2011 when as an independent specialist nurse practitioner she started - COGS Club for people in the early stages of Dementia. She continues to work for Dementia UK as a sessional Admiral Nurse on their Dementia Helpline. She has published articles, and presented at a variety of events in the UK, Eire and Italy.

Synaptic plasticity induced by transcranial magnetic stimulation

Transcranial Magnetic Stimulation (TMS) now has widespread clinical utility far outpacing an understanding of how it modulates the brain – limiting optimization. Behavioral and network effects are subserved by cellular changes, most prominently at the synapse. ‘Excitatory’ TMS is purported to work through a form of synaptic plasticity called Long-Term Potentiation (LTP), a process which depends on NMDA receptors. TMS effects on the human motor system can be blocked by NMDA receptor antagonists and enhanced by NMDA receptor agonists – a pharmacologic augmentation approach successfully applied in a clinical trial for depression. In this presentation, I’ll highlight the preclinical and human physiology data pointing to mechanisms of action for the most commonly used clinical TMS protocols: 10-Hz repetitive TMS and intermittent theta burst stimulation.

Audience Take Away Notes

- Understand how TMS can be used for brain disorders
- Understand the purported mechanisms of action, including long-term potentiation
- Appreciate how TMS could be optimized by leveraging purported mechanisms



Joshua C Brown^{1, 2*}, , Jamie Kweon¹, Megan Vigne¹, Prayushi Sharma¹

¹Brain Stimulation Mechanisms Laboratory, McLean Hospital, Belmont, MA, United States

²Department of Psychiatry, Harvard Medical School, Boston, MA, United States

Biography

Joshua C. Brown, MD, PhD is a psychiatrist, neurologist, and neuroscientist. He is an Assistant Professor of Psychiatry at Harvard Medical School, Medical Director of Transcranial Magnetic Stimulation (TMS), Director of the Brain Stimulation Mechanisms Laboratory, and Director of TMS research in the Division of Depression and Anxiety Disorders at McLean Hospital. Dr. Brown is internationally recognized for his work on the synaptic mechanisms of TMS, pharmacologic augmentation of TMS, and TMS parameter selection.

Terminating the terminator: Glioma/ glioblastoma orthomolecular destruction as a new possible therapeutic intervention

Malignant Glioblastoma Multiforme is the most aggressive of the gliomas, a collection of tumors arising from glia or their precursors within the central nervous system. It accounts for 17% of all primary brain tumors which makes GBM the most common malignant brain tumor. Even with the development of new treatments, 88% of the patients died at 4 years and approximately 12% survive but with severe neurological disabilities. For most patients, the median survival is approximately 15-20 months in protocol-eligible patients with newly diagnosed GBM. GBM grows rapidly near doubling its size in 2-3 weeks. These are enough reasons to get the nickname of Terminator by neurosurgeons working on the neuro-oncology field. The challenging nature of GBMs is related to their heterogeneous and invasive phenotype, characterized by areas of angiogenic microvascular proliferation, brain invasion and necrosis. Here, we present a case study of three patients, one with Glioma & two with Glioblastoma Multiforme, that showed complete remission after receiving a combination of antioxidant agents.



Juan Moreira

CNC / Gnosis Neurointegrative Center, United States

Biography

Juan Moreira has a Board-certified neurologist with two fellowships; vascular neurology and neuroimaging. Exceptional background with over 25 years of experience devoted to providing top quality healthcare at the hospital, ER and ambulatory setting. He had successfully run a private practice from 1995 to 2022. In addition, with experience on Botox, Transcranial Magnetic Stimulation and Laser Photobiomodulation. Interested on clinical research. Looking to work on an institution dedicated to excellence.

Highlights of the adverse effects of popular 'Whole Body Vibration' machines on the central and peripheral nervous systems

Whole Body Vibration (WBV) involves using machines or platforms to transmit periodic pulse/wave energy to the body, causing muscles to contract and relax passively. While scientific evidence on the noxious effects of popular WBV machines is limited, experts generally agree that long-term use can be harmful. Further comprehensive research is needed to fully understand the effects of vibration on the body.

Potential concerns based on available research include:

- **Nerve Damage:** Excessive vibration exposure may lead to nerve damage, especially in the hands and feet, where peripheral nerves are more vulnerable to compression and injury.
- **Peripheral Neuropathy:** Prolonged use of vibration machines might contribute to peripheral neuropathy, characterized by numbness, tingling, and weakness in the extremities.
- **Musculoskeletal Problems:** Vibrations can stress the musculoskeletal system, potentially causing discomfort, pain, and injury in the joints, bones, and muscles.
- **Vascular Issues:** Intense vibration could impact blood flow and circulation, potentially affecting the health of blood vessels and increasing the risk of vascular problems.
- **Balance and Coordination Issues:** Frequent exposure to vibrations might affect balance and coordination, increasing the risk of falls and accidents.
- **Impact on the Spinal Cord:** High-intensity vibrations could transmit through the spine and impact the spinal cord, potentially causing neurological issues.
- **Headaches and Dizziness:** Vibrations can trigger headaches and dizziness, especially in motion-sensitive individuals.

Over several decades, NeuroPhysics Therapy (NPT) has successfully addressed long-term debilitating effects caused by excessive exposure to various vibration sources. NPT has been mainly used to treat individuals who overused marketed WBV machines, mistakenly believing these devices would alleviate their symptoms. However, NPT assessments revealed that ongoing long-term use of WBV devices actually caused the

initial conditions of their symptoms and worsened them. A worst-case scenario of a 61-year-old female who used WBV for up to 3 hours daily for nine years prior to NPT will be presented. Through complexity sciences, systems/network science, chaos theory, and neuroscience, a tested and proven hypothesis will be presented, explaining the NPT process's success. WBV signals resemble periodic white noise, but nature does not produce such signals. If a person's heart displayed this pattern, it would be considered arrhythmia.

Keywords: Whole Body Vibration, Neurophysics Therapy, Complexity Sciences, Systems/Network Science, Chaos Theory, Neuroscience, White Noise, Sensitivity to initial conditions.



Ken Ware

Founder of Neurotricial Sciences and NeuroPhysics Therapy, Gold Coast, Queensland, Australia

Biography

Ken Ware was founder of Neurotricial Sciences Pty Ltd and NeuroPhysics Therapy and Research and he had been in private practice for almost 30 years, while doing independent and collaborative research. He also presented unique research at 10 major International Science Conferences including Neuroscience, Physics, Psychology and Life Sciences, which covers a very broad scientific audience. He is Former Mr. Universe 1994, National powerlifting and Bodybuilding champion and record holder. He had published relative publications in 'Frontiers in Clinical Physiology' - 'World Journal of Neuroscience' - 'World Journal of Cardiovascular diseases'. He is recipient of Her Majesty, Queen Elizabeth's 'Australian Sports Medal' - in 2000, in recognition for personal contributions to the development of the Australian Sporting Culture Top of Form.

Development of the diagnosis of parkinson's disease at the prodromal stage

Parkinson's Disease (PD) is diagnosed many years after its onset, under a significant degradation of the nigrostriatal dopaminergic system, responsible for the regulation of motor function. This explains rather low effectiveness of the treatment of patients. Therefore, one of the highest priorities in neurology is the development of the early (preclinical) diagnosis of PD. The aim of this study was to search for changes in the blood of patients at risk of developing PD, which are considered potential diagnostic biomarkers. Advanced methodology used in this study included: (i) searching for patients at risk of developing prodromal PD based by premotor symptoms; (ii) searching for changes in the body fluids in these patients as diagnostic biomarkers; (iii) verifying the diagnosis of prodromal PD and diagnostic value biomarkers using Positron Emission Tomography (PET); (iv) anticipating the development of motor symptoms. Out of 1835 patients, 26 patients were included in the risk group. The primary criteria for inclusion in a risk group were the impairment of sleep behavior disorder and sense of smell, and the secondary criteria were neurological and mental disorders. In patients at risk and in controls, the composition of plasma and the expression of genes of interest in lymphocytes were assessed by 27 indicators. The main changes that we found in plasma include a decrease in the concentrations of l-3,4-Dihydroxyphenylalanine (L-DOPA) and urates, as well as the expressions of some types of microRNA, and an increase in the total oxidative status. In turn, in lymphocytes of patients at risk, an increase in the expression of the DAD3 receptor gene and the Lymphocyte Activation Gene 3 (LAG3), as well as a decrease in the expression of the Protein deglycase DJ-1 gene (PARK7). These blood changes we found in patients at risk are considered candidates for diagnostic biomarkers at the prodromal stage of PD. In subsequent PET study, the majority of patients at risk of developing PD showed a pronounced interhemispheric asymmetry in the incorporation of 18F-DOPA into dopamine synthesis in the striatum and some patients developed motor symptoms within a year. These data are considered as strong evidence for dopaminergic denervation of the striatum and the diagnostic value of identified blood biomarkers for prodromal PD.



**M. Ugrumov^{1*}MD, Ph.D,
E. Katunina², V. Blokhin¹,
M. Nodel³, E. Pavlova¹, A.
Kalinkin⁴, V. Kucheryanu⁵**

¹Koltzov Institute of
Developmental Biology RAS,
Moscow, Russia

²Pirogov Russian National
Research Medical University,
Moscow, Russia

³The First Moscow State Medical
Institute by Name I.M.Sechenova,
Moscow, Russia

⁴Medical Research and Education
Center, Lomonosov Moscow
State University, Moscow, Russia

⁵Research Institute of General
Pathology and Pathophysiology,
Moscow, Russia

Biography

Professor Michael Ugrumov, MD, PhD, Head of Laboratory of Neural and Neuroendocrine Regulations at the Institute of Developmental Biology of Russian Academy of Sciences (RAS), Professor of Department of Psychology at the National Research University Higher School of Economics (Moscow), Director of LLC Center for Early Diagnosis of Neurodegenerative Diseases (Kazan, Russia). Ugrumov graduated from the University Medical School (Moscow), got PhD at the Institute of Evolutionary Physiology and Biochemistry RAS (St. Petersburg) and Professorship at the Institute of Developmental Biology and the University Medical School (Moscow). He has published more than 250 research articles in SCI(E) journals).

Antibody-proteases as the upgraded translational tools of the next-step generation in personalized and precision neurology practice to monitor multiple sclerosis at clinical and subclinical stages

Biomarkers enable pre-early diagnosis, guide targeted therapy and monitor the activity and therapeutic responses across the diseases. Among the best-validated predictive biomarkers are autoimmunity-related ones to predict and prognosticate risks of the chronification, complications and thus disabling. The latter is so much valuable and important since chronic autoimmune inflammation course is structured to consist from different stages including subclinical and clinical ones. Multiple Sclerosis (MS) is just one of the chronic tissue-specific autoimmune diseases resulting in a destruction of myelin by different tools, including auto Abs of very broad specificity. Along with canonical Abs, some of the families proven to occur are Abs possessing with catalytic activity (abzymes), and thus to belong to Abs with functionality.

Abs against myelin basic protein/MBP endowing with proteolytic activity (Ab-proteases with functionality) are of great value to monitor demyelination to illustrate the evolution of MS. Anti-MBP auto Abs from MS patients and mice with EAE exhibited specific proteolytic cleavage of MBP which, in turn, markedly differed between: (i) MS patients and healthy controls; (ii) different clinical MS courses; (iii) EDSS scales of demyelination to correlate with the disability of MS patients to predict the transformation prior to changes of the clinical course.

Ab-mediated proteolysis of MBP was shown to be sequence-specific whilst demonstrating five sites of preferential proteolysis to be located within the immunodominant regions of MBP and to fall inside into 5 sequences fixed. Some of the latter (with the highest encephalitogenic properties) were proved to act as a specific inducer of EAE and to be attacked by the MBP-targeted Ab-proteases in MS patients with the most severe (progradient) clinical courses. The other ones whilst being less immunogenic happened to be EAE inducers very rare but were shown to be attacked by Ab-proteases in MS patients with moderate (remission-type) courses.

The activity of Ab-proteases was first registered at the subclinical stages 1-2 years prior to the clinical illness. About 24% of the direct MS-related relatives were seropositive for low-active Ab-proteases from which 22% of the seropositive relatives established were being monitored for 2 years whilst demonstrating a stable growth of the Ab-associated proteolytic activity. Moreover, some of the low-active Ab-proteases in persons at MS-related risks (at subclinical stages of MS), and primary clinical and MRT manifestations observed were coincided with the activity to have its mid-level reached. Registration in the evolution of highly immunogenic Ab-proteases would illustrate either risks of transformation of subclinical



Sergey Suchkov^{1-3*}, Noel Rose^{4,7}, Aleks Gabibov⁵, Harry W. Schroeder⁸, Trevor Marshall⁷, Abner Notkins⁶

¹Institute for Global Health & Biotech of Ros Bio Tech

²Professor, Dept for Chair for Clinical Allergology & Immunology of A.I. Evdokimov Moscow State Medical & Dental University (MGMSU), Russia

³EPMA (European Association for Prediction, Prevention and Personalized Medicine), Brussels, European

⁴Johns Hopkins Medical Institutions, Baltimore, MD, United States

⁵Institute for Bioorganic Chemistry, Russian Academy of Sciences, Moscow, Russia

⁶National Institutes of Health (NIH), Bethesda, MD, United States

⁷Autoimmunity Research Foundation, Los Angeles, CA, United States

⁸Division of Clinical Immunology and Rheumatology, University of Alabama at Birmingham, UAB, United States

stages into clinical ones, or risks of exacerbations to develop. And the escalation illustrating re-orientation of the sequence specificity to focus on the more important targeted sites for proteolysis might be an early prognostic and/or predictive sign to monitor demyelination progressing and thus the clinical illness to come. The activity of Ab-proteases in combination with the sequence-specificity would confirm a high subclinical and predictive (translational) value of the tools as applicable for personalized monitoring protocols.

Sequence-specific Ab-proteases have proved to be greatly informative and thus valuable biomarkers to monitor MS at both subclinical and clinical stages! And the translational potential of this knowledge is in the rational design of new diagnostic tools and new therapeutics based on principles of artificial biocatalysts and Biodesign.

Ab-proteases can be programmed and re-programmed to suit the needs of the body metabolism or could be designed for the development of principally new catalysts with no natural counterparts. Therefore, the proposed predictive value of MBP-targeted Ab-proteases for the development of MS is being challenged! Of tremendous value in this sense are Ab-proteases directly affecting the physiologic remodelling of tissues with multilevel architectonics (for instance, myelin), whilst securing the requests and standards of regeneration and remyelination.

So, further studies on Ab-mediated MBP degradation and other targeted Ab-mediated proteolysis may provide biomarkers of newer generations and thus a supplementary tool for assessing the disease progression and predicting disability of the patients and persons-at-risks.

Biography

Dr. Sergey Suchkov graduated from Astrakhan State Medical University and awarded with MD, then in 1985 maintained his PhD at the I.M. Sechenov Moscow Medical Academy and in 2001, maintained his Doctorship Degree at the Nat Inst of Immunology, Russia. From 1987 through 1989, he was a senior Researcher, Koltzov Inst of Developmental Biology. From 1989 through 1995, he was a Head of the Lab of Clinical Immunology, Helmholtz Eye Research Institute in Moscow. From 1995 through 2004, a Chair of the Dept for Clinical Immunology, Moscow Clinical Research Institute (MONIKI). Dr. Suchkov has been trained at: NIH; Wills Eye Hospital, PA, USA; Univ of Florida in Gainesville; UCSF, S-F, CA, USA; Johns Hopkins University, Baltimore, MD, USA. He was an Exe Secretary-in-Chief of the Editorial Board, Biomedical Science, an international journal published jointly by the USSR Academy of Sciences and the Royal Society

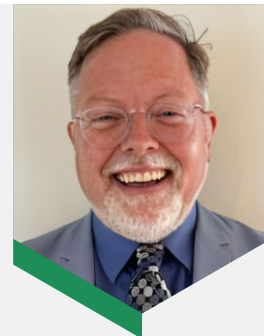
of Chemistry, UK. At pre-sent, Dr. Sergey Suchkov is a Chair, Dept for Personalized Medicine, Precision Nutriciology and Biodesign of the Institute for Global Health and Biotech of RosBioTech, and Professor of the Dept for Clinical Allergology & Immunology of A.I. Ev-dokimov MGMSU, Russia. He is a member of the: New York Academy of Sciences, USA; American Chemical Society (ACS), USA; American Heart Association (AHA), USA; EPMA (European Association for Predictive, Preventive and Personalized Medicine), Brussels, EU; ARVO (American Association for Research in Vision and Ophthalmology); ISER (International Society for Eye Research); PMC (Personalized Medicine Coalition), Washington, USA. Allergology & Immunology of A.I. Evdokimov MGMSU, Russia. He is a member of the: New York Academy of Sciences, USA; American Chemical Society (ACS), USA; American Heart Association (AHA), USA; EPMA (European Association for Predictive, Preventive and Personalized Medicine), Brussels, EU; ARVO (American Association for Research in Vision and Ophthalmology); ISER (International Society for Eye Research); PMC (Personalized Medicine Coalition), Washington, USA.

Neural nanomedicine: Fighting stroke, improving stem cell delivery, healing nerves and using artificial intelligence

Nanomedicine is the use of nanomaterials to improve disease prevention, detection, and treatment which has resulted in hundreds of FDA approved medical products. While nanomedicine has been around for several decades, new technological advances are pushing its boundaries. For example, Artificial Intelligence (AI) has revolutionized numerous industries to date. However, its use in nanomedicine has remained few and far between. One area that AI has significantly improved nanomedicine is through implantable sensors. This invited talk will present research in which implantable sensors, using AI, can learn from patient's response to implants and predict future outcomes. Such implantable sensors not only incorporate AI, but also communicate to a handheld device, and can reverse AI predicted adverse events. Examples will be given in which AI implantable sensors have been used in orthopedics to inhibit implant infection and promote prolonged bone growth. In vitro and in vivo experiments will be provided that demonstrates how AI can be used towards our advantage in nanomedicine, especially implantable sensors. Lastly, this talk will summarize recent advances in nanomedicine to both help human health and save the environment.

Audience Take Away Notes

- What is neural nanomedicine?
- How can neural nanomedicine can used to improve health?
- What is the future of neural nanomedicine?



Thomas J. Webster

Interstellar Therapeutics, Boston, MA, United States

School of Health Sciences and Biomedical Engineering, Hebei University of Technology, Tianjin, China

Biography

Thomas J. Webster's (H index: 121; Google Scholar) degrees are in chemical engineering from the University of Pittsburgh (B.S., 1995; USA) and in biomedical engineering from RPI (Ph.D., 2000; USA). He has served as a professor at Purdue (2000-2005), Brown (2005-2012), and Northeastern (2012-2021; serving as Chemical Engineering Department

Chair from 2012 - 2019) Universities and has formed over a dozen companies who have numerous FDA approved medical products currently improving human health. He is currently helping those companies and serves as a professor at Hebei University of Technology, Saveetha University, Vellore Institute of Technology, UFPI, and others. Dr. Webster has numerous awards including: 2020, World Top 2% Scientist by Citations (PLOS); 2020, SCOPUS Highly Cited Research (Top 1% Materials Science and Mixed Fields); 2021, Clarivate Top 0.1% Most Influential Researchers (Pharmacology and Toxicology); 2022, Best Materials Science Scientist by Citations (Research.com); and is a fellow of over 8 societies. Prof. Webster is a former President of the U.S. Society For Biomaterials and has over 1,350 publications to his credit with over 53,000 citations. He was recently nominated for the Nobel Prize in Chemistry (2023).

Memory impairment and dementia is enhanced with GABA-A receptor modulating steroids but antagonized by GABA-A receptor modulating steroid antagonists

Gamma-Amino Butyric Acid (GABA) is the main inhibitory neurotransmitter in the brain and GABA-ergic transmission is important for the regulation of learning and memory. The progesterone metabolite Allopregnanolone (Allo) is a potent positive GABA-A Receptor Modulating Steroid (GAMS). In animal models, Allo impairs memory and deteriorates memory and learning in transgenic mice given continuously at doses corresponding to low- grade stress. In humans, Allo impairs episodic memory and a GAMS, medroxyprogesterone acetate treatment for four years doubled the frequency of dementia in elderly women.

Disorders like hepatic encephalopathy and primary biliary cholangitis are associated with elevated Allo levels and impaired cognition, and increased fatigue.

Methods: We have invented compounds that function as GABA-A Receptor Modulating Steroid Antagonists (GAMSA), but without intrinsic effects on the GABA-A receptors. They will be used to block the deteriorating effects of Allo.

Results: The antagonistic effect is noted in most GABA-A subtypes investigated so far, especially the dominant GABA-A receptor subtype, $\alpha 5$, in the hippocampus and the subtype related to memory. In vivo, GAMSA inhibits Allo-induced anesthesia in rats, and sedation or saccadic eye velocity in humans. GAMSA, can inhibit Allo-induced memory disturbances in rats. A GAMSA (golexanolone, GR3027), restored learning and motor coordination in rat models of hepatic encephalopathy. GR3027 reverses neuroinflammation in the cerebellum and hippocampus in a rat model of neuroinflammation induced by hyperammonemia. In human's, vigilance, cognition, and pathological EEG was improved in patients with hepatic encephalopathy when treated with GR3027.

Conclusions: GAMSA seem to be possible to use as treatment for impaired cognition.



**Torbjorn Backstrom*,
Magnus Doverskog,
Thomas Blackburn**

Department of Clinical Sciences,
Umea University, Umea, Sweden

Umecrine Cognition AB, Stock-
holm, Sweden

Biography

Torbjorn C. Backstrom currently works at the Clinical sciences, Umea Neurosteroid Research Center, Norrlands universitetssjukhus. Torbjorn does research in Neurology, Gynaecology and Obstetrics. Their current project is 'Satiety induction in polycystic ovarian syndrome and Prader Willi Syndrome

Effects of neuronavigated TPS: A novel tool of Noninvasive Brain Stimulation (NIBS)

Treatments of patients with severe therapy-resistant dementia and depressive disorders repeatedly pose enormous challenges in psychiatry and neurology. Transcranial Pulse Stimulation (TPS) as a new non-invasive therapy method could represent a new alternative to standard treatments. In contrast to Ultrasound Stimulation (tFUS) TPS uses shock waves. These shock waves allow an application to superficial brain structures as well as into areas deep in the brain without the induction of any thermal side effects. The stimulation of the target areas is MRI-navigated with a similar precision as in stereotactical procedures.

TPS is currently approved for the treatment of Alzheimer's disease. Since AD patients repeatedly reported significant improvements of their mood, a healing attempt was carried out in patients with a severe therapy-resistant depression. An 81-year-old inpatient suffered from a major depressive disorder (lasting for longer than 18 months). All pharmacological approaches with different antidepressants (including ketamine) also in combination treatment and adjuvant therapy did not improve the status of the patient. ECT also did not lead to any positive change. The TPS-treatment was performed as a healing attempt. The patient received bilateral stimulation of the nucleus accumbens (the reward center of the brain) and the frontodorsal cortex (bilaterally 3,000 pulses per session, 0.2 mJ/mm² per pulse, frequency 4 Hz). The navigated stimulation was carried out over a period of 2 weeks (with 3 sessions per week) by a Neurolith apparatus (Storz Medical, Switzerland). In addition to the clinical assessment of depressive symptoms, standard tests with a TFDD and CERAD were carried out. The patient was examined and tested before TPS stimulation as well as 2 and 6 weeks later. A dementia syndrome was not present in the patient.

TPS stimulation led to an exceptional significant improvement in mood, which was also reflected in the TFDD (18/20 to 6/20). This improvement persisted for over 6 weeks. Side effects were not reported by the patient. This case shows that MRI-navigated TPS can be considered as an alternative method for therapy-resistant major depression. To determine the exact mechanisms of action of TPS further investigation is needed. In a rodent model it could be shown that TPS induced an increase of Nitric Oxide (NO)-levels. Both, the release of trophic factors and a temporarily opened Blood-Brain-Barrier (BBB), seem to play a critical role. Thus a transient opening of the BBB might help to potentiate effects of administered pharmaceuticals contributing to an improvement of brain function.



Ulrich Sprick^{1,2*}, Ali Gunes¹, Martin Kohne¹

¹Alexius/Josef Clinic, Neuss, Germany

²Faculty of Medicine, Heinrich-Heine-University, Düsseldorf, Germany

Biography

Prof. Dr. med. Dr. rer. nat. Dipl.-Psych. Ulrich Sprick studied Medicine and Psychology at the University of Düsseldorf. He is an associated professor at the Medical Faculty of the University of Düsseldorf. Trained as a specialized psychiatrist and an expert psychologist in neuropsychology he actually works as Head of the Center of Neurostimulation and the Department of Research and Development of the Alexius/Josef Clinic in Neuss (Germany). He has been working in brain research for more than 20 years with special interests in brain stimulation, neuroplasticity, trophic factors, endogenous opiates and memory. From the clinical perspective his actual research interests include treatment of Alzheimer's Disease and depression, nonvisual effects of light and telemedicine.

In summary TPS is a very promising option as an adjunctive therapy to a state-of-the-art treatment which may achieve a reduction of depressive symptoms as well as an improvement of cognitive functions and quality of life.

Audience Take Away Notes

- Presentation of a new effective method of non-invasive brain stimulation with very low side effects
- Beside case reports of patients with a severe depression collected data of more than 50 patients with of Alzheimer's Disease treated with TPS will be included. The ratio of positive effects and observed negative side effects will be analysed
- Discussion of the working mechanism(s) of TPS

Neurological recovery and its prognostic indicators following traumatic spinal cord injuries

Fortunately the incidence of Traumatic Spinal Cord Injury (TSCI) is rare 10-50/million population/year. Trauma to the spinal cord however results in a multi-system physiological impairment and malfunction, paralysis, sensory loss and a potential wide range of medical and non-medical complications. The injured spinal cord is physiologically unstable and can also be further damaged by non-mechanical insults. Hypoxia, Hypertension, Hypotension, Sepsis, Hypothermia, Fluid overload can, with inadequate management are insults that can easily occur and cause more damage to the injured cord that result neurological deterioration, lack of recovery or delay in recovery. A physiological approach with scrupulous simultaneous attention to the spinal injury and all the medical effects of cord damage Guttman in the 2ndWW demonstrated that all complications can be prevented, a good and painless range of movement of the spine can be achieved, further neurological damage can be prevented. He also realised that the non-medical effects of cord damage can be equally devastating for the patients and if not given the same attention they can affect the medical and rehabilitation outcomes. With a holistic management from the early hours or days of injury Guttman and the clinicians who were able to offer this model of service delivery in the last seventy years demonstrated that patients with complete cord damage become able to live enjoyable long dignified fulfilling productive and often competitive lives with safe and convenient functioning of all their body systems. They also demonstrated that patients with sensory sparing made significant motor recovery and most patients with long tract sensory sparing recovered ambulation irrespective of the radiological appearance on presentation and without intervention on the injured spine.

From the mid-eighties onward the development of CT and MRI; improved instrumentation & increased safety of anaesthetic resulted in a change of practice from Active Physiological Conservative Management (APCM) of the spinal injury and all its effects to a Focused Surgical Stabilisation or Decompression or both. The rationale is to mechanically realign and stabilise the spine and/or decompress the spinal cord in the hope of preventing further neurological damage, achieving early mobilisation and rehabilitation and reducing cost of treatment.

The significance of the BI, Canal encroachment and Traumatic Cord Compression as well as the possible advantages, disadvantages, complications of Surgical Stabilisation, Surgical Decompression and APCM will be discussed. The arguments for Surgical vs Active Physiological Conservative Management of the injured spine and effects of cord damage and their outcomes will be discussed. The importance of some future areas of research will be highlighted.



W El Masri , MB, BCH, FRCS, FRCP

Clinical Professor of Spinal Injuries, Keele University
Emeritus Consultant Surgeon in Spinal Injuries, RJ & AH Orthopaedic Hospital – Oswestry Shropshire SY107A-G, United Kingdom

Biography

W S El Masri trained in the speciality of spinal injuries at Stoke Mandeville, Oxford, Guys Hospitals & the USA between 1971 and 1983. To date he personally treated 10,000 patients with traumatic Spinal Injuries. WEM developed, and led the Midland Centre for Spinal Injuries (MCSI) between 1983 & 2014. He took responsibility for the management of the injured spine, the multisystem malfunction as well as the range of non-medical and physical effects of cord injury in the acute, subacute, rehabilitation phases as well as in the long term. WEM lectured worldwide in developed and developing countries. He contributed to the literature with over 140 publications. He published his observations on the prognostic indicators of neurological recovery following Traumatic Spinal Cord Injuries and Introduced the concept of Physiological Instability of the Injured Spinal Cord and its influence on clinical management. WEM demonstrated that with simultaneous Active Physiological

Conservative Management of all the physiologically impaired and malfunctioning systems of the body together with the injured spine neurological recovery occurs in the majority of patients irrespective of the degree of Biomechanical Instability, Canal encroachment or Cord Compression. He is Peer reviewer and on the Editorial Boards of a number of Journals. WEM held the offices of: President of the International Spinal Cord Society, Chairman of the British Association of Spinal Cord Injury Specialists and Executive Member of the BSRM. Founder Member and trustee of a number of charities that support Health Care professionals and patients. Raised about six million pounds from charity to rebuild and furnish the MCSI. Advisor to WHO's International Perspectives on Spinal Cord Injury which was published in 2013 Member of the NICE Guideline Developing Group in spinal injuries. He received a number of awards including: the Medal of the International Spinal Cord Society, National Hospital Doctor Team Award for Innovation, Outstanding achievement award from the Chinese Society of Spinal Injuries, Outstanding Consultant Achievement award by the Spinal Injury Association, Hon. Presidency of the Romanian Spinal Cord Society, the Paul Harris Fellowship of the Rotary Club. WEM's concepts and support for evidence based clinical management including the right of the patient to make a fully informed choice between the various methods of management including the injured spine; the importance of management in a spinal injury centre with a fit for purpose infrastructure that enables all medical and non- medical needs of the patient to be met can be accessed free of charge in the following publication in the journal.

Novel signaling mechanisms and therapeutic options for diabetic vascular dementia

Vascular dementia is a neurodegenerative disease. This disease is also known as Vascular Contributions to Cognitive Impairment and Dementia (VCID). As well documented, VCID has high morbidity and mortality, and diabetes is a leading factor in the development of VCID. However, the cellular and molecular mechanisms underlying the development of diabetes-induced vascular disease remain to be largely unknown. Moreover, the current treatments for VCID are neither very specific nor effective. It has been generally believed that dysfunctions of Cerebral Arteries (CAs) to cause blood hypoperfusion to the brain makes an important contribution in the initiation and progress of VCID. Perfusion of CAs is predominantly generated and controlled by contraction and relaxation of Smooth Muscle Cells (SMCs). These two cellular processes are fundamentally produced and regulated by cell calcium signaling. The cell calcium signaling is primarily determined by ion channels on the plasma membrane and Sarcoplasmic Reticulum (SR) membrane. Therefore, we have started to explore whether and which ion channels might be essential for diabetes-evoked VCID. Consistent with previous reports by us and other investigators, we have found that intraperitoneal injection of streptozotocin caused a large increase in blood glucose, leading to diabetes in mice. A series of our studies have also discovered that the diabetic mice had declined cognition, impaired memory, and increased anxiety, thereby exhibiting significant VCID. This diabetic vascular dementia might occur due to cerebral vasoconstriction and subsequent blood hypoperfusion, as revealed by Laser Speckle Imaging System. Diabetic cerebral vasoconstriction could result from increased intracellular calcium concentration ($[Ca^{2+}]_i$) in CSMCs. Increased ($[Ca^{2+}]_i$) was attributed to the augmented Ca^{2+} release from the SR, the major intracellular Ca^{2+} store, which followed the hyperfunctional activity of type-2 Ryanodine Receptor (RyR2), the calcium release channel on the SR in CSMCs. Biochemical and genetic experiments indicated that the hyperfunction of RyR2 channel was a result of dissociation of FK506 binding protein 12.6 (FKBP12.6), an endogenous channel stabilizer (or inhibitor). In conclusion, our findings provide the first evidence that RyR2/FKBP12.6 dissociation exerts a crucial role in the development of diabetes-caused VCID; presumably, specific pharmacological and genetic inhibition of RyR2 and/or FKBP12.6 stabler in vascular SMCs may become specific and effective treatment options for diabetic VCID and vascular complications.



Yong Xiao Wang

Department of Molecular and Cellular Physiology, Albany Medical College, Albany, New York, United States

Biography

Dr. Yong Xiao Wang has been a Full Professor in Department of Molecular and Cellular Physiology at Albany Medical College since 2006. Dr. Wang obtained his MD at Wannan Medical University, PhD at Fourth Military Medical University, and postdoctoral training at Technology University of Munich and University of Pennsylvania. He has made many important findings using complementary molecular, biochemical, physiological, and genetic approaches at the molecular, organelle, cellular, tissue and organism levels in animals and human samples, had numerous publications in *Nature Commun* (impact factor: 14.290), *Antioxid Redox Signal* (8.209), *Proc Natl Acad Sci USA* (9.432), *Nature* (34.480), *Circ Res* (9.214), and other highly peer-reviewed journals and academic books, and served as the editorial board member and/or section editor as well as the executive committee member and/or subcommittee chair for professional societies.

Audience Take Away Notes

- Our current presentation will greatly help the audience to create their future research directions
- The finding presented may significantly assist the audience to develop novel preventive and therapeutic strategies for VCID and other dementias
- Our research could also be used by other faculty to expand their research or teaching

Neuroimaging by evaluation nerve repair and remodeling of acupuncture in children with cerebral palsy

Objective: To investigate quality of life in children with autism spectrum disorder. This study aimed to evaluate the validity of existing QoL questionnaires for use with children with ASD aged 8–12 years.

Method: 200 children with autism spectrum disorder (male: 118, female: 82; 2~4 years old: 80, 5~7 year old: 87, 8~12 years old: 33) and 120 normal children (control group) are brought into this study. Separate path analyses were performed to evaluate models of QOL and Intelligent evaluation. The PedsQL (Pediatric Quality of Life Inventory) as robust measures used with children with neuro developmental disorders.

Results: In the study, the test group had lower scores on the PedsQL4.0 universality Core scale, in comparison with the control group. Behaviour problems had a negative indirect effect on Community adaptation, mental health and school performance. And a lower intelligence-related quality of life for children with autism spectrum disorder and clinically significant autistic symptoms in comparison with children and fewer symptoms. The quality of life children with autism spectrum disorder group was lower than normal group in the scores of physical functioning were (62.30 ± 25.05), emotional functioning were (53.57 ± 26.69), social functioning were (44.63 ± 27.91), and school functioning (38.69 ± 30.60). The totals cores of Peds QL were (49.86 ± 23.32), with the difference being significant (90.16 ± 13.32 , 79.09 ± 19.56 , 86.39 ± 15.45 , 82.75 ± 16.03 , 85.23 ± 14.2 , $P < 0.01$).

Conclusions: Results suggest greater impairment in adaptive functioning and emotional disorders. For high-functioning children with autism spectrum disorder, potential positive development played significant roles in rehabilitation, to achieve and maintain the best level of intervention. The severity of the disorder and social support coping strategies were related with Life self-care ability and adaptation, coping with intelligent obstacle seriously. Physicians are encouraged to evaluate for early treatment in the overall care plan.

Key words: Children with Autism Spectrum Disorder, Quality of life, Pedsq4.0, Evaluation.



Zhenhuan Liu

Affiliated Nanhai Maternity
Children's Hospital of Guangzhou
University of Chinese Medicine,
China

Biography

Zhenhuan LIU professor of pediatrics, Pediatric acupuncturist Ph.D. tutor. He has been engaged in pediatric clinical and child rehabilitation for 40 years. Led the rehabilitation team to treat more than 40,000 cases of children with intellectual disability, cerebral palsy and autism from China and more than 20 countries, More than 26800 childrens deformity returned to school and society and became self-sufficient. The rehabilitation effect ranks the international advanced level. Vice-chairman of Rehabilitation professional committe children with cerebral palsy, World Federation of Chinese Medicine Societies. Visiting Professor of Chinese University of Hong Kong in recent 10 years. He is most famous pediatric neurological and rehabilitation specialists in integrated traditional Chinese and Western medicine in China. He has edited 10 books. He has published 268 papers in international and Chinese medical journals.

JUNE

20-22

9th Edition of International Conference on

Neurology and Neurological Disorders

WORKSHOP



Ali Riza Gunes*, M. Kohne, U. Sprick

Center for Neurostimulation, Alexius/Josef Hospital, Neuss, Germany

Clinical improvement of visual complaints in benson's syndrome with TPS-treatment: A case series on atypical dementia

Background: Atypical dementias often go unrecognized in everyday clinical practice. In 1988, Frank Benson and colleagues first described a case series of 5 patients with progressive visual complaints in the form of Balint's syndrome (visual ataxia, ocular apraxia, simultanagnosia) caused by a brain disease, which they summarized as Posterior Cortical Atrophy (PCA). The further clinical course is similar to a neurodegenerative disease, with progressive atrophy starting from posterior changes and involving temporal and frontal lobes, but in contrast to Alzheimer's Dementia (AD), hippocampal and entorhinal regions show a lower rate of atrophy. A causal therapy does not yet exist.

Methods: In this case report, we report on a 69-year-old right-handed patient whose everyday life (with an unremarkable ophthalmologic exclusion diagnosis) was mainly impaired by visual complaints (Balint syndrome). As a result, she was barely able to read or manage her household. Neuropsychological and liquor diagnostic findings were typical of Alzheimer's disease. Magnetic resonance imaging diagnosed PCA, which was objectified using morphological and computer-aided analyses. We treated the patient with TPS over a period of 2 months. The principle of TPS is based on ultrashort ultrasound pulses in the microsecond range, which act on mechano-sensitive channels of the nerve cell membrane by means of mechanical effects and lead to a change in transmitters and the release of growth factors by stimulating neuronal networks. Animal experiments have shown that this leads to microglia activation and plaque reduction. The patient in our case study received 6 therapy sessions within 2 weeks and a further therapy session after 6 weeks with an energy quantity of 0.2 mJ/mm^2 per individual pulse with a total number of pulses of 6000/session and a frequency of 4 Hz. Thanks to 3D navigation based on MRI images of the patient, an individual pulse application was carried out using the Neurolith device from Storz Medical. The pulses were applied bilaterally to the frontal, parietal and temporal cortex and an additional 800 pulses were applied to each occipital lobe. To test executive function, the color-word interference test (Stroop test) was used with the following pre/post design: t0 pre-stimulation: t1 after 6 treatments, t2 a further 6 weeks later.

Results: After the first three treatment sessions, the patient already reported a significant reduction in her visual complaints: She was able to read well and, according to external anamnesis, was also able to manage her household without any problems again. She also achieved better results in the Stroop test after 2 (t1) and 6 weeks later (t2).

Audience Take Away Notes

- Using Transcranial Pulse Stimulation (TPS), initial studies have shown improvements in cognition in AD patients using neuropsychological tests. The aim of our observational study was to investigate the possible effects of TPS in a PCA patient whose main complaint was visual impairment (Balint syndrome)

- **Learning Objectives**

- Presenting innovative non-invasive brainstimulation procedures: showing alternative/additional stimulation methods to TMS
- To show various treatment options for TPS: expanding the treatment spectrum thanks to specific stimulation targets
- Identifying treatment alternatives for Benson's syndrome: supplementing the range of treatment options by TPS

Biography

Dr. Gunes studied Medicine at the University of Dusseldorf/Cologne, graduated as MD in 2012. After joining the research group of Prof. P. Berlit at Krupp Hospital, Essen, he completed his doctoral thesis in 2018 on vascular diseases and received his board certification for Neurology in 2019. He completed his psychiatric fellowship at University Hospital Dusseldorf and received his Board certification 2022. Since then consultant at center for Neurostimulation of Prof. U. Sprick at Alexius/Josef Hospital. Besides of publishing on research articles and writing chapters for neurological textbooks (SOPs Neurology), he presented posters and held oral speeches during national (DGN, DGPPN) and international (EAN, INBC, INS) neurological congresses.



Dilana Hazer Rau

Storz Medical AG, Switzerland

Transcranial pulse stimulation for the treatment of patients with alzheimer's dementia

Transcranial Pulse Stimulation (TPS) is a non-invasive procedure for the treatment of patients with Alzheimer's disease. Alzheimer is the most current form of dementia, affecting millions of patients worldwide. As a neurodegenerative disease, it is associated with a progressive degradation process in the brain, leading to cognitive and functional impairment. Various forms of standard therapies are currently used to slow down the progression of the disease. However, their effective benefits and possible side effects should always be weighted up prior prescription. TPS is a relatively new drug-free procedure that can be used as an add-on treatment option to standard therapies. In TPS smooth low-energy shock waves, so-called TPS pulses, are generated and delivered in a non-invasive focused way to the brain regions typically affected by Alzheimer's disease. As a neurostimulation method, the goal of TPS is to stimulate deep brain tissue and regenerate nerve cells and cell functions as well as improve vascularization within the brain. Various studies were recently conducted on the effects and safety of this new treatment method. In this overview, we report on current data and describe the mechanotransduction effects of low-energy TPS treatment. Further, an overview on recent TPS studies published with Alzheimer's disease patients is presented including the achieved results, regarding clinical effects and safety issues. The studies use various psychological measures to assess the cognitive and emotional functions of the patients before and after treatment. The results suggest that TPS is a safe and effective treatment option. Increasing patients' number and further controlled clinical studies especially on long-term effects and biological responses are required to confirm the results and manifest the positive effects as well as further understand the translational mechanisms of this new but promising treatment procedure.

Audience Take Away Notes

- **Learn about TPS Technology:** Gain a comprehensive understanding of TPS principles, mechanisms, and applications
- **Get an update on current research:** Explore the latest advancements and research findings in the field of TPS
- **Practical applications:** Discover how TPS can be used in cognitive enhancement of Alzheimer's symptoms and get an insight into potential applications in the field of neurodegenerative diseases

Biography

Dr. Dilana Hazer Rau studied Engineering & Medical Physics (B.Eng. & M.Sc.) at the Universities of Oldenburg (CvO) and Lyon (UCBL1) and received her doctorate in Biomedical Engineering (Dr.-Ing.) at the Karlsruhe Institute of Technology (KIT), Heidelberg University Hospital and Carnegie Mellon University (CMU), Pittsburgh, PA. She then worked in the medical device industry in Leuven and Munich with patient-specific modeling systems before joining the Medical Psychology at the Ulm University Hospital as scientific researcher within the MvW-Habilitation Program. She is currently Product Manager for shock wave therapy systems in the fields of Neurology and Cardiology.



Oliver Seemann

Psychiatriezentrum Breitenau, Switzerland

TPS vs. TMS - A power comparison

rTMS (Repetitive Transcranial Magnetic Stimulation) is yet a well know neurostimulation technique, which is now challenged by TPS (Transcranial Pulse Stimulation). TMS has been investigated since around 40 years and conquered an undisputed place in clinical treatment, most of all in the field of depression. The challenger TPS is a newcomer, who started the success story through treatment of Dementia of Alzheimer type. Both techniques are also used off-label, though modes of action are not always clear. This comparison will highlight the indications, the differences and commonalities. By combining the power of both strategies some of the neurological and psychiatric diseases will best be fought. Thus, this comparison may lead to a better understanding of neuroplasticity in general.

Biography

Dr. Med. Oliver Seemann 1988-93 study of medicine in Heidelberg, Barcelona and Munich. 1997-2001 education as psychiatrist and psychotherapist at University LMU München 2002-ongoing: outpatient treatment and research of the effects of Repetitive Transcranial Magnetic Stimulation (rTMS) on psychiatric and neurological disorders and as a method for wellness and lifestyle for healthy people. 2017-ongoing: through his research he developed the hitherto only clinically tested, totally mobile, Low-Intensity subthreshold transcranial magnetic stimulator. 2020 implementing an Interventional Psychiatric Department in the Psychiatric Clinic of Schaffhausen (PZB, Switzerland): High-Intensity and subthreshold mobile Low-Intensity rTMS, TPS.

JUNE

20-22

9th Edition of International Conference on

Neurology and Neurological Disorders

SPEAKERS



Akankunda Veronicah

Founder and Executive Director Golden Age Elderly Homes Kampala-Uganda

Role of care homes & assisted living facilities in caring for people with neurological disorders

Introduction: Dementia is an age mental disorder that makes victims lose normal functionality that need delicate attention. It has been technically defined as a clinical syndrome characterised by a cluster of symptoms manifested by difficulties in memory, disturbances in speech and and cognitive functions, changes in behaviours, and impairments in activities of daily living, and includes a range of neurological disorders characterised by memory loss and cognitive impairment. (Livingston et al, 1996). Most family members do not know that Dementia is an age-related disorder or illness and lack the requisite skills to handle the situation. The misconception about many old age-related issues like dementia is the root cause of a systematic social failure to create a conducive rehabilitation environment. In the African context which is sometimes superstitious, in some scenarios, this condition is interpreted as a curse and hence treated with black magic which is against proved scientific solutions to the problem. This scientific ignorance concerning the problem leads to a Try and err treatment methodology and in fact, many of the patients die because of wrong prescriptions especially traditional concoctions. Given such a misconceived approach suggesting that dementia patient is a curse, they are consequently discriminated against. They are also considered useless, labelled mad people because of the uncoordinated stories and hence their health needs are not prioritised as the case with normal people.

Why is it important for the family to play an exceptional role?

Family members are the primary health care givers and therefore the way how they handle the situation in its early stages determines future deterioration syndromes like total memory loss. Unfortunately, most family members are ignorant about this condition and in most cases the patients are brought to our facilities when their condition was already mismanaged by family members and we thus cannot do much. For example, incontinence can be managed at early stages through potty training or toilet scheduling before resorting to 24/7 diapers which are also not good. Family is the only solace (consolation) amidst socially constructed stigmatisation practices. The moment their own family disowns them or fail to understand them, many dementia patients break down because of the sense of uselessness. Illness is the most critical moment in which family can prove a closer bond than ever (Giltin et al 2008) It is the best insurance policy that anyone can ever get. The act of sending dementia patients to elderly care facilities like us in Kampala presents a social paradox. For while on one hand the family members think that they are paying for quality care and rehabilitation of their abnormal aged relative, the dementia patients on the other hand feel socially disowned and being thrown away to third party caregivers. This therefore means that the best person for the job is actually the immediate family.

What can be done to fix the problem?

Professional Elderly care should be understood and practiced as an extension of homes not a dumping place for people considered as abnormal on account of ignorance. Immediate relatives should therefore be sensitised concerning the normalcy of dementia in the context of old age so that can be understanding and supportive to dementia patients rather than discriminating them as them present day lepers.

There is a need to skill home based care givers on how to handle dementia in its early stages. Unless this is done, many of our elderly home shall be filled with patients who should have been treated and supported from their homes. This skilling of home-based care givers is a vital intervention because until elderly care is appreciated as a human moral obligation, many transactional rehabilitation centres will crop up and this shall be one of the worst moral decadences of our times.

The task of caregiving is complex and can lead to physical, mental and financial stress for caregivers. Emotions such as guilt, resentment, sadness and the effort expended, as well as the anticipated loss of the relative, emerge (Brodaty H, Donkin M, 2009). This therefore supports the need to skill home care givers.

Conclusion: Aging is a natural and inevitable dimension of human life and therefore its associated effects like dementia among others should be conceived and treated as normal. We members of society actually turn abnormal if we consider dementia an abnormal condition. The last people to be abnormal should be the immediate family members because it is old that gives forth to the new.

Biography

Veronicah studied Mass communication and television production at Nairobi Film School and graduated with BA in 2009. She worked with some of the major media houses in Kampala including NTV and NBS & UBC as a producer for lifestyle shows for 5 years. She later joined Jubilee life insurance company as a risk advisor in the area of life insurance for seven years. She is also a Rotarian with great passion for health promotion outreach. It is from the above experiences that she identified practical and policy discriminations among the young and middle aged towards elderly. She consequently conceived the elderly home idea and she started some voluntary elderly outreach after which she did a course in Geriatric nursing to gain more professional skills in the area.



Xiaoyue Wen¹, MD, PhD, Jiamin Lu², MD, Zhongpei Lin¹, MD, MS, Zeyu Zhang¹, MD, MS, Qinglin Qiu¹, MD, MS, Shouwen Su¹, MD, MS, Chau Wei Wong³, MD, PhD, Bo He^{1*}, MD, PhD

¹Joint and Orthopaedics Trauma, Department of Orthopaedics, The Third Affiliated Hospital of Sun Yat-sen University, Guangzhou 510000, China

²Department of Plastic Surgery, The First Affiliated Hospital of Sun Yat-sen University, No. 58 Zhongshan Road 2, Guangzhou 510080, China

³LIHE Hospital, 1428 Guangzhou Avenue, Guangzhou 510060, China

Transcriptome analysis of mRNA altered after different induction time of induced Schwann-like cells from adipose-derived stem cells

Objectives: To compare the protein coding transcripts differences before and after different induction time of Adipose-Derived Stem Cell (ADSC)-induced Schwann-like Cells (iSCs).

Methods: Isolation of ADSCs from healthy adult female rats was performed. The iSCs of 7 days and 19 days after induction were chosen for RNA-sequencing and bioinformatic analysis was applied to determine the difference of iSC-7d (group 2, g2), iSC-19d (group 3, g3) and ADSC (group 1, g1). Eight DEmRNAs were randomly chosen for qRT-PCR to verify the accuracy of sequencing data.

Results: Compared to g1, g2 had 83 DEmRNAs and g3 had 189 DEmRNAs. DEmRNAs of g2 were located in the synapse area and enriched in the NOD-like signaling pathway through KEGG analysis. DEmRNAs of g3 were located in the neuromuscular junction and Extra Cellular Matrix (ECM), and enriched in the cellular response to cAMP as well as the development of the peripheral nervous system through GO analysis. Venn analysis found that 31 genes were upregulated after induction, which were located in ECM and enriched in the JAK/Stat pathway. Eight genes were found to be downregulated in these groups. The persistent increase of Nefh, Nrg1 and Dio2 were found in NGS and qPCR results after induction.

Conclusion: During the induction process of Schwann-like cells from adipose stem cells, key regulation factors such as Nefh, Nrg1 and Dio2, as well as the continuous activation of the JAK/Stat pathway may play a role in helping cell trans differentiation.

Audience Take Away Notes

- ADSC can differentiate into iSC through inducing differentiation, to express Schwann cell phenotype and secrete neurotrophic factors which could help repair peripheral nerve injury
- We verified DEmRNAs with different induction time by qPCR and found that Nefh, Nrg1 and Dio2 genes will be continuously up-regulated with the extension of time, suggesting that these genes may play a very important role in maintaining iSCs traits
- We speculate that during the induction of iSCs, the elevation of NEFH, Nrg1 and Dio2 can not only promote the formation and maintenance of cytoskeleton proteins of iSCs but also make iSCs secrete a large number of myelin-related proteins and neurotrophic factors and promote iSCs to differentiate into more mature cell phenotype through JAK/STAT pathway, Nrg1/ErbB pathway and thyroid hormone-related pathway

Biography

Dr. Bo He now is an associate professor of Joint and Orthopedics Trauma, Department of Orthopedics, The Third Affiliated Hospital of Sun Yat-sen University. He started tissue engineering and peripheral nerve research since 2005. He received his MD degree in 2003, and he was once working in Stanford University indulge in basic research about epigenetics and tissue engineering. Also, he received the certification of American National Institutes of Health (NIH) for clinical research.



Chennakesavulu Dara

ESIC Medical College, Hyderabad, India

Acute encephalitis and its mimics in the critical care unit

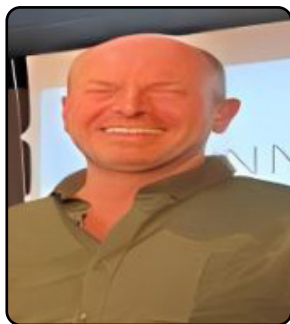
Encephalitis is a frequent cause of neurological consultations for hospitalized patients. However, understanding this syndrome is just one piece of the puzzle. The clinical presentation of encephalitis often shares similarities with infections, parainfections, post infections, and various immune-mediated diseases. Our primary objective is to distinguish encephalitis from other conditions such as encephalopathy, which can result from factors such as toxins, inherited metabolic disorders, hypoxia, trauma, and vasculopathies. Therefore, we comprehensively explore both common and less common causes of Acute Encephalitis Syndrome (AES) while delving into their clinical, laboratory, and radiological features. This in-depth understanding aids in specific diagnosis, guides treatment, and ultimately enhances patient outcomes.

Audience Take Away Notes

- This presentation on Acute Encephalitis and its Mimics in the Critical Care Unit is of paramount importance to the audience. In the high-stakes environment of critical care, accurate diagnosis and swift intervention are imperative
- By delving into the complexities of acute encephalitis and its mimics, you provide clinicians with crucial insights to differentiate between various conditions presenting with similar symptoms
- Armed with this knowledge, healthcare professionals can make informed decisions, optimize patient care, and potentially save lives in the critical care setting

Biography

Dr. Chennakesavulu Dara, an accomplished Consultant & Professor of General Medicine, is a beacon of excellence in the medical field. With a stellar academic background including MBBS, MD, DNB, FGID, and FRSTM&H, his dedication and hard work shine through in every aspect of his work. Proficient in multiple languages and deeply committed to staying abreast of the latest advancements in Internal Medicine. Dr. Dara is a trusted ID Physician at ESIC Medical College & Hospital, Sanathnagar, Hyderabad. His extensive research contributions, numerous publications, and active participation in conferences underscore his unwavering commitment to advancing medical knowledge and patient care.



Simon Nue Møller¹, Mai Erritzøe-Jervild, MD^{2,3}, Christina Kruuse, MD, PhD, Professor^{2,3}, Christian Stenør^{2*}, MD, Associate Professor

^{1,3}University of Copenhagen, Denmark

²Neurovascular Research Unit (NVRU), Department of Neurology, Copenhagen University Hospital Herlev and Gentofte Copenhagen, Denmark

Immune checkpoint inhibitor-related CNS vasculitis – report of four cases and excerpt from a systematic review

Immune Checkpoint Inhibitors (ICIs) have emerged as a pivotal class of immunotherapy in the treatment of various cancers. These therapies, while highly effective, can also lead to a spectrum of immune-related Adverse Events (irAEs), one of which is vasculitis affecting the Central Nervous System (CNS), termed nirVasculitis. This systematic review aims to delineate the clinical and laboratory characteristics of nirVasculitis associated with ICIs.

Methods: Adhering to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines, two independent researchers conducted comprehensive searches in PubMed and Embase databases to identify cases of CNS nirVasculitis. Additionally, four cases from our department were included. Patients were classified based on diagnostic certainty into definite, probable, or possible nirVasculitis categories. The study's results are discussed, highlighting detailed case presentations with a particular focus on MRI scans and vessel wall imaging.

Conclusions: NirVasculitis is a rare but potentially underreported and severe condition linked to ICI therapy. Prompt recognition of the condition is crucial to initiate immunosuppressive treatment, which can significantly impact patient outcomes. This review underscores the necessity for heightened awareness and vigilance among clinicians to identify and manage this serious adverse event promptly. This study highlights the importance of recognizing the signs and symptoms of nirVasculitis in patients undergoing ICI therapy, the need for thorough diagnostic evaluation, and the critical role of timely intervention with immunosuppressive treatment to improve patient prognosis.

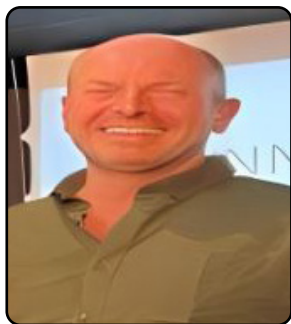
Audience Take Away Notes

- The audience will be able to use the findings from this systematic review and cases to better recognize and manage immune-related Adverse Events (irAEs) associated with Immune Checkpoint Inhibitors (ICIs), specifically central nervous system vasculitis (nirVasculitis). By understanding the clinical and laboratory features of nirVasculitis, healthcare providers can improve diagnostic accuracy and initiate timely and appropriate treatment
- **This research will aid oncologists, neurologists, and other healthcare professionals in their clinical practice by:**
 - Enhancing their ability to identify symptoms indicative of nirVasculitis
 - Informing them of the typical presentation and progression of the condition
 - Guiding them in the use of diagnostic tools such as brain imaging and cerebrospinal fluid analysis. Providing evidence-based recommendations for the management of nirVasculitis, including the use of corticosteroids

- **Other faculty members can utilize this research to:**
 - Expand their investigations into the adverse effects of ICIs and explore potential mechanisms underlying nirVasculitis
 - Conduct further research into preventive strategies and alternative treatments for nirVasculitis
 - Raising awareness about a rare but serious condition among healthcare providers
 - Highlighting the need for vigilance and regular monitoring of patients on ICIs
 - Providing a comprehensive summary of the current state of knowledge on nirVasculitis, which can be used as a reference for future studies
 - Encouraging multidisciplinary collaboration in managing complex irAEs
 - Contributing to the overall body of knowledge in oncology and neurology, potentially leading to improved patient outcomes and survival rates

Biography

Dr. Christian Stenør is a Consultant Neurologist and Clinical Associate Professor at Herlev University Hospital and at the Department of Clinical Medicine at the University of Copenhagen, Denmark, respectively. His work focuses on neurology, and he is an integral part of the faculty, contributing to both research and teaching. Dr. Stenør is involved in advancing our understanding of neurological conditions, particularly in relation to neuroinfectious diseases and immune checkpoint inhibitors and their adverse effects, such as Central Nervous System vasculitis. Recently Dr. Stenør won young Danish neurologists national teaching price.



Christian Stenør,^{1,2*} MD, Associate Professor, Al-Hasan Hussein, MD¹

¹Department of Neurology, Copenhagen University Hospital Herlev, Denmark

²Department of Clinical Medicine, University of Copenhagen, Denmark

CNS vasculitis caused by lyme neuroborreliosis – the value of black blood MRI

Background: Lyme Neuro Borreliosis (LNB) is a tick-borne neurological infection, caused by the spirochetes of the *Borrelia burgdorferi sensu lato* complex. In Europe, LNB is among the most common bacterial neurological infections. In adults, typical nervous system manifestations include radiculoneuritis, cranial neuritis or lymphocytic meningitis. However, with chronic LNB, encephalitis and cerebral vasculitis can be seen, potentially leading to cerebrovascular events such as Transient Ischemic Attacks (TIA), or ischemic stroke, even in younger individuals.

Methods and Results: We present selected cases of LNB-associated CNS vasculitis from an ongoing retrospective study of more than 300 patients with LNB at our institution. Particular attention is given to diagnostics, clinical presentation and MRI imaging, including vessel wall imaging.

Conclusions: Similar to other CNS vasculitic diseases, LNB-associated CNS vasculitis can be debilitating and even deadly. A high degree of clinical acumen is necessary to diagnose this potentially treatable condition before it is too late.

Audience Take Away Notes

- **Clinical Manifestations:** The audience will learn about the typical nervous system manifestations of LNB, including radiculoneuritis, cranial neuritis, and lymphocytic meningitis
- **Diagnosis Criteria:** The audience will become familiar with the diagnostic criteria for definite and probable LNB according to the European Federation of Neurological Societies (EFNS)
- **Association with Cerebral Vasculitis:** The audience will learn about the rare but significant association of neuroborreliosis with cerebral vasculitis and its potential to cause cerebrovascular events like Transient Ischemic Attacks (TIA) and ischemic stroke
- **Case Studies and Diagnostics:** The audience will be presented with case studies from a retrospective study, focusing on diagnostics, clinical presentation, and MRI imaging, including vessel wall imaging
- **Improved Diagnosis:** Armed with this knowledge, healthcare professionals will be better equipped to diagnose LNB accurately, especially in its rare presentations involving cerebral vasculitis
- **Enhanced Clinical Skills:** The insights on MRI imaging and clinical presentation will enhance the audience's ability to identify and differentiate LNB from other neurological conditions
- **Better Patient Outcomes:** By improving their diagnostic acumen and awareness of LNB-associated CNS vasculitis, healthcare providers can ensure better patient outcomes through early and accurate treatment
- **Continued Professional Development:** Staying updated on the latest research and case studies in LNB will contribute to the audience's continued professional development and expertise in neurology and infectious diseases

- **Interdisciplinary Collaboration:** The findings can encourage interdisciplinary collaboration among neurologists, infectious disease specialists, and radiologists to improve patient care

Biography

Dr. Christian Stenør is a Consultant Neurologist and Clinical Associate Professor at Herlev University Hospital and at the Department of Clinical Medicine at the University of Copenhagen, Denmark, respectively. His work focuses on neurology, and he is an integral part of the faculty, contributing to both research and teaching. Dr. Stenør is involved in advancing our understanding of neurological conditions, particularly in relation to neuroinfectious diseases and immune checkpoint inhibitors and their adverse effects, such as Central Nervous System vasculitis. Recently Dr. Stenør won young Danish neurologists national teaching price.



Cristian Ravariu^{1,2}

¹UPB-University Politehnica of Bucharest, Faculty of Electronics ETTI, Dept. of Electronic Devices Circuits and Architectures Splaiul Independentei 313, Sect.6, 060042, Bucharest, Romania

²EduSciArt SRL Company, Str, Iovita nr. 2, Bucharest, Romania

Transistor based biosensors for dopamine detection

The dopamine measurement in human blood or urine could be an valuable index in the neuropsychiatric disorders. Dopamine belongs to a class of analytes for biosensors, known as neurotransmitters from the catecholamine family. Neurotransmitters have implications in brain functions, cardiac arrest, muscle contractions, plus many neuro-psychiatric implications, being able to be detected in blood, urine and sweat. This work highlights the importance of transistor based biosensors as devices for dopamine recognition. The first part is dedicated to an introduction in biosensors for neurotransmitters, with focus on dopamine. The regular methods in their detection are expensive and require high expertise personnel. A major direction of evolution of these biosensors has expanded with the integration of active biological materials, suitable for molecular recognition, near to electronic devices, like transistors. Secondly, the linear detection ranges of the transistor based dopamine biosensors correspond to the clinical demands, while the biosensors offer an excellent sensitivity and specificity, easier than conventional spectrometry. Thirdly, the applications of novel nanomaterials and biomaterials in these bio devices are discussed. Older generations of metabolism biosensors can't detect concentrations sub-micro-molar range. But new generations of biosensors that combine aptamer receptors and organic electrochemical transistor OECT, as transducers have pushed the detection limit to pico-molar and even femto-molar range, which fully cover the usual ranges of clinical detection of human dopamine in body humors 0.1n-10nm. Ultimate evolutions allow co-integrate transistors and vesicles with natural receptors of dopamine, like G protein-coupled receptors to push the detection limit to uni-molecular efficiency.

Audience Take Away Notes

- How transistor based biosensors can detect one of the most important neurotransmitters - Dopamine (DA)
- Work principle of OECT transistors and future perspectives for DA detection
- The study provides practical solutions to co-integrate receptors near transistors

Biography

Prof. C. Ravariu studied Microelectronics at the Polytechnic University of Bucharest, Romania and graduated as MS in 1993. He worked as scientific researcher first 5 years at Institute of Microtechnology, Bucharest, and then joined the Polytechnic University of Bucharest. After multiple foreign stages in Bioelectronics (Patras, Greece), Nano-devices (EPFL, Switzerland), Organic Electronics (LAAS, France), he received Postdoc degree in 2012 in Romania. Since 2013 he obtained the position of Full Professor at the Polytechnic University of Bucharest, Faculty of Electronics, Romania. He has published more than 250 research articles. Since 2014 he is Chairman of the Romanian IEEE Electron Devices Chapter and his main interest is in nano-bio-devices for electronics and biomedical research.



Dixie J Woolston, PhD ABPP

Neuropsychology Division, Department of Psychiatry, Mayo Clinic Arizona/
Scottsdale, Arizona, United States

Brain health update: Current trends and future directions

The field of brain health is undergoing rapid advancements, driven by increasing understanding of the brain's complexity and the rising prevalence of neurological disorders. This update explores current trends and future directions in brain health research and practice. Recent developments highlight the importance of a multifaceted approach encompassing lifestyle factors, technological innovations, and personalized medicine. Key lifestyle interventions such as diet, exercise, and cognitive training are shown to significantly impact brain health and delay the onset of neurodegenerative diseases like Alzheimer's and Parkinson's. Technological advancements, particularly in neuroimaging and neurostimulation, are providing unprecedented insights into brain function and facilitating early diagnosis and intervention. Furthermore, the advent of precision medicine, leveraging genetic and biomarker data, promises tailored therapeutic strategies that enhance efficacy and minimize side effects. Emerging areas of interest include the gut-brain axis, the role of sleep in brain health, and the impact of environmental factors on cognitive function. As the field progresses, interdisciplinary collaboration and a holistic perspective will be crucial in addressing the complexities of brain health and improving outcomes for individuals across the lifespan. This update underscores the dynamic nature of brain health research and the potential for innovative approaches to transform the prevention, diagnosis, and treatment of neurological conditions.

Audience Take Away Notes

- Learn latest research on lifestyle interventions for optimizing brain health
- Understand future of leveraging precision medicine and genetic/biomarker data to tailor strategies that enhance efficacy and brain efficiency
- Understand the World Health's Organization seminal position paper called Optimizing Brain Health Across the Life Course
- Ideas for how to motivate patients to improve brain health factors during your clinical encounter

Biography

Dr. Dixie Woolston obtained her PhD in 2006 from University of Texas Southwestern Medical Center. She completed a 2-year fellowship in Clinical Neuropsychology also at UT Southwestern. She has worked in a variety of clinical settings, including the VA, a large private neurology practice, and currently is the Division Chair of Neuropsychology at Mayo Clinic Arizona. Research interests include neuroimaging, Alpha-Stim device, and optimizing brain health.



Dixie J Woolston, PhD ABPP

Neuropsychology Division, Department of Psychiatry, Mayo Clinic Arizona/
Scottsdale, Arizona, United States

Utilizing computerized cognitive testing in neurology practices

Research increasingly supports the concept that cognition should be considered the 5th Vital Sign, highlighting the critical importance for neurological practices to measure cognitive functioning routinely. Early diagnosis of cognitive disorders and cognitive dysfunctions is a major healthcare priority, offering significant benefits to patients, medical providers, and families. Accurate and timely detection can lead to better management and intervention strategies, potentially improving patient outcomes and quality of life.

This presentation will explore the pros and cons of computerized testing versus traditional cognitive screening measures such as the Mini-Mental State Examination (MMSE), Montreal Cognitive Assessment (MoCA), and Kokmen Short Test of Mental Status. The advantages of computerized cognitive assessments include increased sensitivity, consistency in administration, and the ability to capture subtle changes over time. In contrast, traditional methods, while well-established and widely recognized, may be limited by subjective interpretation and variability in administration.

Brief self-administered computerized cognitive tools hold substantial promise for clinical implementation. They can significantly reduce staff time, streamline workflow, and improve financial productivity by utilizing appropriate billing codes in the United States. This can be particularly advantageous in busy neurology practices where efficiency and accuracy are paramount.

Several key computerized testing platforms will be reviewed, including the Computer-Administered Neuropsychological Screen for Mild Cognitive Impairment (CAMCI), Cognitive Assessment and Neurocognitive Screening-Mild Cognitive Impairment (CANS-MCI), CNS Vital Signs (CNSVS), CogState, Cognitive Tool for Objective Cognitive Evaluation (C-TOC), and electronic Self-Administered Gerocognitive Examination (eSAGE). Each of these tools offers unique features and benefits, catering to different aspects of cognitive assessment.

Practical examples of how to integrate these computerized testing tools into a neurology practice will be provided. This includes considerations for initial setup, training of staff, patient education, and interpreting results within the clinical context. Participants will leave the discussion equipped with the knowledge and confidence to leverage digital technologies for cognitive assessment, ultimately enhancing the care provided in their neurology practices.

Audience Take Away Notes

- Learn pros and cons of traditional versus computerized cognitive screens
- Understand practical examples of how computerized testing can be used in a neurology practice
- Understand benefits of computerized testing for patients, families, and clinical practice

Biography

Dr. Dixie Woolston obtained her PhD in 2006 from University of Texas Southwestern Medical Center. She completed a 2-year fellowship in clinical neuropsychology also at UT Southwestern. She has worked in a variety of clinical settings, including the VA, a large private neurology practice, and currently is the Division Chair of Neuropsychology at Mayo Clinic Arizona. Research interests include neuroimaging, Alpha-Stim device, and optimizing brain health.



Emily R. Rosario, Ph.D

Executive Director, Casa Colina Research Institute, Casa Colina Hospital and Centers for Healthcare, United States

Genetic and cytokine influences on cognitive recovery following traumatic brain injury: A longitudinal study

Objectives: This study aimed to investigate the relationship between APOE genotype, cytokine levels, and cognitive outcomes in patients recovering from Traumatic Brain Injury (TBI). The objectives were to assess the impact of APOE $\epsilon 2$ and $\epsilon 4$ variants on cytokine profiles and determine their association with cognitive recovery at multiple time points, up to one year following injury.

Methods: A diverse cohort of 20 TBI patients with moderate to severe injuries was longitudinally assessed over a two-year period. Genetic analysis determined APOE genotype, distinguishing between $\epsilon 2$, $\epsilon 3$, and $\epsilon 4$ variants. Cytokine profiles were assessed through Enzyme-Linked Immunosorbent Assays (ELISA) to measure multiple cytokines, including IL-6, TNF-alpha, IL-8, and IL-1b. Cognitive outcomes were evaluated using neuropsychological assessments, including the Repeatable Battery for the Assessment of Neuropsychological Status (RBANS) and the Montreal Cognitive Assessment (MoCA).

Results: APOE genotype significantly influenced cytokine levels, with $\epsilon 2$ carriers demonstrating lower pro-inflammatory cytokine levels, including IL-6 and TNF-alpha, compared to $\epsilon 4$ carriers. $\epsilon 4$ carriers exhibited a more pronounced neuroinflammatory profile, potentially contributing to differential cognitive recovery patterns. Spearman's and Pearson's correlations unveiled complex associations between cytokine levels and cognitive domains. Pro-inflammatory cytokines, such as IL-8 and IL-1b, showed mixed correlations with cognitive outcomes, while anti-inflammatory cytokines like IL-10 displayed limited associations. Longitudinal analyses revealed dynamic relationships between cytokines and cognition, emphasizing the evolving nature of TBI recovery.

Conclusions: This study elucidates the intricate interplay between APOE genotype, cytokine profiles, and cognitive outcomes in TBI patients. APOE $\epsilon 2$ and $\epsilon 4$ variants were associated with distinct cytokine profiles, potentially contributing to differential cognitive trajectories. Pro-inflammatory cytokines demonstrated complex relationships with cognitive domains, suggesting that neuroinflammation plays a nuanced role in TBI recovery. These findings underscore the importance of considering genetic and cytokine factors in tailoring personalized rehabilitation strategies for TBI patients. Further research is warranted to delineate the mechanisms driving these relationships and to translate these insights into improved clinical interventions for TBI recovery.

Biography

Dr. Emily Rosario, Ph.D is a Neuroscientist and current Director of the Research Institute at Casa Colina Hospital and Centers for Healthcare. She has over 15 years of research experience in rehabilitation medicine, age-related disease and dysfunction, neurologic disorders, and endocrine dysfunction at both the basic science and clinical level. She has nearly 40 peer-reviewed publications in the areas of neuroscience, neurologic disorders, and rehabilitation including several publications in high impact journals such as the Journal of the American Medical Association (JAMA), the Journal of Neuroscience, Neurology, and Frontiers in Neuroendocrinology. Dr. Rosario has received several awards and grants funding her research from the Alzheimer's Association, the UniHealth Foundation, and the National Institutes of Health (NIH), specifically, the Eye Institute, National Institute of Aging, and National Institute of Neurological Disorders and

Stroke. She has been invited to present her work both nationally and internationally at over 50 conferences including the International conference for Alzheimer's disease, World Congress on Traumatic Brain Injury, and Society for Neuroscience. As Director of Research at Casa Colina Hospital, Dr. Rosario works with numerous clinicians including physicians, audiologists, neuropsychologists, physical, occupational, and speech therapists on over a dozen diverse research studies. The research, all neurologic or rehabilitation focused, ranges from outcome-based research studies to retrospective, observational, and randomized controlled clinical trials. In addition, she collaborates with several academic and research institutions including Cedar-Sinai, UCLA, USC, and the California Institute of Technology on a number of research projects. As part of her collaboration with academic institutions she has trained and supervised over 25 research students on various clinical research studies including acting as the primary mentor for senior research or honors dissertation projects. She has also served as a guest lecturer at USC, UCLA, University of LaVerne, and the Claremont Colleges, on a variety of topics including Neuroscience, Neurodegenerative diseases, Biology of Aging, Neuroendocrinology, Metabolic syndrome, Research Methods, and Neuropsychology.



Estrella Rodríguez

Neuroimmunologist and Health Consultant, Retired Doctor, Cadiz, Spain

MOGAD, a view from the inside

This abstract outlines the personal experience of an individual (myself) who is a physician and also a patient diagnosed with MOGAD (anti-MOG positive NMOSD). The diagnostic journey spanned over four years, characterized by a diverse array of symptoms, initially dismissed or attributed to various causes by specialists focused only on their respective areas of expertise, despite objective evidence. This case underscores the lack of familiarity with MOGAD among neurologist in Spain, leading to delayed diagnosis and consequential long term effects following a relapse. The individual encounters skepticism from medical teams, frustration due to treatment stagnation, and daily debilitating pain, resulting in cessation of work. The lead of the presentation lies in acquiring comprehensive information on ongoing research endeavors, advocating for early diagnosis within the medical community, recognizing symptom variability among patients, and emphasizing the importance of broadening diagnostic approaches beyond expensive image studies. A call to action is made for intensified research efforts targeting specific therapies for MOGAD and improved support for afford daily symptoms in diagnosed patients, like pain.

Audience Take Away Notes

- Neurologist and other physicians should think about NMOSD and how to do it
- A lot of patients misdiagnosed could be treated at time
- Think about more effective test and not in invasive or expensive studies
- Include anti-MOG and others bio markers in blood test could change lives
- Knowing the personal view of a patient, but by the eyes of a physician, is a gold
- Give voice to rare diseases and get into the mind of the experts

Biography

Dr. Estrella Rodríguez, born in Madrid in 1985, licenciated in medicine in the University of Alcalá de Henares in Spain, served for a decade as the director of the medical service at Siemens, catering to over 5000 annual patients and overseeing emergency cases. Additionally, she shared her expertise as a lecturer for healthcare assistants and became Abstract Neurological Disorders an international authority in hospital management through university education. Following her battle with MOGAD, she retired from active medical practice, assuming an honorary collegiate status. Her pursuit of knowledge led her to specialize in neuroimmunology, subsequently sub-specializing in disorders within the spectrum of neuromyelitis optica. In May of this year, she authored an article in the prestigious Cambridge SVOA Neurology Journal detailing her personal perspective on MOGAD. Presently, she is dedicated to advocating for this rare condition, striving to raise awareness among the medical community, particularly neurologists, regarding its management, given the scarcity of cases and literature on the subject.



Francesco Petraggiano^{1*}, Irene Fasciani¹, Federica Bono², Gabriella Aloisi¹, Veronica Mutti², Carla Pardini³, Marco Carli³, Marco Scarselli³, Francesca Vaglini³, Adriano Angelucci¹, Chiara Fiorentini², Luca Lozzi⁴, Cristina Missale², Roberto Maggio¹, Mario Rossi¹

¹Department of Biotechnological and Applied Clinical Sciences, University of L'Aquila, 67100 L'Aquila, Italy

²Section of Pharmacology, Department of Molecular and Translational Medicine, University of Brescia, Brescia, Italy

³Department of Translational Research and New Technologies in Medicine and Surgery, University of Pisa, Pisa, Italy

⁴Department of Physical and Chemical Science, University of L'Aquila, 67100 L'Aquila, Italy

The detrimental effect of light on dopaminergic neurons: Implications for PD onset

Parkinson's Disease (PD) stands out as one of the most prevalent neurodegenerative conditions, typically manifesting in later stages of life, characterized by the gradual deterioration of motor functions. Recently identified environmental factors either increase the risk or display an inverse relationship with the PD development; exposure to certain pesticides, for example, has been linked to an increased PD risk. Although light pollution hasn't been considered a potential risk factor for PD, it is an escalating concern due to its impact on human health.

Research has provided evidence that prolonged exposure to bright light, emitted by common fluorescent lamps, can significantly reduce dopaminergic neurons in the substantia nigra of rats and mice. This effect appears to be specific to dopaminergic neurons. Our studies have demonstrated that light wavelengths above 600 nm can penetrate the scalp and skull of rodents, reaching the substantia nigra, suggesting a direct detrimental effect of fluorescent light on dopaminergic neurons, rather than an indirect impact related to circadian rhythm disruption. It has also been shown that light can penetrate deep into the human brain after traversing the scalp and skull.

Incandescent bulbs and white LED lights feature a continuous light spectrum, whereas fluorescent white light's electromagnetic spectrum includes wavelength peaks in the blue, green, and red range, collectively producing white light. This allows for the dissection of various components of white light for further evaluation.

Through the use of monochromatic LEDs, we replicated specific peaks of fluorescent white light and examined their detrimental effects on immortalized dopaminergic MN9D cell lines and dopaminergic neuronal cultures derived from human induced Pluripotent Stem Cells (hiPSCs). Our findings indicate that LEDs with wavelengths shorter than 710 nm are harmful to dopaminergic neurons, with the peak at 610 nm causing the most damage; the 610 nm wavelength can penetrate the mouse brain to a greater extent.

These observations suggest that the specific peaks at 610 nm may be responsible for the detrimental effects observed with in vivo exposure to fluorescent white light.

Audience Take Away Notes

- This study supports the notion that the damage on dopaminergic neurons exposed to fluorescent light is most likely caused by the 610 nm wavelength
- Our findings indicate that the cellular models employed in our study can reliably predict the effects

observed in vivo when dopaminergic cells are exposed to the same injury and encourage further investigation in vivo using LED light at 610 nm

- This in vitro system could be crucial to investigate the effects of specific gene mutations of susceptibility to PD disease
- The study could establish a new chronic rodent model of PD, drug-free and ideally stress- free
- These results prompt the exploration of light pollution as a potential environmental risk factor for PD in epidemiological analysis

Biography

Dr. Francesco Petragano studied at the University of L'Aquila, earning a master's degree in Medical Biotechnology. He obtained a PhD in Experimental Medicine in 2022, with a thesis on Study of the regulation of mitochondrial function by the C-terminal fragment of the M2 muscarinic receptor. During his PhD, supervised by Dr. Annibale, he worked with the Lohse group at the Max Delbrück Center in Berlin. Currently, he's a postdoctoral fellow in the Pharmacology lab of Prof. Roberto Maggio and Dr. Mario Rossi at the University of L'Aquila, having published 14 articles in peer-reviewed journals.



Harkomal Verma^{1*}, Monisha Dhiman², Anil K. Mantha¹

¹Department of Zoology, School of Basic Sciences, Central University of Punjab, Ghudda, Bathinda, Punjab, India

²Department of Microbiology, School of Basic Sciences, Central University of Punjab, Ghudda, Bathinda, Punjab, India

In vitro investigation of neuroprotective effects: Unveiling the impact of A β 25-35- induced oxidative stress on SH-SY5Y cells and the therapeutic potential of phytochemicals

Alzheimer's Disease (AD) is intricately linked to oxidative stress induced by the accumulation of Amyloid beta (A β) peptide, disrupting cellular functionality. This comprehensive study investigates the multifaceted impacts of A β 25-35-induced oxidative stress on human neuroblastoma SH-SY5Y cells and explores the protective potential of phytochemicals Ferulic Acid (FA) and Ginkgolide B (GB), both individually and in combination. The evaluation encompasses diverse parameters, including cell viability, Reactive Oxygen Species (ROS) production, oxidative DNA base damage, and repair capabilities, with a specific focus on the Base Excision Repair (BER) pathway's key enzyme, Apurinic/Apyrimidinic Endonuclease 1 (APE1). Our findings unveil the profound implications of A β 25-35 treatment, demonstrating diminished cell viability, escalated ROS production, and heightened ROS-mediated DNA damage. The study delves into the cellular repair mechanism through the BER pathway, revealing substantial alterations in the expression of the APE1 enzyme following A β 25-35 exposure. Remarkably, our investigation introduces a strategic pre-treatment approach with FA, GB, and their combined formulation, administered 3 hours before A β 25-35 exposure for 24 hours. This approach yields remarkable enhancements, including augmented cell viability, reduced ROS production, significant amelioration of mitochondrial DNA (mtDNA) base damage, and heightened translational expression of APE1 across diverse cellular compartments, including cytosolic, nuclear, mitochondrial, and exosomal compartments. Notably, we emphasize the importance of revealing the proteome of exosomes, shedding light on their crucial role in mediating a wide range of effects. Exosomes, identified as carriers of secreted APE1, display improved endonuclease activity within the exosomes released by cells. This activity contributes to the rescue of nearby SH-SY5Y cells from oxidative stress damage induced by A β 25-35, which was found to improve by the pre-treatment of phytochemicals 3 hrs before A β 25-35. Further proteomic analysis of exosomes isolated from differently treated SH-SY5Y cells, utilizing Triple-ToF, uncovered distinct patterns. Exosomes from phytochemical-treated cells, considered a healthy microenvironment, supported physiological cell health. In contrast, exosomes from A β 25-35-treated cells, representing a diseased/pathophysiological microenvironment, delivered oxidative and inflammatory signals, potentially harming neighboring cells. Furthermore, the application of phytochemicals, recognized as neuroprotective agents against A β , induces a significant shift in the cellular microenvironment, leading to a notable alteration in neuronal cell physiology. The observed distinctions in exosomal proteomes underscore their pivotal role in mediating signals that influence cellular health. This integrated approach provides valuable insights into developing therapeutic strategies for Alzheimer's disease.

Audience Take Away Notes

- The audience can leverage the findings from this research in innovative ways, particularly in the context of therapeutic development. Given that exosomes can cross the blood-brain barrier, researchers and clinicians can design experiments to isolate exosomes and encapsulate the identified neuroprotective

phytochemicals. This encapsulation strategy could serve as a targeted delivery system, potentially enhancing the efficacy of these compounds in mitigating the hallmarks of diseases, including Alzheimer's. Moreover, manipulating exosomes to carry specific cargo or signals allows for the design of experiments involving the injection of these modified exosomes into mouse models. This approach could offer insights into the modulation of cellular responses and the potential therapeutic impact *in vivo*. Furthermore, researchers could extend these concepts to design human-based studies, exploring the feasibility of using exosome-based interventions to reduce disease markers in clinical settings. Overall, the practical applications encompass targeted drug delivery strategies, *in vivo* model experiments, and the potential translation of findings into human-focused therapeutic studies

- Professionals in the fields of neuroscience, pharmacology, and healthcare can leverage the study's findings to advance their understanding of Alzheimer's disease mechanisms. The insights into A β -induced oxidative stress and the protective effects of phytochemical pre-treatment offer potential avenues for developing novel therapeutic interventions. Healthcare practitioners may find implications for patient care strategies, emphasizing the importance of early intervention using specific phytochemical combinations. Researchers can use this knowledge to guide further studies in drug development, targeting APE1 and the BER pathway for potential Alzheimer's treatments. Overall, this research equips professionals with actionable insights that may inform future approaches to Alzheimer's disease management
- This research serves as a valuable resource for faculty across neuroscience, pharmacology, and related fields. It provides a foundational understanding of Alzheimer's disease mechanisms, offering opportunities for expansion in areas such as oxidative stress, neuroprotection, and cellular signaling. The study's focus on phytochemical interventions also holds potential for drug development. Faculty can integrate these insights into teaching materials, fostering a comprehensive understanding of cellular impacts and therapeutic strategies among students. The emphasis on interdisciplinary aspects, particularly in exosome research, encourages collaborative exploration across diverse academic domains

Biography

Harkomal Verma completed his post-graduation in 2016 from Punjabi University, Patiala, specializing in animal physiology. After that, he joined his current Ph.D. research in the Department of Zoology under the supervision of Dr. Anil K. Mantha. He has a total of six publications, out of which 4 are first-author publications in renowned journals like *Molecular Neurobiology*, *Mitochondrion*, and *Metabolic Brain Disease*.



Hiroko Tsukamura

Laboratory of Animal Reproduction, Graduate School of Bioagricultural Sciences, Nagoya University, Nagoya 464-8601, Japan

The brain mechanism regulating mammalian reproduction

Accumulating evidence suggests that hypothalamic kisspeptin neurons are the master regulator for mammalian reproduction to govern the Hypothalamus-Pituitary-Gonadal (HPG) axis. Indeed, mutation or deletion of Kisspeptin gene (*Kiss1*) or its Receptor Gene (*GPR54*) causes hypogonadotropic hypogonadism and then pubertal failure and infertility in humans and rodent models. Kisspeptin neurons are mainly located in two distinct hypothalamic regions, such as Anteroventral Periventricular Nucleus (AVPV)/Preoptic Nucleus (POA) in the anterior hypothalamus and Arcuate Nucleus (ARC) in the posterior hypothalamus in mammals. The present paper focuses on the role of AVPV/POA kisspeptin neurons as a Gonadotropin-Releasing Hormone (GnRH) surge generator to trigger ovulation and of the ARC kisspeptin neurons as a GnRH pulse generator to control folliculogenesis/steroidogenesis in mammals. Specifically, kisspeptin neurons in the AVPV in rodents and the POA in ruminants, primates and others are considered to be estrogen positive feedback action site to generate GnRH surge and the consequent Luteinizing Hormone (LH) surge to stimulate ovulation, because estrogen upregulates AVPV/POA *Kiss1* gene expression and activates AVPV/POA kisspeptin neurons. On the other hand, ARC kisspeptin neurons are well accepted to be responsible for GnRH/gonadotropin pulse generation and consequent folliculogenesis/steroidogenesis. The ARC kisspeptin neurons are also called as KNDy neurons because of the co-expression of Neurokinin B (NKB) and Dynorphin A (Dyn). This paper will discuss how stimulatory NKB and inhibitory Dyn generate pulsatile activities of KNDy neurons to generate GnRH/LH pulses by describing our gene-modified rat models. The ARC kisspeptin neurons are considered to be an estrogen negative feedback site, since estrogen downregulates *Kiss1* gene expression in the ARC in rodents and other species. This presentation will discuss how the estrogen epigenetically regulates *Kiss1* expression in these two populations of kisspeptin neurons. This paper also provides the neuroendocrine mechanism how malnutrition and lactation suppress GnRH/LH pulses through an inhibition of the ARC kisspeptin neurons to understand the malnutritional and lactational anestrus in mammals.

Audience Take Away Notes

- The audience may be able to use what they learn in this presentation to improve production efficiency in domestic animals
- The audience may also use the knowledge in this presentation to develop reproductive medicine for humans suffering from reproductive disorders
- This research will be useful for teaching the latest findings in reproductive science for other faculties

Biography

Dr. Hiroko Tsukamura was educated and received Ph.D. in Nagoya University. She has been working in the fields of animal reproduction and neuroendocrinology from molecular to behavioral levels with more than 70 research articles. Dr. Tsukamura has been intensively studying the role of kisspeptin neurons serve as the master regulator for mammalian reproduction. Dr. Tsukamura, a professor at the Graduate School of Bioagricultural Sciences, was awarded from the Society of Reproduction and Development (1995), the Japan Society for Pituitary Research (2002), the Japan Society for Comparative Endocrinology (2019) and the Japan Endocrine Society (2022).



Hyeong-Yeong Park* and Ji-Hoon Jeong

¹Department of Computer Science, Chungbuk National University, Cheongju 28644, Republic of Korea

Towards brain-computer interface based communication tool utilizing EEG signals integrated with large language model

Brain-Computer Interface (BCI) is a research field that involves analyzing and classifying signals from brain activity using machine learning or deep learning and applying them to various applications. Speech imagery decoding involves analyzing brain waves induced by the user's imagined speech, without the user actual speaking, and applying them to communication tools. In traditional speech imagery decoding, brain activity related to a limited set of tasks was collected and classified. However, recent efforts aim to combine brain activity collected by methods such as functional Magnetic Resonance Imaging (fMRI) and Electrocorticography (ECoG) with a Large Language Model (LLM) for sentence-level decoding. In this study, we aim to classify speech imagery brainwave data collected through Electroencephalogram (EEG) to categorically determine the meaning conveyed by these data. Then, the classification results are combined with the language model to generate sentences based only on brain waves. The process of collecting EEG data is as follows: Participants freely generate sentences related to a given keyword (e.g., meals and cooking: What should I eat for dinner?). They then imagine speech in those sentences while the corresponding EEG is recorded. Collecting EEG data undergoes preprocessing, such as noise removal and selection of temporal lobe channels. It is then classified using deep learning classifiers such as EEGNet to determine which keyword corresponds to the imagined speech. The extracted keyword is then presented as a prompt to LLM such as Generative Pre-trained Transformer (GPT) for sentence generation. The combination of EEG signals with LLM presents a cost-effective alternative to fMRI or ECoG, making it applicable to an intuitive BCI communication tool. This is an aspect that has not been explored in the speech imagery decoding paradigm. To achieve more accurate and specific keyword extraction from EEG, an effective deep learning architecture should be designed. The extracted keywords are then used to tune the LLM to generate sentences that closely align with the speaker's intent, allowing for a higher level of speech imagery decoding.

Audience Take Away Notes

- Introduction of new speech imagery decoding paradigm in BCI
- About benefits of high-level speech imagery decoding
- Necessity of integrating an LLM into the BCI communication

Biography

Ms. Park is a master course of graduate school in the Computer Science department at Chungbuk National University, having previously earned her Bachelor's degree at the same institution. She actively contributes to research at the Machine Learning and Neural Engineering Lab under the supervisor by Prof. Ji-Hoon Jeong. Her research focuses on Brain-Machine Interfaces, Machine Learning, and Artificial Intelligence. As an IEEE student and IEEE EMBS member, she presented researches related to speech imagery decoding at IEEE EMBC 2023 and IEEE SMC 2023. She is also a review editor for the Journal of Research Institute for Computer and Information Communication.



Irene Fasciani*, Francesco Petragnano, Gabriella Aloisi, Roberto Maggio, Mario Rossi

Department of Biotechnological and Applied Clinical Sciences, University of L'Aquila, L'Aquila, 67100, Italy

In vitro investigations of the antiparkinsonian drug ropinirol properties on muscarinic receptors: A possible link to in vivo side effects

Parkinson's Disease (PD), after Alzheimer's, is the second most important age-related neurodegenerative disease whose prevalence and incidence increase almost exponentially with age and reach a peak after the age of 80. PD is primarily characterized by a selective loss of dopaminergic neurons in the Substantia Nigra Pars Compacta (SNpc) which translates into progressive declines of motor functions. There are currently no disease-modifying therapies available that slow down or completely stop the neurodegenerative process, but treatments that may offer benefits regarding clinical manifestations. Pharmacological approaches are normally based on the use of Levodopa or D2 dopaminergic agonists able to restore the dopaminergic transmission at the midbrain level.

Ropinirole is a non-ergoline, selective agonist for the dopamine $D_2/D_3/D_4$ receptors with important antiparkinsonian properties. Ropinirole is commonly used for the symptomatic treatment of PD and has been proven to be effective both in monotherapy, in patients in the initial stages of the disease, and in combination therapy, in patients with advanced disease.

However, several side effects are associated with Ropinirole treatment including hypotension, sinus node dysfunctions, hallucinations, and bone alteration. In particular, two main side effects of Ropinirole have been noticed on heart: bradycardia and atrial fibrillation. Muscarinic M_2 subtype receptor (M_2R) is well expressed in cardiomyocytes and is responsible of parasympathetic transmission on heart. The acetylcholine mediated physiological activation of the M_2R is well known to induce a decrease in inotropy and bradycardia. Given these considerations, we wanted to explore the possibility that Ropinirole could have a direct effect on the M_2 receptors. To this aim, during the last year we run a few experiments that indeed suggested that the M_2 receptor could be a potential Ropinirole therapy off-target. Our preliminary results indicate that Ropinirole can increase ERK phosphorylation in cells that overexpress the M_2 receptor subtype. In addition, Ropinirole causes the M_2 internalization suggesting its potential binding to muscarinic M_2 receptors and consequence functions.

Audience Take Away Notes

- In this project, we aim at investigating ex-vivo, potential side effects of the antiparkinsonian Ropinirole
- This project aims to understand the any muscarinic receptor signaling contribution in the effects of Ropinirole on heart cells
- Our results could explain the side effects of Ropinirole treatment in PD patients

Biography

Dr. Irene Fasciani graduated in Biology at University of L'Aquila, Italy in 2012 cum laude. She obtained the PhD on Neurobiology of neurodegenerative diseases, plasticity, and neural development in 2016. She currently is a senior researcher employed at University of L'Aquila and joins the group of Professor Roberto Maggio. The main research activity regards the neuropharmacology of neurodegenerative diseases. She published over 20 articles in peer-reviewed journals.



Jinghong Zhang*, Ph.D, Fei Yang, Mao Li, Yahui Zhu, Xusheng Huang

Department of Neurology, Beijing 301 hospital, Beijing, China

Quantitative evaluation of factors contributing to the results of 3Hz RNS test on ALS patients

Introduction: Previous studies have suggested that therapeutic treatments aimed at preserving Neuromuscular Junction (NMJ) may play an imperative role in fighting against Amyotrophic Lateral Sclerosis (ALS). However, as far as Repetitive Nerve Stimulation (RNS) test, a technique to evaluate NMJ function, is concerned, factors contributing to its results and their respective contributions have not yet been fully elucidated.

Methods: A total of 626 patients who diagnosed as ALS were enrolled in this study. Data of their clinical and electrophysiological indicators are divided into training set (collected from June 2016 to December 2022) and test set (collected from January 2023 to August 2023). Stepwise regression was used in independent variable selection and model building.

Results: 42% patients have a decrement larger than 10% and 23.9% have a decrement larger than 15%. Onset age, gender, onset site, Forced Vital Capacity (FVC) and Motor Unit Potential (MUP) duration are independent factors contributing to the results of RNS test on the accessory nerve. MUP duration has the greatest impact on decremental response, followed by FVC and onset age. The expected decrement in the female is larger than in the male. Upper limb onset contributes to the decrement more than lower limb onset and bulbar onset.

Discussion: The results of RNS test on the accessory nerve may be suitable to serve as a biomarker to monitor respiratory function in ALS patients. Independent factors need to be considered in stratified randomization for clinical trials aimed at targeting NMJ in ALS patients.

Audience Take Away Notes

- The abnormality rates of 3Hz RNS test result, and relationship between the decrement and either clinical indicators (including gender, onset site, diagnostic level, age at onset, disease duration, BMI, FVC, ALSFRS-R score, disease progression rate) or electrophysiological indicators (including MUP duration, MUP amplitude, polyphasia) were analyzed in current study with a large sample size
- 2 regression models about the results of RNS test on the accessory nerve have been built with good and stable prediction performance, which can be recalibrated for patients from other cohorts
- MUP duration, gender and onset site are important factors contributing to the decremental response in ALS patients, which need to be considered in stratified randomization for clinical trials aimed at targeting NMJ in ALS patients. As for individuals, onset age, gender, and onset site are settled, so NMJ function in the accessory nerve is mainly affected by MUP duration and FVC

Biography

Jinghong Zhang is a Ph.D student majoring in Neurology. She got her medical license in 2020 and completed the standardized training for Residents of Neurology in 2022. She gave oral presentations about her research in ALS in the 2022 National ALS Conference, 25th National Conference of Neurology, and 26th National Conference of Neurology. She also took part in a poster presentation in the 2023 Amyotrophic Lateral Sclerosis and Related Motor Neuron Disease Gordon Research Seminar and Conference, as well as ENCALS meeting 2023.



Kaouther Selmi^{1*}, Alaeddine Sridi², Mohamed Bouallegue², Kais Bouallegue²

¹FSM, Electronics and Microelectronics laboratory, Faculty of Science, University of Monastir, Tunisia

²ISSATs Higher Institute of Applied Sciences and Technologies, Sousse, University of Sousse, Tunisia

Impact of neuron with two dendrites in heart behavior

Neurons are the fundamental units of the brain and the nervous system. The variable structure model of neurons is a system of differential equations with various parameters. By optimizing these parameters, we can create a unique model that describes the dynamic behavior of a single neuron. We have also introduced a neural network based on neurons with multiple dendrites, employing an activation function with variable structure. However, prior research has not explored the impact of dendrite positions on the transmission of information.

The Electrocardiogram (ECG) is a non-stationary physiological signal that represents a recording of the electrical activity of the heart. After decades, many artificial neural networks have been proposed to develop tools that may lead to a better understanding of the behavior of the heart. The ECG has many applications in various fields, namely medicine, internet of things, cryptography, wearable sensors, biometric recognition and more. In our approach, we use a neuron with two dendrites inspired from Bouallegue neural networks.

We conclude that neurons with two dendrites can be utilized as a novel tool for modeling, identifying, and generating dynamic heart behavior. The results show that this work has the potential to have a significant impact on human welfare and could contribute to the care of heart diseases.

Keywords: Variable Structure Model of Neuron (VSMN), Neural Networks, Neuron, Dendrites, Heart Behavior, (ECG) Electrocardiogram.

Audience Take Away Notes

- In this paper, we proposed a new theoretical approach to generate an artificial ECG signal using a set of neurons two dendrites, we have discovered model of dynamic heart behavior. The result show that this work could have a strong impact on the welfare of humanity and can lead to a care heart disease
- Activation functions have a large impact on the performance of Artificial Neural Networks (ANNs). The design of of ANNs simulates the structure of neural networks of the brain's central nervous system to a certain extent. An ANNs consists of a number of connected neurons, each act as a parallel distributed processor, which can perform large-scale computations for data processing and classification. Our VSMNs can also be combined to create dendrite based neural networks which generated promising results in different studies. In this work, we can present the behavior of heart thought the use of our VSMN
- Understanding the intricate interplay between neurons and the heart is essential for advancing our knowledge of cardiac health and developing treatments for heart-related conditions



Kelsey Bonnici

University of Malta, Imsida, Malta

Exploring the enablers and barriers to implementing evidence-based practice in acute stroke care

The integration of Evidence-Based Practises (EBPs) plays a crucial role in enhancing patient outcomes and lessening the impact of post-stroke disability, particularly in the realm of acute stroke care within the healthcare field. The objective of this study is to explore the various factors that facilitate or hinder the effective adoption of Evidence-Based Practises (EBPs) in the provision of acute stroke care. By doing so, this research aims to enhance our comprehension of the intricate dynamics involved in the translation of research findings into tangible clinical interventions.

This research employs a rigorous methodology, consisting of an extensive evaluation of existing literature, as well as a mixed-method approach, to identify and analyse the primary factors that impact the acceptance and long-term viability of evidence-based guidelines in the field of acute stroke care. One crucial component under examination is the healthcare practitioners' attitudes towards the integration of novel practises, in conjunction with the difficulties presented by institutional policies and limitations in resources. Additionally, the research acknowledges the significance of interprofessional collaboration and patient participation in cultivating a favourable setting for the incorporation of Evidence-Based Practises (EBPs). Additionally, it underscores the significance of technological improvements in enabling the smooth implementation of evidence-based therapies within acute stroke care environments.

This analysis highlights the importance of educational and training programmes in fostering a culture that prioritises evidence-based care. The research underscores the need of providing healthcare personnel with the requisite information and competencies to proficiently comprehend and apply contemporary evidence-based guidelines, hence acknowledging the imperative for ongoing learning and enhancement. This study offers useful insights into the development of methods that can effectively bridge the gap between research evidence and clinical application by comprehending the intricate dynamics of decision-making processes inside healthcare organisations.

This study seeks to provide practical suggestions for policymakers, healthcare administrators, and healthcare professionals by actively involving nurses who specialise in caring for stroke patients. This research proposes the implementation of specific interventions and policies to foster a culture of evidence-based practise in acute stroke care, by addressing the identified problems and utilising the available opportunities. The primary objective is to provide a valuable contribution to the healthcare system by promoting the integration of evidence-based practises. This integration is expected to result in improved patient outcomes and a more sustainable strategy to managing acute stroke cases.

Audience Take Away Notes

- The audience will acquire comprehension regarding the significance of Evidence-Based Practice (EBP) in the provision of nursing care, so enabling them to discern the necessary measures for enhancing our professional conduct

- Health care professionals possess the capacity to discern the obstacles and facilitators within their respective institutions and make efforts to surmount these barriers in order to enhance the quality of patient care
- Comparable investigations can be undertaken in alternative establishments
- This study furnishes the essential resources for enhancing guidelines and protocols, as well as illuminating identified barriers and devising strategies to overcome them

Biography

Ms. Kelsey Bonnici studied Nursing at the University of Malta and graduated as a nurse in 2021. She then started reading for a MSc (hons) in Nursing at the University of Malta, where she got the opportunity to conduct the study being presented. She started working as staff nurse, the same year she graduated in the neurology department of the main local acute hospital.



Michelle Melgarejo da Rosa^{1,2*}, Bárbara Raíssa Ferreira de Lima³, Leydianne Leite de Siqueira Patriota³, Amanda de Oliveira Marinho³, Jinaldo Alves da Costa³, Crysane Araujo de Oliveira Lima², Joelson Germano Crispim², Jeann Branco², Thiago Henrique Napoleão^{1,3}, Patrícia Maria Guedes Paiva^{1,3}, Moacyr Jesus Barreto de Melo Rêgo^{1,2}, Michelly Cristiny Pereira^{1,2}, Maira Galdino da Rocha Pitta^{1,2}

¹Department of Biochemistry, Federal University of Pernambuco, Recife, Brazil

²Suely Galdino Therapeutic Innovation Research Center, Federal University of Pernambuco, Recife, Brazil

³Natural Products Laboratory - Bioprot, Federal University of Pernambuco, Recife, Brazil

Exploration of natural products and newly synthesized compounds as potential alternatives for alleviating symptoms of psychological conditions

Psychological disabilities such as Major Depressive (MD) and anxiety-like disorders are a leading cause of global economic and social burden. While current treatments offer some effectiveness, they often fall short. This underscores the urgent need for faster-acting and more efficient treatments. In this discourse, we aim to explore how natural products and newly synthesized compounds might provide potential alternatives for alleviating symptoms of anxiety and depression, illustrated with examples currently under exploration in Dr. Michelle Rosa's laboratory. For example, lectins are proteins with diverse biological and pharmacological potentials. These proteins typically contain at least one carbohydrate-binding domain, enabling specific and reversible binding to carbohydrates. Despite their known properties, there is limited understanding of the effects of lectins on the Central Nervous System (CNS). One such lectin, *Schinus terebinthifolia* Leaf Lectin (SteLL), is a glycosylated protein extracted from *S. terebinthifolia* leaves with the ability to bind chitin. In mouse models of anxiety and depression-like symptoms, SteLL significantly reduced the number of entries and time spent in the open arms, while decreasing immobility time in the tail suspension test. Furthermore, the efficacy of SteLL in the elevated plus maze and immobility test was reversed by pretreatment with pharmacological antagonists of the $\alpha 2$ -adrenoceptor, 5-HT_{2A/2C} serotonin receptor, and the D1 dopamine receptor. In a sub-acute evaluation, the anti-immobility effect of SteLL persisted after seven days of treatment.

Dr. Michelle Rosa's laboratory also focuses on synthesizing new organic molecules with medicinal potential and maintains a molecule bank containing approximately 1,600 registered bioactive molecules. In another series of experiments, we are investigating the effects of newly synthesized compounds on neuropathological conditions. We discovered that a thiazolidine derivative exhibited a significant anxiolytic-like effect by reducing traumatic memory in a fear conditioning extinction learning protocol. Molecular docking analysis also suggested potential interactions with sodium channels and Proliferator-activated receptor gamma receptors.

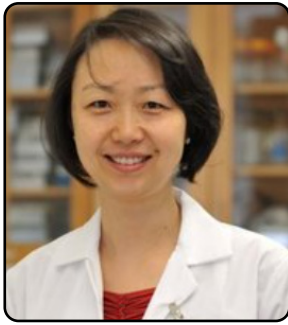
Currently, a range of natural and chemical products have been evaluated for psychological and neurological conditions. Leveraging available tools and expertise, we aim to contribute to the development of alternatives that could revolutionize the treatment of psychological disorders. Faster-acting and better-tolerated drugs have the potential to significantly improve the lives of millions and alleviate the global burden associated with these conditions.

Audience Take Away Notes

- The limitations of current treatments for Major Depressive Disorder (MD) and anxiety disorders, highlighting the urgent need for more effective and faster-acting therapies
- The potential of natural products and newly synthesized compounds as alternative treatments for anxiety and depression
- The broader scope of research into natural and chemical products for psychological and neurological conditions and the laboratory's commitment to contributing to the development of improved treatments
- The potential impact of faster-acting and better-tolerated drugs in improving the quality of life for individuals affected by these conditions and reducing the overall burden on society

Biography

Michelle Melgarejo da Rosa, an assistant professor at the University of Pernambuco, Brazil, earned her Ph.D. in Neurobiology from the Leibniz Institute for Neurobiology in Magdeburg, Germany, in 2017. The research specialized in molecular mechanisms involved in synaptic plasticity. In 2023, she conducted postdoctoral research at UTHHealth in Houston, USA, focusing on the involvement of the medial prefrontal cortex in reward omission responses. Michelle also served as a visiting professor at the DKFZ in Heidelberg, Germany (2023), where she gained expertise in the production of monoclonal antibodies. Currently, her research is centered on exploring alternative treatments for psychological disorders such as anxiety and depression, as well as cognitive disabilities and Parkinson's disease. With an h-index of 18 on Google Scholar, she has authored over 43 papers published in renowned scientific journals.

**Ming Guo**

UCLA David Geffen School of Medicine, United States

Neurodegeneration, aging & mitochondria

Mutations in PINK1 and PARKIN lead to inherited forms of Parkinson's Disease (PD). My lab was one of the first to report the function of the PINK1 gene, and to show that PINK1 and parkin function in a common pathway to regulate mitochondrial integrity and quality. Mitochondrial morphology (dynamics) is controlled by two opposing actions, mitochondrial fusion, which is regulated by mitofusin, and mitochondria fission, which is controlled by drp1. We discovered that the PINK1/parkin pathway degrades mitofusin (inhibits mitochondrial fusion), and promotes Drp1 (mitochondrial fission). Our work provided compelling evidence that mitochondrial dysfunction underlies PD pathogenesis. In addition to mitofusin and Drp1, we have identified multiple other regulators of mitochondrial health that interact with PINK1/parkin in PD models. These include MUL1 (degrades Mitofusin in parallel of the PINK1/parkin pathway), VCP (degrades Mitofusin), atg1 (increases Drp1 in addition to promoting autophagy) and clueless/CluH (a new regulator of Drp1). We have also developed the first transgenic model of mitochondrial DNA (mtDNA) heteroplasmy related to cellular aging and have identified factors that allow us to remove up to 95% damaged mtDNA. These genes and pathways may serve as therapeutic targets for PD and have the potential to reverse aging.



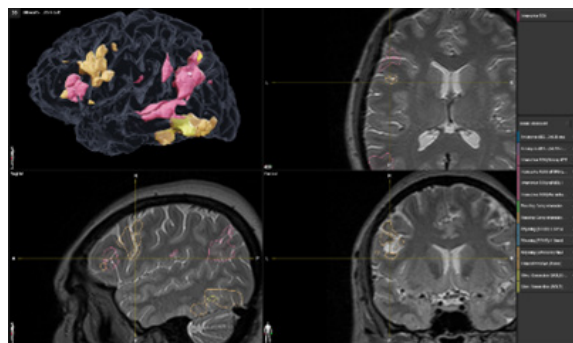
Mohit Saxena

Department of Radiology, Northwestern Medicine, Chicago, Illinois, United States

Recent advances in brain imaging

Introduction: Brain surgery may benefit from functional MRI (fMRI) that can detect changes in cerebral blood flow and oxygen utilization caused by tissue activation. Therefore, the patient needs to perform certain tasks in the scanner while fMRI is acquired. However, task-based fMRI (tb-fMRI) is time consuming and some patients can barely perform the tasks. As an alternative, resting state fMRI (rs-fMRI) can be utilized to demonstrate various brain networks within <10min acquisition time. This study attempts to compare tb-fMR and rs-fMRI in epilepsy patients towards a possibility of replacing tb-fMRI with rs-fMRI in situations where patients are non-cooperative or time is short.

Methods: The study included 19 subjects (8M/11F) aged between 17-61 years (mean 36.68 ± 11.82) suffering from variations of epilepsy (details in Tab. 1) that successfully completed tb- and rs-fMRI during a single session on a 3T scanner (Verio, Siemens, Germany). Acquisition of tb-fMRI 120 volumes of EPI was performed with TR/TE of 2000/20ms, FOV 220mm, 4mm slice thickness, in a block design for five language tasks (antonym generation, word generation, reading and comprehension, rhyming and picture naming). During rs-fMRI 200 volumes of EPI images with identical parameters were acquired. T1-weighted 3D MPRAGE was acquired for anatomical reference with TR/TE 2200/2.55ms, TI 900ms, FOV 240mm and flip angle of 8°. All data were retrospectively processed using commercially available fMRI planning software (Elements BOLD MRI mapping, Brainlab, Germany; CE-market, FDA clearance pending), which allows automated post-processing, such as denoising, and interactive tools to analyze tb- and rs-fMRI data.



Results: Results from tb-fMRI analysis yielded plausible results in almost all the subjects and which were concordant with the interactive seed based ROI from rs-fMRI, except for two subjects (ID 04, 05). As an example, Wernicke's area showed significant differences between tb- and rs-fMRI in patient 05 (Fig.1; tb-fMRI in yellow, rs-fMRI in pink). Overall, the quality of rs-fMRI results matches well with tb-fMRI and therefore can be considered as an alternative option for functional preoperative mapping, especially in cases where patients are non-cooperative or time is short.

Biography

Dr. Saxena is Ph.D in Neurology engaged in NeuroImaging Research, as an Advanced Imaging Neuroscientist at Northwestern Medicine Hospital, Chicago, IL USA. Dr. Saxena contributes to 3D Image Analyses that helps Neurosurgeons, Eppileptologists and Neurologists in not only viewing multimodal medical images i.e. MRI, CT, PET,SPECT, MEG, EEG etc. but also preserving the functional brain areas.



Monika Sharma^{1*}, Ph.D, Pankaj Yadav¹, Navratan Suthar²

¹Medical Technologies, IIT Jodhpur-AIIMS Jodhpur, Department of Bioscience and Bioengineering, IIT Jodhpur, Rajasthan, India

²Department of Psychiatry, AIIMS Jodhpur, Rajasthan, India

The neurological challenges of schizophrenia: A study on extrapyramidal symptoms in schizophrenia

In India, a considerable portion of the population is affected by mental illnesses due to inadequate coverage of mental health care. Psychiatric disorders pose increasing challenges from both sociological and economic standpoints. Physicians confront difficulties in optimizing antipsychotic medication dosages to balance effectiveness and minimize side effects. Extrapyramidal Symptoms (EPS) are movement disorders, arising from dopamine-receptor-blocking medications, complicate patient management with symptoms like acute dystonia, akathisia, parkinsonism, and tardive dyskinesia. This research focuses on the demographic and clinical profiles of patients undergoing antipsychotic treatment for schizophrenia, with a specific emphasis on movement disorders caused by antipsychotic medications. A machine learning model predicting EPS factors, based on patient data, has been developed to estimate the probability of symptom occurrence. Utilizing statistical tools such as Wilcoxon rank-sum and Chi-square tests, baseline disparities between EPS and Non-EPS groups were assessed. Factor analysis revealed key factors to EPS, and a partial correlation network showed positive correlations between BMI, Chlorpromazine equivalent daily dose, and duration of Schizophrenia. With a notable 38.3% EPS prevalence, Parkinsonism emerged as a significant subtype. The collaborative efforts of Indian Institutes of Technology and the All-India Institute of Medical Sciences, Jodhpur underscores the research's significance in refining therapeutic approaches for schizophrenia. Insights from this study hold promise for enhancing personalized care in India's mental health landscape. This abstract aims to offer insights into the challenges associated with antipsychotic treatment and presenting innovative approaches to address the challenges faced by patients in the treatment of schizophrenia and its associated adverse effects.

Audience Take Away Notes

- This presentation provides attendees with a profound understanding of the challenges inherent in antipsychotic treatment within the realm of Indian mental health, placing a specific emphasis on the prevalence and impact of Extrapyramidal Symptoms (EPS) on patient management. Attendees will gain valuable insights into the intricate link between psychiatry and neurology, illuminating the complex interplay of factors influencing the manifestation of EPS. The discussion extends beyond patient challenges to address the difficulties faced by physicians, healthcare providers, and caregivers in managing these symptoms effectively. The audience will benefit from innovative approaches outlined in the presentation, offering fresh insights and practical strategies for symptom management. This presentation serves as a pivotal resource for faculty, providing them with novel perspectives and tools to enhance their understanding and approach to the nuanced management of antipsychotic-induced symptoms in the context of mental health

Biography

Monika Sharma, a distinguished senior Ph.D Scholar, excels in psychotic disorders, clinical research, and neuroinformatics. She pursued a B.Tech and M.Tech in Biotechnology, she demonstrates unwavering commitment in advancing psychosis research and has made impactful contributions in Defence Research and Development Organization and Indian Space Research Organization, developing cutting-edge machine learning models. Beyond academia, she passionately serves as a social worker, advocating for underprivileged children. Her unique blend of academic prowess and practical application highlights her genuine dedication to both research and social impact. As a keynote speaker, Sharma promises a compelling exploration of intricate aspects of neurology, drawing from her diverse experiences across scientific domains.



Naser Gilani^{1,2*}, Ehsan Razmara³, Mehmet Ozaslan¹, Ihsan Kareem Abdulzahra⁴, Saeid Arzhang⁵, Ali Reza Tavasoli⁶, Masoud Garshasbi³

¹Department of Biology, Gaziantep University, Gaziantep, Turkey

²Farabi Molecular Laboratory, Irbil, Iraq

³Department of Medical Genetics, Faculty of Medical Sciences, Tarbiat Modares University, Tehran, Iran

⁴Kurdistan College of Medicine, Irbil, Iraq

⁵School of Medicine, Shahrekord University of Medical Science, Shahrekord, Iran

⁶Myelin Disorders Clinic, Pediatric Neurology Division, Children's Medical Center, Pediatrics Center of Excellence, Tehran University of Medical Sciences, Tehran, Iran

A novel deletion variant in CLN3 with highly variable expressivity is responsible for juvenile neuronal ceroid lipofuscinoses

With more than 7,000 identified rare diseases and approximately 80 % being linked to genetic causes, diagnosing rare disease patients can often be difficult—resulting in lengthy, expensive, and emotional diagnostic odysseys, but with revolutionary advances in Molecular Diagnostic Techniques you have the genetic testing tool in hand to diagnose your patients in less time with high levels of certainty, with affordable cost. One of this techniques is Next Generation Sequencing that provide the possibility of doing monogenic, multigenic, whole exome, and whole genome sequencing just through days. In Neurology field with huge number of hereditary disease or disease with genetic based NGS is one of the important players that could be used to detect an array of neurological disorders from neonatal ICU cases to dementia or movement disorders in adults. In our article also thanks for advanced techniques like as NGS and other ones we found and report a novel mutation in CLN3 gene that is responsible for juvenile neuronal ceroid lipofuscinoses.

Audience Take Away Notes

- Get more information with details about some advanced techniques in molecular genetic field
- Have an idea how they can get help from these facilities for do diagnosis of some complex genetic disease
- Be informed about the usage of these procedures for providing a scientific paper in their institute or even clinic
- Learn about the limitations beside the advantages of these available investigations

Biography

Naser Gilani, Genetic Counsellor from 2013. MD, PhD in Molecular Biology and Genetics, Medical Doctor, graduated from Tehran University of Medical Science in 2003. PhD in Molecular Biology and Genetics, Turkey. Establish Farabi Medical Laboratory as the first Laboratory in North of Iraq working professionally in Medical Genetics field. Providing a wide range of Diagnostic Genetic tests. Establishing first genetic counselling clinic in area Participation and presenting 17 lectures in Medical Genetics field, in International Congresses recent ones: Seven publications published, last one as A disorder clinically resembling cystic fibrosis caused by biallelic variants in the AGR2 gene that is published in Journal of Medical Genetics, leading human genetics journal with Impact Factor 6.318, Member of the Molecular Biology Society of Japan, Member of the editorial board of Neurology and Neuroscience Journal.



Olga M Bazanova

Professor Moscow Physics and Technology University, Moscow

Assistant Professor MMD NSU, Novosibirsk

Expert Researcher, Biofeedback Software Laboratory, Institute of Molecular Biology and Biophysics

Federal Research Centre of Fundamental and Translational Medicine, Novosibirsk, Russia

Individualized neurofeedback

Considerable interest has been, and still is, generated by the potential performance enhancing benefits of EEG biofeedback or NeuroFeedback Training (NFT). A plausible rationale for such training, with an aim to improve mood and or enhance cognition, can be made based upon what is already known of the links between EEG activity and behavior. However, designing an optimal NFT paradigm remains difficult because a number of methodological factors that may influence the outcome of such training remain largely unexplored. Specifically, this presentation examines the NFT training schedule; the variety, basis, the nature and modality of the feedback signal provided; the establishment of a target frequency range of EEG, whether NFT should be conducted with eyes open or closed and the impact of the neurohumoral condition, instructional recommendations on the NFT efficiency; unidirectional EEG as compared to bidirectional EEG/EMG NFT Throughout, the presentation provides a number of suggestions and possible directions for future research.

Audience Take Away Notes

- What is neurofeedback?
- Which conditions are effectively treated with neurofeedback?
- How is neurofeedback training conducted?
- Are there side effects?
- How long will training should take place?

Biography

Prof. Olga Bazanova studied Physiology and Psychophysiology at the Novosibirsk State University, Russia and received her PhD. in 1980. Providing the psychophysiological research of EEG indices of sensorimotor abilities of musicians. Olga defended her Doctor of Science Dissertation at 2009. She delivered lectures at Moscow and Novosibirsk universities. She has published more than 70 research articles in SCI (E) journals.



Ntenga Patrice

University of Lubumbashi, Congo

Kiza-ntenga syndrome

The disorder of the development of the SN during the embryonic period is at the origin of Malformations of Cortical Development (MDC) which represent a major cause of mental and motor disabilities as well as severe epilepsy. We describe here a syndrome called Kiza-Ntenga syndrome which is of embryonic origin and which is made up of right cerebral hemiatrophy, facial asymmetry with prominence of the face ipsilateral to the cerebral hemiatrophy, right hemierythrodermin, focal secondarily generalized convulsive seizures, slight regression of speech and walking. And therefore, Kiza designates the name of the patient and Ntenga which designates the name of the author who described him.

Observation: Child K, male, aged 1 year, weighing 9 kg, received for sudden seizures lasting more than 48 hours which were managed without success in a local structure. Born at full term with a birth weight of 4,100 kg eutopic manner. One day later, he will be put in an incubator without oxygenation. No history of malformation reported in the family or epileptic seizures. His mother reports a regression in speech and walking. Objectively we note an asymmetrical head with the right hemiface more prominent than the left, a right hemicorporal erythroderma from the head to the foot taking the interior and posterior face and describing an atypia taking half of the sole of the right foot while the left hemibody is normal in color. Left hemicorporal tonic-clonic convulsive seizures which generalize secondarily and which are sudden. A treatment consisting of valproic acid syrup at 30 mg/kg and injectable dexamethasone at 1 mg/kg will make it possible to control the seizures after a failure of treatment with phenobarbital which was administered in its source structure. A sleep EEG performed shows some isolated localized spikes and spikes in the right hemisphere. A brain CT scan shows on an axial section cerebral hemiatrophy of the right hemisphere with a double cerebral cortex in the frontal region and polymicrogyria. A basic biological assessment carried out and not contributory. After stopping the convulsive seizures under treatment, the examination shows an attentive child, with good eye tracking, without motor deficit, well toned, able to stand up with support and capable of walking on all fours. The remainder of the examination is unremarkable. This picture describes, not only that it is out of the ordinary but deserves to be described as a syndrome in its own right from the group of epileptogenic encephalopathies; which we call Kiza - Ntenga syndrome (Kiza to designate the name of the person who suffers from it, and Ntenga to designate the name of the author who described it).

Comments: This present syndrome is congenital and secondary to a developmental anomaly of the nervous system. He makes a differential diagnosis with Sturge Weber and Rasmussen syndrome

Audience Take Away Notes

- When the syndromic diagnosis is made, this has an advantage on a therapeutic orientation to stop the seizures which threaten the brain, but also, on the practical orientation. This work allows other researchers to push their reasoning further on the pathologies or syndromes described in the books and which are not the same

Biography

Dr. Ntenga Patrice, qualified specialist in neurology and epileptology at Cheikh Anta Diop University (UCAD) of Dakar, Senegal in 2018, qualified eye surgeon at the Ophthalmology Training Center of Central Africa (CFOAC), Kinshasa in 2010, Graduate Doctor of surgery and childbirth medicine at the University of Lubumbashi in 2002. Currently preparing his thesis in neurology on the neurogenetics of epilesia and is provincial coordinator of the mental health program.



Patrick Ganzer

¹Department of Biomedical Engineering, University of Miami, Miami, FL, United States

²The Miami Project To Cure Paralysis, University of Miami, Miami, FL, United States

Targeted plasticity therapy & new targets

Injury and disease can lead to a myriad of neural control problems (e.g., following spinal cord injury or stroke). Rehabilitation is a leading therapy for patients, but it only leads to modest neural plasticity & recovery. Targeted Plasticity Therapy (TPT) is an emerging therapy that enhances the effects of rehabilitation, via augmenting neural plasticity. During TPT, successful events (e.g., a good movement) are precisely and repeatedly paired with vagus nerve stimulation. Vagus nerve stimulation leads to the brief release of neuromodulators that initiate plasticity cascades (e.g., axonal sprouting or synaptic modifications). Over time, this allows for neural circuits to rewire to target tissues facilitating recovery of function. TPT is now excitingly approved by the Food and drug administration for enhancing upper limb rehabilitation in patients with stroke and is also in various stages of clinical trial testing for treating a number of other diseases. This presentation will overview TPT and also discuss possible new targets.

Audience Take Away Notes

- The audience will be able to use content learned in the presentation related to neural circuits, bioelectronic medicines, and the newest innovations in the neuromodulation space
- The presentation will focus on ways to enhance brain change, and will contain other content that the audience can possibly use in their scientific studies
- The presentation will be educational on the fronts of cutting-edge neuroscience and translational neurotechnology

Biography

Patrick D. Ganzer (Ph.D.) is currently an Assistant Professor at the University of Miami. He received his undergraduate degree from King's College in 2008, his Ph.D. from Drexel University in 2013, and completed his postdoctoral fellowship at the University of Texas at Dallas in 2017. Dr. Ganzer also worked in industry at Battelle Memorial Institute from 2017-2021. Dr. Ganzer's neurotechnology teams have translated their work to multiple clinical trials, published in several high impact journals (e.g., Cell, Nature Communications, Science Advances, Nature Human Behavior, and eLife), and have received multiple awards for their impact on the field of translational neurotechnology.



Rahul Hajare

Department of School of Pharmaceutical Sciences, Sandip University, Nashik, Maharashtra, India

Understanding academic and educational problems fit for purpose in the contributing to attentional and learning difficulties in our children

Innocent smile is a natural transition that consists of biological and psychological changes that occur for children. ADHD, painful, is a common condition of pain that affects a wide range of young children capable of reducing their quality of life, decrease their ability to function at a 100 percent and ultimately causing a reduction in productively for the affected children for a period of time. Many studies have shown that the level of knowledge about ADHD is unsatisfactory especially in young children and that it indeed has the ability to disrupt a peaceful flow in rhythm and pattern of children in executing daily activities, the aim of this study is therefore to determine the true extent at which ADHD interferes with daily activities. It is an understudied and underfunded research topic that has been traditionally treated with teaching experiences with a fairly low level of success and does not address the most significant symptoms of ADHD which include anxiety, fear and insomnia.

Audience Take Away Notes

- ADHD is a common health problem and high clinical referral rate due to its high prevalence rate
- It exerts a significant effect on the daily activities and effect on the quality of life among the young children population
- The aim of this study is therefore to determine the true extent at which ADHD interferes with daily activities
- Born out of the Indian legacy it is mandate is to provide high throughput, education quality as well as basic research with understanding ADHD

Biography

Dr. Rahul Hajare received his B. Pharm. degree in 2002 from Amravati University in India, where he studied pharmaceutical chemistry. After that, he joined the research team at Nagpur University's Institute of Pharmaceutical Research, Education, and Quality Assurance. In 2012, he graduated from Vinayaka Mission University with a PhD after completing two years of postdoctoral research at the National AIDS Research Institute (ICMR) in Pune, India, under the supervision of renowned and highly respected scientist Dr. Ramesh Paranjape. In Nashik, he is named a professor at Sandip University, School of Pharmaceutical Science. In SCI (E) journals, he has over 70 research publications to his credit. The Scholar Hindu University of America, Florida, presents Dr. Rahul Hajare with an award.



Robert B. Slocum, Ph.D

Narrative Medicine Program Coordinator, University of Kentucky HealthCare, Lexington, Kentucky, United States

Narrative medicine: A communication therapy for the communication disorder of Psychogenic Nonepileptic Seizures (PNES)

Patients with Psychogenic Non-epileptic Seizures (PNES), also known as Functional Seizures (FS), have involuntary paroxysmal episodes that resemble epileptic seizures but without organic etiology. Many patients with PNES have a history of sexual, physical, or emotional abuse or other traumatic or overwhelming experiences. PNES is a communication disorder in which distress is expressed somatically in a pathological way instead of a healthy verbal manner. The patient's body may seem to enact a communication of its own as the patient cannot or will not communicate directly about an overwhelming and unspeakable subject.

Patients with PNES are frequently misdiagnosed and mistreated for epileptic seizures. Accurate diagnosis may be delayed for many years. PNES may cause severe disruption of the patient's quality of life in terms of employment or schooling as well as relationships, and activities of daily living. Some patients with PNES have been accused of faking symptoms or malingering, and stigmatized by health care providers, coworkers, family members, and others in society. Patients with PNES may have family histories of poor interpersonal communication and conflict resolution, with inherited codes of silence and shame concerning sensitive or traumatic subjects. Patients with PNES may have Post-Traumatic Stress Disorder (PTSD) as a comorbidity. They may have significant dissociation and inadequate emotional expression.

Narrative Medicine (NM) visits draw out the patient's narrative of illness or injury and treatment in the context of their entire life story. The focus is to discover topics and areas in the patient's narrative that the patient needs to explore. NM sessions are interactive and dynamic, responding to topics and issues raised by the patient. There is no script or checklist for NM sessions. NM is patient-centered and open-ended with focus on exploring topics the patient needs to discuss. Unstated or silenced concerns may be voiced by the patient. NM sessions are not confrontational, and may take unexpected turns. An unhurried context of trust where the patient is heard can encourage the patient to communicate about difficult history and conditions. Narrative writing exercises have also proven helpful for patients facing a variety of traumas and major stresses in situations similar to those faced by patients with PNES. NM sessions encourage patients to communicate more effectively about their unspeakable distress and reclaim their lives from the communication disorder of PNES.

A patient with PNES who constructs a story (written or oral) about personal trauma or overwhelming stress can discover a narrative antidote to the communication disorder and inhibition of PNES. Some patients with PNES may have been warned not to tell their story, or shamed into silence by family members, friends, or colleagues. Some patients may have been deeply hurt by traumas or past efforts to tell their hurtful stories that were not believed or well received by others. Some patients may now feel overwhelmed by past traumas, current stress, or future challenges that seem impossible, and they may feel equally overwhelmed by the prospect of communicating their pain and distress. But the patient with PNES can become the teller of the story who discovers hope by putting the unspeakable into words. Old taboos and codes of silence can be let go as the patient collaborates with an attentive NM provider.

Audience Take Away Notes

- This presentation will help the audience to understand the causes and symptoms of Psychogenic Non-Epileptic Seizures (PNES), and respond appropriately when encountering patients with PNES
- This presentation will help the audience to understand the need for Narrative Medicine (NM) interventions for patients with PNES, and to make appropriate referrals for care with NM
- This presentation suggests future possibilities for research concerning the effectiveness of NM applications for patients with PNES

Biography

Robert B. Slocum is the Narrative Medicine Program Coordinator at University of Kentucky HealthCare. He holds doctorates in Law (Vanderbilt), Ministry (University of the South), and Theology (Marquette). He has experience in pastoral ministry as well as academic teaching and administration. He has taught undergraduate courses in religious studies and ethics. He is an Assistant Professor (Voluntary Faculty, Internal Medicine) at the University of Kentucky College of Medicine (COM). He teaches a fourth-year COM elective on the narrative basis for patient care and resilient practice. He is a member of the Hospital Ethics Committee. He is the author, editor, or co-editor of 14 books, including a journal of reflections. His 36 articles have appeared in theological or medical journals and as book chapters, and he has made presentations at more than two dozen theological and medical conferences. He has also published short fiction and poetry. He is interested in the clinical application of narrative and the significance of narrative for identity formation. He sees Narrative Medicine as a bridge between medical humanities and clinical practice.



Roger H. Coletti, MD

Interventional Health, PA, Lewes, DE, United States

Treatment of chronic muscle spasm and pain with the CMECD® procedure

It has been noted by multiple researchers that there is Spontaneous Electrical Activity (SEA) at painful trigger points. This author has studied chronic muscle spasm and found that SEA is always present and appears to be the cause for the chronic nature of muscle spasm and resulting chronic pain. Chronic muscle spasm and resulting chronic pain can last for years and cases where the spasm lasted for decades were not only found but successfully treated with the CMECD® procedure. This procedure consists of EMG guidance searching for the SEA and using a combination of phenoxybenzamine, Lidocaine and dexamethasone to extinguish the SEA. Large areas of muscle often need to be treated. Thanks to lidocaine acting as an antiarrhythmic, the SEA is extinguished within seconds and the phenoxybenzamine then takes over after about one hour. With the resolution of the SEA, the muscle can immediately relax. The phenoxybenzamine forms a covalent bond on the alpha motoneuron receptor and the result is a duration of action of 2-3 months. This is enough time for the muscle to recover the prolonged effect of ischemia resulting from the prolonged spasm. Muscles treated in this fashion need only a single injection. Recurrences are rare and only occur if there is a repeat overuse or traumatic injury. The CMECD® procedure is available for use by any medical caregiver that is licensed to give injections. The ability to permanently relieve chronic pain without the use of opioid drugs should prompt interest in this procedure.

Audience Take Away Notes

- The audience will be exposed to an EMG guided injection procedure that will allow them to treat chronic pain resulting from chronic muscle spasm with a single injection regardless of the length of time the chronic spasm had been present. Details and practical considerations will be covered. The EMG presentation will be reviewed with treatment and outcome EMG videos. Theoretical considerations will be discussed
- The ability to make use of the CMECD® procedure will allow physicians to treat individuals suffering from chronic pain. The economy of the procedure will allow them to directly treat patients directly and be rewarded with the personal accomplishment of immediate and sustained relief of chronic pain. The EMG findings that will be presented offer an opportunity for further research in the origin and treatment of chronic pain and chronic muscle spasm

Biography

Dr. Coletti received a BA from Georgetown University College of Arts and Sciences. He received a Master of Arts from Hofstra University. He received his MD from State University of New York at Downstate. His medical internship and residency was performed at Nassau County Medical Center in East Meadow, NY. He did two years of cardiology fellowship at Columbia Presbyterian Medical Center in New York and then transferred to Westchester County Medical Center where he completed one year of Interventional Cardiology fellowship. He was awarded FACC, FASNC, and FSCAI fellowship status. Current interest is chronic muscle spasm and pain.



**Saadia Sattar^{1*}, Ayesha Kamran Kamal², Abdul Muqeet³,
Mohammad Usmaan⁴, Adeel Khoja⁵, Shafquat Rozi⁶**

¹Senior Instructor (Research, Department of surgery, Aga Khan University, Karachi, Pakistan

²Professor Neurology, Stroke Service, Department of Medicine, Aga Khan University, Karachi, Pakistan

³Manager eHealth Innovation, Aga Khan Development Network, eHealth Resource Center, Karachi, Pakistan

⁴Information Analyst, Aga Khan Development Network, eHealth Resource Center, Karachi, Pakistan

⁵Senior Instructor (Research), Department of Medicine, Aga Khan University, Karachi, Pakistan

⁶Assistant Professor, Department of Community Health Sciences, Aga Khan University, Karachi, Pakistan

Validation of InstaDx, a clinical decision support tool information technology based application for ischemic stroke sub-type diagnosis

Globally ischemic stroke is the second leading cause of mortality and morbidity among the adult population. Prompt diagnosis of ischemic stroke sub-type can lead to better clinical outcomes. This study aimed to adapt and develop mHealth-based android application 'InstaDx' and validate the application in two phases, to assist ischemic stroke sub-type diagnosis for use among neurology residents against a Stroke Expert. InstaDx uses an evidence-based algorithm to diagnose ischemic stroke sub-type in the presence of multiple competing mechanisms to minimize misdiagnosis and improve prognosis. In the first phase, algorithms of sub-type diagnosis were created through standard guidelines and then transferred into InstaDx. In the second phase, a validation study was conducted at Aga Khan University Hospital, Karachi. 228 consecutive patients of age ≥ 18 years (62.59 ± 14.60), presenting in the emergency department with neurological deficits consistent with stroke were recruited and InstaDx was used by residents. 11.84% of patients receive revascularization with tissue plasminogen activator. Sensitivity and specificity of InstaDx for large artery atherosclerosis were 65.91 and 73.57%, small artery atherosclerosis was 56.25 and 84.18 % and cardio aortic embolism was 58.33 and 99.17%, respectively against Stroke Expert diagnosis. Focus group discussions were used to assess the user feedback in third phase which revealed acceptance of InstaDx as an educational tool by the residents suggesting advanced diagnostic capacities. InstaDx proved to be a valuable sensitive and highly specific mHealth-based application for diagnosing subtypes of ischemic stroke. It provides a standard algorithm to confidently assess ischemic stroke patients.

Audience Take Away Notes

- The design and adaptation of algorithm is evidence based, developed under the supervision of stroke expert and health care professionals unlike the other available marketed health apps
- To the best of knowledge, InstaDx is the first validation study for diagnosis of sub-type of stroke on the basis of etiology against gold standard as many of the applications available in market are not validated and various available applications targeting more towards symptoms of stroke and anatomical identification of ischemic stroke
- InstaDx was validated in specialized tertiary care center where we have standard stroke pathway protocols to minimize the variability in treatment modality offered to patients and variability in diagnosing ischemic sub-type of stroke
- We have qualitatively measured uptake and feasibility of the app through focus group discussion
- InstaDx has the potential to be used in a busy ER and hospital setting. It can also be used in rural areas where specialized stroke care is not available. InstaDx will fulfill the need to strengthen the evidence based training for the residents working in stressful high volume environments

- The InstaDx Clinical Decision Support software adds local evidence for an implementable solution to the lack of diagnostic support in busy LMIC settings

Biography

Saadia Sattar completed her Masters in Epidemiology & Biostatistics from Aga Khan University Hospital in 2017. Currently, she is working as a Senior Instructor (Research) at the Department of Medicine, Aga Khan University Hospital. Currently, she has multiple intramural and extramural grants and supervises multiple clinical trials and observational studies. As an enthusiastic young researcher, she is more focused on behavioral modification, management accuracy, and preventive modalities improving disease prognosis in the field of vascular biology, as well as developing a diverse and productive mHealth-based research program in communicable and non-communicable diseases at a hospital and community level.



Salim Hirani

Chief Clinical Physiologist, Neurophysiology Department, Ysbyty Gwynedd Hospital, Bangor, North Wales, United Kingdom

A study to further develop and refine Carpal Tunnel Syndrome (CTS) nerve conduction grading tool

The grading systems proposed by Bland and Padua are the most commonly used are very old and both have limitations. The aim of this research is to establish, using the best available evidence, a clinically appropriate revision of the current CTS nerve conduction grading tool, and to evaluate its effectiveness (in terms of acceptability and usability as a tool for intervention prediction). The revised scale is designed from a clinical physiologist perspective and based on the numerical values of nerve conduction findings.

Audience Take Away Notes

- My presentation is interested for those who are involve in recoding Neurophysiology nerve as well as those surgeon, who are involved in hands surgery. This will give them information to decide a conservative or surgical treatment if they can follow the information. My presentation will help to those who are interested to join the Neurophysiological field or in surgical field in future. My grading will give them precise lesion of entrapment in a simpler way and make their job easy

Biography

Salim Hirani is working in Neurophysiology field for more than 30 years. He did is Neurophysiology course from United Kingdom. He works in different country and can speak 4-5 languages. His three paper was already published i.e. Refine Grading of Carpal Tunnel syndrome in BMC journal in 2019, Neurophysiological Grading tools of ulnar nerve entrapment across elbow in Journal of Neurology, Neurological Science and Disorders in 2023 and third paper of Neurophysiological Study for Ulnar Entrapment at Wrist (meddocsonline.org) in Journal of Psychiatry and Behavioural Sciences in June 2023.



Salim Hirani

Chief Clinical Physiologist, Neurophysiology Department, Ysbyty Gwynedd Hospital, Bangor, North Wales, United Kingdom

Neurophysiological grading tool of ulnar nerve entrapment across wrist and across elbow with case presentation

Ulnar Nerve Entrapment Across the Elbow (UNEAE) and Across Wrist (UNEAW) is the second most common entrapment of the hand after carpal tunnel syndrome. There are few gradings available for UNEAE and lesser in UNEAW. The aim of this research is to create a clinically appropriate ulnar nerve entrapment grading tool to covers both area of entrapment in one research paper. To see the relation of sensory nerve involvement across wrist with the entrapment across elbow and to evaluate its effectiveness in terms of compatibility with previous research, without any invasive tests like needle EMG examination. To identify the lesion below and across wrist in terms of to support the Clinical Physiologist (CP) to grade them properly and also help the consultant in deciding to treat with conservative or surgical treatment. To compare the recording from the First Dorsal Interosseous (FDI) muscles with the Abductor Digiti Minimi (ADM) muscle to see which muscle is more sensitive and shows early changes in ulnar nerve entrapment. The proposed revised grading system is based on more nuanced, descriptive categories, ranging from normal, early, mild, moderate and severe. To create full grading system of UNEAW and UNEAE some additional category of clinical grading is therefore proposed.

Audience Take Away Notes

- My presentation is interested for those who are involve in recoding Neurophysiology nerve as well as those surgeon, who are involved in hands surgery. This will give them information to decide a conservative or surgical treatment if they can follow the information. My presentation will help to those who are interested to join the Neurophysiological field or in surgical field in future. My grading will give them precise lesion of entrapment in a simpler way and make their job easy

Biography

Salim Hirani is working in Neurophysiology field for more than 30 years. He did is Neurophysiology course from United Kingdom. He works in different country and can speak 4-5 languages. His three paper was already published i.e. Refine Grading of Carpal Tunnel syndrome in BMC journal in 2019, Neurophysiological Grading tools of ulnar nerve entrapment across elbow in Journal of Neurology, Neurological Science and Disorders in 2023 and third paper of Neurophysiological Study for Ulnar Entrapment at Wrist (meddocsonline.org) in Journal of Psychiatry and Behavioural Sciences in June 2023.



Sarah Adelaide Crawford, PhD

Professor, Cancer Biology Research Laboratory, Southern Connecticut State University, New Haven Connecticut, United States 06515

Analysis of the role of the innate immune system in brain cancer in a research model of pediatric cancer/glioblastoma, *Drosophila melanogaster*

Currently, the major focus of research on tumor immunity is the adaptive immune system involving T-cell activation/targeting of human cancers; however, the innate immune system represents a critical first-responder line of defense coordinating in situ anti-cancer responses with adaptive immune system regulation. Many unresolved questions remain to determine the precise role of innate immune system signaling with both tumor progression and inhibition. To address this question, research in my laboratory on brain tumor etiology involves the use of a strain of the model organism, *Drosophila melanogaster* that contains a temperature-sensitive mutation in the brain tumor suppressor gene *brat*. The abnormal *brat* protein causes the formation of brain tumors that resemble human brain tumors, both genetically and physiologically. *Drosophila* has been used as a model for understanding many human diseases, including cancer, since approximately 75% of human disease-related genes can be found in *Drosophila* homologs, including human innate immune system genes and the *brat* tumor suppressor gene, which is an analogue of the human ortholog TRIM3.

The research comprises an assessment of the role of the innate immune system in either restricting or advancing malignant tumor growth, depending on the tumor microenvironment. *Drosophila* does not possess an adaptive immune system; its innate immune system (which bears many similarities to its human counterpart) is the focal point of its anti-tumor immune responses. This fundamental difference in immune system complexity facilitates a direct assessment of this tumor/immune system interface that is the driver of more complex adaptive immune responses in humans. The research involves comparative assessment of the innate immune system profile in each stage of tumor development in *brat* activated *Drosophila* embryos as compared to their levels in normal central nervous system development. The developmental stages include late embryonic stage to late pupal stage during which the major developmental steps transforming progenitor stem cells into differentiated neural brain tissue occurs. This work involved live tissue imaging studies of dissected central nervous system tissues from *Drosophila* at each stage of normal brain development versus brain tumor development in *Drosophila* embryos containing a mutation, *brat* that causes brain tumor formation as a consequence of dysregulated brain development, in many ways replicating patterns of pediatric brain tumor development in humans.

This inquiry also involves analyzing the hemolymph immune system cellular content at each stage of normal versus malignant central nervous system development. In addition, embryonic cell cultures are assessed in vitro with respect to the effects of innate immune system components on their growth patterns and properties. These embryonic stem cells, derived from *Drosophila* embryonic tissue, allow a precise characterization of the cellular effects of abnormal immune system components produced by larval flies during tumor development on growth of cells under conditions where these cells may display altered growth rates as well as abnormal patterns of growth in the context of the immune system components derived from flies with incipient brain tumors. This research presentation will identify critical innate

immune system parameters during early-stage tumor development that may contribute to immune system repression and the failure to control tumor growth.

Audience Take Away Notes

- The research I will present will be of interest to scientists in the discipline of tumor immunology, in dysregulated developmental signaling in the formation of central nervous system tumors, as well as clinicians who seek a deeper understanding of the biological mechanisms responsible for tumor recognition and destruction by the immune system
- The presentation will include a review of the current state of knowledge of the relationship between malignant tumors, the innate and adaptive immune systems
- This will be useful for teaching purposes as well as application to current research models in tumor immunology

Biography

Sarah Adelaide Crawford is a professor of genetics and cancer biology at Southern Connecticut State University USA. She received a doctoral degree in biochemistry from Columbia University and a master's degree in biochemistry from Princeton University. Postdoctoral research was at Memorial Sloan Kettering Cancer Center, NYC. She have been engaged in research in cancer biology for many years, heading a research laboratory at the university and have published and presented my research internationally. She is a member of the American Association of Cancer Research, the European Association of Cancer Research, American Association for the Advancement of Science, The Society of Clinical Research Associates and the New York Academy of Sciences.



Sawsan Zaitone

University of Tabuk, Saudi Arabia

Caffeic acid improves locomotor activity and lessens inflammatory burden in a mouse model of rotenone- induced nigral neurodegeneration: Relevance to parkinson's disease therapy

Background: Caffeic acid phenethyl ester is found in honey bee propolis. It has immunomodulatory, anti-inflammatory and anti- cancer properties. Rotenone is a pesticide commonly used for inducing experimental Parkinson's Disease (PD) due to complex I inhibition and microglia activating properties. The current study examined neuroprotective effect of caffeic acid against rotenone- induced neurodegeneration in groups of seven mice.

Methods: Mice received protective doses of caffeic acid (2.5, 5 or 10 mg/kg) daily and nine injections of rotenone (1 mg/kg, subcutaneously) – every 48 h. Behavioral evaluation of motor function was done by a battery of tests including open-field test, cylinder test, pole test and rotarod test; all these tests showed motor impairment.

Results: Assay of striatal dopamine highlighted a significant decrease and increases in inflammatory markers. In addition, histopathological assessment of substantia nigra neurons demonstrated low immunostaining for Tyrosine Hydroxylase (TH) in rotenone treated mice. PCR analysis highlighted upregulation for genes encoding CD11 b (a microglia surface antigen), Cyclooxygenase-2 (COX-2), inducible Nitric Oxide Synthase (iNOS) and Nuclear factor- κ B (NF κ B). Treatment with caffeic acid (5 or 10 mg/kg) amended most of rotenone-induced motor deficits, lessened microglia expression and inflammatory mediators and improved the nigral TH immunostaining.

Conclusion: These results confirmed the anti-inflammatory activity of caffeic acid and highlighted its neuroprotective activity against rotenone-induced neurodegeneration in mice.

Biography

Prof. Sawsan Zaitone is a Professor of Pharmacology & Toxicology at the University of Tabuk and she is interested in research projects about in neurologic disorders and diabetes complications and creation of new treatment modalities for solving these critical problems.



Sergey Suchkov^{1-6*}, Daniel Scherman⁸, Shawn Murphy^{6,7}, David Smith⁹, Hiroyuki Abe⁵

¹The Russian University of Medicine and Russian Academy of Natural Sciences, Moscow, Russia

²EPMA, Brussels, EU, Belgium

³PMC, Washington, DC, United States

⁴ISPM, Tokyo, Japan

⁵AHA, Houston, TX, United States

⁶MGH, Borton MA, United States

⁷Harvard Medical School, Boston, MA, United States

⁸Centre de Recherche Pharmaceutique de Paris (CRP2); Faculte de Pharmacie, Universite Paris Descarte, Centre National de la Recherche Scientifique, Unite de Technologies Chimiques et Biologiques pour la Sante (UTCBS) Inserm, Paris, France

⁹Mayo Clinic, Rochester, MN, United States

Personalized and Precision Medicine (PPM) as a unique healthcare model to be set up to secure the human healthcare, wellness and biosafety through the view of public health

A new systems approach to diseased states and wellness result in a new branch in the healthcare services, namely, Personalized and Precision Medicine (PPM). To achieve the implementation of PPM concept, it is necessary to create a fundamentally new strategy based upon the recognition of biomarkers of hidden abnormalities long before the disease clinically manifests itself. NIH (Bethesda, USA) has included PPM into a List of the Five Greatest Priorities of Development of Medicine and Healthcare Services in XXI Century. Each decision-maker values the impact of their decision to use PPM on their own budget and well-being, which may not necessarily be optimal for society as a whole. To really understand PPM we would have to understand the various fields of translational applications that provide the tools to exploit and practice PPM, and genomics- and phenomics-related tools, in particular! Improved patient (or persons-at-risk) outcomes with the application of the biomarker tests must consider not only increased survival or quality of life, but also improved Clinical Decision Support (CDS) & making leading to the avoidance of unnecessary therapy or toxicity captured within the rapid learning system. So, bioinformatics, Artificial Intelligence (AI), Machine Learning (ML) and biostatistics will be crucial in translating those big data into useful applications, leading to improved diagnosis, prediction, prognostication and treatment. It would be extremely useful to integrate data harvesting from different databanks for applications such as prediction and personalization of further treatment to thus provide more tailored measures for the patients resulting in improved patient outcomes, reduced adverse events, and more cost effective use of the latest health care resources including diagnostic, prognostic, preventive and therapeutic (targeted) etc. Personalized aims and objectives exist at every stage of disease initiation and progression to develop a Personalized Health Plan (PHP) addressing lifestyle, risk modification and disease management, and later, Personalized Health Management & Wellness Program (PHMaWP). And a lack of medical guidelines has been identified by responders as the predominant barrier for adoption, indicating a need for the development of best practices and guidelines to support the implementation of PPM! Putting PPM-tools in a public health perspective requires an apprehension of the current and future public health challenges. The principles of PPM and efforts to approaching the right health issues in a timely manner can be applied to population health. Doing so will, however, require a careful view and concerted effort to maintain the needs of population health at the forefront of all PPM discussions and investments. In reality, a new buzzword has crept into the health sciences lexicon: PPM-based public health. The initial drive toward PPM-based public health is

occurring, but much more work lies ahead to develop a robust evidentiary foundation for use. PPM and PPM-based public health calls for a trans disciplinary approach to support safe and effective deployment of the new enabling diagnostic and therapeutic technologies stressing: not to treat but to get cured!!! Meanwhile, neurological (neurodegenerative, in particular) diseases are promisingly suited models for PPM and PPM-related translational applications because of the rapidly expanding genetic knowledge base, phenotypic classification, the development of neuro-biomarkers and the potential modifying treatments. Moreover, neurodegenerative diseases have high degrees of genetic and pathophysiological heterogeneity, irrespective of clinical manifestations. Advances in disease modelling and methodological design have paved the way for the development of PPM-related Neurology, an established concept in clinical neurology with growing attention from other medical specialties. We propose PPM architecture for CNS diseases built on four converging pillars: multimodal biomarkers, systems biology & integrative medicine, IT health technologies, and big data science. One of the main challenges for healthcare systems is the increasing prevalence of neurodegenerative pathologies together with the rapidly aging populations. In this sense, Multiple Sclerosis (MS) being a chronic, autoimmune, demyelinating disease of CNS, would strongly require PPM, which involves the use of advanced OMICS-technologies, IT-portfolio, and imaging to identify specific biomarkers and disease subtypes, being a promising approach to the management of MS. PPM in MS includes the development of targeted therapies that aim to modulate specific immune pathways involved in MS pathogenesis and to develop targeted therapies to be used to get MS cured! Overall, PPM represents a promising approach to the management of MS and related neurodegenerative disorders, with the potential to improve diagnosis, prognosis, and treatment outcomes. By understanding the unique characteristics of a patient's neurological condition, such as genetic predispositions, biomarkers, and disease mechanisms, PPM aims to optimize treatment outcomes and improve patient care. Healthcare providers can develop more accurate diagnoses, design personalized treatment plans, minimize adverse effects, and potentially enhance the overall quality of life for individuals with neurological disorders by considering personalized factors. Overall, PPM in neurology holds the promise of advancing our understanding of neurological diseases and transforming healthcare by tailoring interventions to the unique needs of each patient, whilst constructing schemes of molecular profiling, upgraded clinical evaluation, protocols of personalized diagnosis and targeted treatment as well as monitoring and adjustment. In the advanced era of Bio design-inspired biotechnology and knowledge, the most difficult and unrecognizable diseases can now be cured, stopped, and reversed with the help of PPM-related advanced technology. And thus the latter would need for novel training since the society is in bad need of large-scale dissemination of novel systemic thinking and minding. And upon construction of the new educational platforms in the rational proportions, there would be not a primitive physician created but a medical artist to be able to enrich flow-through medical standards with creative elements to gift for a patient a genuine hope to survive but, in turn, for a person-at-risk – a trust for being no diseased. This is the reason for developing global scientific, clinical, social, and educational projects in the area of PPM to elicit the content of the new branch.

Audience Take Away Notes

- In Bio design-inspired Biotech-driven Biotechnology and Bio industry
- To implement the technologies into the clinical practice and Bio industry
- To prepare a course of lectures on Bio design-inspired Immunobiotechnology
- To make a cooperative bridge with Biopharma and Biotech through Bio designers
- For sure! Setting up start-ups of the next step generation

Biography

Dr. Sergey Suchkov graduated from Astrakhan State Medical University and awarded with MD, then in 1985 maintained his PhD at the I.M. Sechenov Moscow Medical Academy and in 2001, maintained his Doctorship Degree at the Nat Inst of Immunology, Russia. From 1987 through 1989, he was a senior Researcher, Koltzov Inst of Developmental Biology. From 1989 through 1995, he was a Head of the Lab of Clinical Immunology, Helmholtz Eye Research Institute in Moscow.

From 1995 through 2004, a Chair of the Dept for Clinical Immunology, Moscow Clinical Research Institute (MONIKI). Dr. Suchkov has been trained at: NIH; Wills Eye Hospital, PA, USA; Univ of Florida in Gainesville; UCSF, S-F, CA, USA; Johns Hopkins University, Baltimore, MD, USA. He was an Exe Secretary-in-Chief of the Editorial Board, Biomedical Science, an international journal published jointly by the USSR Academy of Sciences and the Royal Society of Chemistry, UK. At pre-sent, Dr. Sergey Suchkov is a Chair, Dept for Personalized Medicine, Precision Nutriciology and Biodesign of the Institute for Global Health and Biotech of RosBioTech, and Professor of the Dept for Clinical Allergology & Immunology of A.I. Ev-dokimov MGMSU, Russia. He is a member of the: New York Academy of Sciences, USA; American Chemical Society (ACS), USA; American Heart Association (AHA), USA; EPMA (European Association for Predictive, Preventive and Person-alized Medicine), Brussels, EU; ARVO (American Association for Research in Vision and Ophthalmology); ISER (Internat-ional Society for Eye Research); PMC (Personalized Medicine Coalition), Washington, USA.



Ningyi Zou¹, Peijing Rong², Shaoyuan Li^{1*}, Ph.D

¹Institute of Acupuncture and Moxibustion, China Academy of Chinese Medical Sciences, Beijing, China, 100700

²Institute of Basic Research in Clinical Medicine, China Academy of Chinese Medical Sciences, Beijing 100700, China

Transcutaneous auricular vagus nerve stimulation: A novel therapy connecting central and peripheral system

Currently, most clinical practice and scientific research revolves around a single disease or system, and the single disease-oriented diagnostic and therapeutic paradigm needs to be broken. This review describes how Transcutaneous Auricular Vagus Nerve Stimulation (taVNS), a novel non-invasive neuromodulation approach, connects the central and peripheral systems of the body. Through stimulation of widely distributed vagus nerve from the head to the abdominal cavity, this therapy can improve and treat central system disorders, peripheral system disorders, and central-peripheral comorbidities caused by autonomic dysfunction. In the past, public research on taVNS has focused on how to treat central system disorders by modulating this brain nerve. As the vagus nerve innervates the heart, lungs, liver, pancreas, gastrointestinal tract, spleen and other peripheral organs, taVNS could have an overall modulatory effect on the region of the body where the vagus nerve is widespread. Based on the above physiological basis, we summarize the existing evidence of its ability to regulate cardiac function, adiposity, glucose, gastrointestinal function, immune function, etc., to treat peripheral system diseases, and its treatment of complex diseases with central and peripheral comorbidities. This review will show the successful examples and research progress of taVNS using peripheral neuromodulation mechanisms from more perspectives, demonstrating its expanded scope and value to provide new ideas and approaches for holistic therapy from both central and peripheral perspectives.

Audience Take Away Notes

- Transcutaneous auricular Vagus Nerve Stimulation (taVNS) is a novel neuromodulation therapy which has shown a similar function to invasive VNS, with the advantages of non-invasive, easy operation, excellent therapeutic efficacy and minimal side effects
- This review focuses on the application of taVNS in treating disorders of peripheral organs and the communication between central and peripheral regulations
- The application of taVNS in the field of central peripheral comorbidities will be worth exploring in depth

Biography

Shaoyuan Li, Ph.D. is associate research fellow, postgraduate tutor, at Institute of Acupuncture and Moxibustion of China Academy of Chinese Medical Sciences (CACMS). She is also Young Elite Scientists supported by China Association for Science and Technology. She focuses on the clinical effect and mechanism of auricular vagus nerve stimulation on Central and Peripheral System comorbidities. She has published more than 30 peer-reviewed papers across several disciplines including depression, neurology, neuroscience, metabolism and neuromodulation.



Shuhua Chen

Department of Neurology, Beijing Children's Hospital, Capital Medical University, Beijing, China

EEG application pre- and post-cerebral cortex disconnection surgery in intractable epilepsy

Cerebral cortex disconnection surgery is a surgical treatment method for drug-resistant epilepsy patients. By this surgical technique, the connection between the epileptic cerebral tissue and its related structures and adjacent brain tissue were disconnected completely. It means the disconnected brain tissue (including one cerebral region, one lobe or one hemisphere) can be exit almost intact but can not perform its original function or cause seizures, So seizure free can be attained after surgery. According to the location of the disconnection, the corresponding disconnection surgeries can be divided into frontal lobe disconnection, parietal lobe disconnection, occipital disconnection, insular and periinsular cortex disconnection, temporo-parieto-occipital disconnection, Hemispherotomy (also called functional Hemispherectomy), and so on. Cerebral cortex disconnection surgery can achieve the effect of surgical resection, but there are fewer surgical complications, so it's performed widely in epilepsy surgery.

Video EEG is one of the important tools for epilepsy during its diagnosis and treatment. For refractory epilepsy video EEG is more important during preoperative evaluation for epilepsy surgery. It can provide not only the localization information about the epileptogenic zone, but also an important content of postoperative follow-up, providing a basis for surgical prognosis judgment, efficacy evaluation, and adjustment or from reduction to withdrawl of anti-seizure drugs.

This lecture will provide an overview of the development of cerebral cortex dissection in China over the past 20 years. We also review the characteristics of Electroencephalography (EEG) before and after cerebral cortex dissection surgery and its relationship with its outcomes. And also I will share our experience based on our case studies. Finally, some hypotheses and ideas are proposed for the future application of VEEG for cerebral cortical dissection surgery.

Audience Take Away Notes

- Video EEG has been a popular and useful method in epilepsy, especially in presurgical evaluation. Cerebral cortex disconnection surgery is one epilepsy surgery procedure. Our presentation will discuss
- The development of the cerebral cortex dissection surgery in China in the past 20 years, especially the hemispherectomy
- What's the characteristics of the VEEG in the patients with refractory epilepsy before cerebral cortex dissection surgery?
- What's the characteristics of the VEEG in the patients with refractory epilepsy after cerebral cortex dissection surgery?
- What's the possible value of the VEEG in the evaluation for the prognosis of cerebral cortex dissection surgery?
- What we can do in the future by VEEG in the patients after cerebral cortex dissection surgery?

Biography

Dr. Chen studied Neurology at the Tianjin Medical University, China and graduated as MD in 1999. She received her PhD degree of imaging and nuclear medicine in 2002 at the same University. She worked in different hospitals successively, including Affiliated Hospital of Jining Medical College, Beijing Sanbo Brain Hospital, Children's Hospital Capital Institute of Pediatrics and now working in Beijing Children's Hospital, Capital Medical University. She has published more than 30 research articles in journals. Dr. Chen has been engaged in epilepsy diagnosis and treatment, presurgical evaluation of epilepsy, and neurophysiological diagnosis (including scalp and intracranial electroencephalography) for about 17 years.



Subatharshini Sountharalingam

Goulburn Valley Health, Australia

Unveiling the unforeseen: Unusual presentation of acute motor and sensory axonal polyneuropathy in a regional victorian hospital

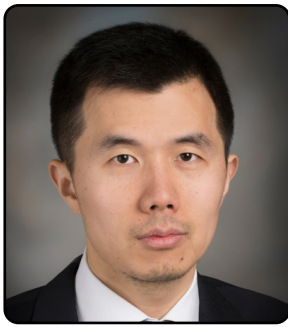
Background: Guillain Barre Syndrome (GBS) is a very well-studied condition in neurology which usually associated with antecedent infections, predominantly gastroenteritis or chest infection over the past few weeks. Among its variants, Acute Motor and Sensory Axonal Neuropathy (AMSAN) is the severe form and has got worse clinical course and prognosis. *Campylobacter jejuni* is the agent in 70% of cases of Acute Motor and Sensory Axonal Neuropathy (AMSAN) cases. There are cases of GBS concomitantly with the infections.

Case Presentation: A 68-year-old male presented to the emergency department with four-day history of severe right sided pleuritic chest pain, which was unbearable, not responding to conventional analgesics. He also experienced difficulty in walking over the last two days. He started using a stick which is new and wife witnessed furniture walking before the day of admission. On examination, noticed a well-built man with marked distal weakness of the lower limbs (3/5) with global areflexia. Upper limb power was normal (5/5) both distally and proximally and no objective sensory loss demonstrated. Cranial nerves were spared. Chest examination did not have any positive findings. Cerebrospinal Fluid (CSF) examination did not reveal the typical albumin cytological dissociation (protein 0.37g/l, leuk-1*10⁶) and the CT brain and MRI spine were also normal. Blood panel was pristine and chest X-ray was devoid of any consolidation. On the first day of admission, his pleuritic chest pain was causing him distress which required intravenous opioids while closely monitored for neurological progression given the atypical features. His weakness progressed proximally in the next 24 hours, power was 2/5 in the distal feet and 3/5 proximally, upper limbs also started with the distal weakness of 4/5. Then intravenous immunoglobulin was commenced (0.4g/kg/d for 5 days). However, the weakness progressed to affect the respiratory muscles which led him to get intubated. He also had autonomic instability with fluctuations in the blood pressure and tachycardia. The repeat CSF on day 9 revealed albumin cytological dissociation (CSF protein 0.92g/l) and nerve conduction also confirmed highly attenuated tibial motor amplitude with prolonged distal latencies and slow velocities, absent F waves, normal median motor CMAP which favours generalized axonal motor and sensory neuropathy. CSF anti GM1, GAD antibodies were negative. The serologies from extended viral and bacterial respiratory panel to evaluate the underlying aetiology was negative including COVID PCR. There is no recent vaccination as well. The weakness started to improve after four weeks into the illness. Eventually it improved and patient is undergoing rehabilitation at present.

Conclusion: Diagnosis of GBS could be challenging at times especially in a regional setting with limited resources. It should be driven by high clinical suspicion even when the timeframe is quite short. Contrary to the typical cases of GBS, the weakness could start concomitantly with an infection or as short as within 48 hours and reach nadir in 3 days. The absent albuminocytological dissociation in the beginning of the course should not exclude the clinical suspicion and it should be repeated after a week. This case underscores the importance of recognizing atypical presentations of GBS, especially when neurological symptoms manifest in conjunction with unusual clinical features, thereby emphasizing the importance of the clinical diagnostic approach and timely intervention to optimize patient outcomes.

Biography

Dr. Subatharshini Sountharalingam, happy to be called as SUBA, she obtained my MBBS(Hons) from a medical faculty in Sri Lanka and entered into postgraduate training in the specialty of General Medicine and obtained MD in general medicine in 2018, followed by MRCP (UK) in the same year. She practiced as a specialist in Sri Lanka before moving to Australia. Currently she on the peer review for FRACP in a Regional Victorian Hospital and in the process of obtaining fellowship in Australia. She interested in academic activities and involved in hospital audits, researches as well.



Caishang Zheng¹, Yanjun Wei¹, Chaolin Zhang², Frederick Lang³, Jian Hu⁴, Yiwen Chen^{1*}

¹The University of Texas MD Anderson Cancer Center, Department of Bioinformatics & Computational Biology, Houston, Texas, United States

²Columbia University, Departments of Biochemistry and Molecular Biophysics & Systems Biology, New York City, New York, United States

³The University of Texas MD Anderson Cancer Center, Department of

Neurosurgery, Houston, Texas, United States

⁴The University of Texas MD Anderson Cancer Center, Department of Cancer Biology, Houston, Texas, United States

Multomics analyses reveal DARS1-AS1/YBX1-controlled posttranscriptional circuits promoting glioblastoma tumorigenesis/radioresistance

Glioblastoma (GBM), grade IV glioma, is the most prevalent/malignant primary brain tumor in adults. The therapeutic benefit from standard treatment remains limited and median survival of GBM patients is around 15 months. Glioblastoma Stem Cell-Like Cells (GSCs) are a sub-population of highly tumorigenic GBM cells that possess unique functional characteristics including the capability of self-renewal/differentiation into other cell types, persistent proliferation, and tumor initiation upon secondary transplantation. GSCs also confer therapeutic resistance of GBM to chemotherapy/radiation therapy. Long noncoding RNA (lncRNAs) are emerging regulatory RNAs that can mediate tumor-promoting/suppressing effects in cancer. However, the role of lncRNAs in determining the functional characteristics of GSCs underlying GBM pathogenesis remains poorly understood. To fill this gap, we performed CRISPRi screen and identified >50 lncRNA hits that are overexpressed in GBM compared with normal brain tissues, including many with established function in development/disease. One of the hits, DARS1-AS1, exhibits an elevated expression with disease progression from low-grade glioma to GBM. Furthermore, its higher expression is associated with shorter overall survival of GBM patients. Functionally, depleting DARS1-AS1 inhibits the proliferation/self-renewal of GSCs, and orthotopic patient-derived tumor growth in vivo. Its depletion also impairs the Homologous Recombination (HR)-mediated DNA Double-Strand Break (DSB) repair and enhanced the radiosensitivity of GSCs. Mechanistically, by integrating mass-spectrometry, RNA-seq, and enhanced Crosslinking Immunoprecipitation (eCLIP)-seq, we found that DARS1-AS1 interacted with YBX1 to promote target mRNA binding and stabilization to up-regulate expression of the key regulators of G1/S transition, including E2F1 and CCND1. DARS1-AS1/YBX1 also stabilized the mRNA of FOXM1, a master transcription factor regulating GSC self-renewal and DSB repair. Our findings reveal a lncRNA/RBP-mediated post-transcriptional program that ensures a coordinated regulation of DSB repair and cell cycle progression/self-renewal in GSCs, suggesting that DARS1-AS1/YBX1 axis may be a therapeutic target in GBM and inhibiting this axis together with radiation/PARP inhibitors targeting HR-deficiency may provide a new therapeutic strategy for treating GBM.

Audience Take Away Notes

- The audience will be able to use the insight from this presentation about post-transcriptional regulation in their own disease of interest
- The integrative multi-omics strategy designed by the current study is generally applicable and can be adopted by other researchers to systematically study the lncRNA/RBP-mediated regulatory networks in health and disease

- This study suggests that inhibiting the DARS1-AS1/YBX1 axis may lead to HRD in GBM and make it vulnerable to PARPi therapy. Combining delivery of siRNAs/miRNA mimics that inhibit the DARS1-AS1/YBX1 axis using nanoparticle platforms with radiation or PARPi therapy may provide a new therapeutic strategy for treating GBM

Biography

Dr. Chen obtained his PhD in Physics with a focus on Biophysics in 2007. After over one year's postdoctoral fellowship supervised by Dr. Norbert Perrimon at HHMI and Harvard Medical School in U.S., he joined Dr. Shirley Liu's lab at Dana Farber Cancer Institute and Harvard School of Public Health. He joined the University of Texas MD Anderson Cancer Center as a tenure-track Assistant Professor in 2015 and was promoted to Associate Professor with tenure in 2022. Based on Google Scholar, he has published ~70 paper with a total number of citations of ~16,000 and H-index of 44.

JUNE

20-22

9th Edition of International Conference on

Neurology and Neurological Disorders

POSTERS



Dániel Baksa^{1,2,3*}, Dóra Török^{1,2}, Gabriella Juhász^{1,2}

¹Department of Pharmacodynamics, Faculty of Pharmacy, Semmelweis University, Budapest, Hungary

²NAP3.0-SE Neuropsychopharmacology Research Group, Hungarian Brain Research Program, Semmelweis University, Budapest, Hungary

³Department of Personality and Clinical Psychology, Institute of Psychology, Faculty of Humanities and Social Sciences, Pazmany Peter Catholic University, Budapest, Hungary

Opposite effects of CGRP-related genes on migraine and depression

Introduction: Anti-Calcitonin Gene-Related Peptide (CGRP) migraine medications may also reduce symptoms of depression, a comorbid disease of migraine with overlapping genetic background. Currently, we do not understand the biological background of this phenomenon. Here, we aimed to test the effect of Polygenic Risk Score (PRS) of a CGRP-related gene set on migraine and depression.

Methods: A sample of the UK Biobank database (Application no. 71718) was used (N=134,197) in our cross-sectional study. Migraine and depression status were based on ICD-10 codes (G43 and F32/F33, respectively), and we also used a questionnaire-based current depression score. The CGRP gene set was defined according to the Pathway Commons database (Ngenes=29). PRS was calculated with LDpred2. To test the predictive value of the PRS, we performed linear regressions with R (4.1.2) separately on migraine, depression, and current depression score.

Results: The CGRP gene set PRS showed a significant risk effect on migraine ($\beta=0.4981$, $p=0.0067$) but not on depression diagnosis, although a significant protective effect on current depression score ($\beta=-0.2466$, $p=0.0319$) was detected.

Conclusion: A CGRP-related gene set showed a risk effect on migraine, but a protective effect on current depression symptoms that might suggest a better mental health state among migraine patients with higher CGRP-related genetic risk.

Funding: 2017-1.2.1-NKP-2017-00002; NAP2022-I-4/2022; TKP2021-EGA-25; 2019-2.1.7-ERA-NET-2020-00005, ERAPERMED2019-108; K 143391; ÚNKP-23-4-II-SE-2

Audience Take Away Notes

- The presenter will provide current knowledge on the effect of anti-CGRP medications on depression symptoms of migraine patients
- The first possible explanation of this phenomenon from a genetic standpoint, specifically the effect of a CGRP-related gene set on migraine and depression will be presented
- Our results may suggest CGRP-related targets for future pharmacogenetic studies
- In the long term, our results might be useful in identifying migraine subgroups whose comorbid depression symptoms can benefit from anti-CGRP treatment

Biography

Dr. Baksa studied psychology at the Eötvös Loránd University, Hungary and graduated as MA in 2013. In 2016, he joined the research group of Gabriella Juhász, MD, D.Sc at the Department of Pharmacodynamics, Semmelweis University, Hungary, and received his PhD degree in 2023 at the same institution. Currently, he is involved in two research projects led by Gabriella Juhász. He became an assistant lecturer at the Department of Personality and Clinical Psychology, Pazmany Peter Catholic University, Hungary. He has published 26 research articles in the fields of genetics and fMRI, covering topics of Migraine, Circadian Rhythm, and Depression.

Guanghui Deng

Department of Neurology and Rehabilitation Medicine, Yongchuan People's Hospital of Chongqing, Chongqing, China

Personalized care in hemorrhagic stroke: Application efficacy and rehabilitation strategies

Objective: This review aims to explore the effects of personalized care and early rehabilitation on patients with intracerebral hemorrhage and how these approaches improve patient survival rates and functional outcomes.

Methods and Materials: The literature review primarily relies on studies published within the last five years, gathered from PubMed, to assess the effectiveness of early rehabilitation in ICH patients. The study subjects are hospitalized ICH patients in China who received early rehabilitation treatment within 48 hours post-stroke. Key outcome measures include survival rates, health-related quality of life, functional assessments, and anxiety levels.

Results: After treatment, 18 cases were cured in early rehabilitation group, 99 cases were effective, 5 cases were ineffective, the total effective rate was 95.90%; In the standard treatment group, 8 cases were cured, 100 cases were effective, 14 cases were ineffective, and the total effective rate was 88.52%. There was significant difference between the two groups ($p=0.03$). The treatment compliance rate of the early rehabilitation group was higher than that of the standard treatment group ($p<0.001$), and the length of hospital stay was significantly shorter than that of the standard treatment group ($p<0.05$). What's more, the early rehabilitation group exhibited higher survival rates compared to the group receiving standard care alone. Specific data includes a higher risk of death in the standard care group (adjusted hazard ratio of 4.44). Additionally, the early rehabilitation group had an average hospital stay 10 days shorter than the standard care group, with the former averaging 24 days and the latter 34 days.

Conclusion: In summary, early rehabilitation therapy significantly improves long-term survival rates and functional outcomes in ICH patients, particularly within the Chinese healthcare context.

Audience Take Away Notes

- Early rehabilitation therapy significantly improves long-term survival rates and functional outcomes in ICH patients
- It's a meta analysis that got the advantages and disadvantages of the two treatments are compared from various angles by summarizing the current classical researches
- Help the physicians to choose a better treatment for ICH patients

Biography

Ms. Guanghui Deng is a nurse-in-charge in Yongchuan People's Hospital of Chongqing. She is working in the Department of Neurology and Rehabilitation Medicine. She was born in 1973 and working for ICH patients for years.



John K. Maesaka, M. D

Division of Nephrology and Hypertension, NYU Langone Hospital Long Island, and NYU Grossman Long Island School of Medicine, Mineola, N.Y. 11501 United States

New pathophysiologic approach to hyponatremia yields revolutionary results, identification of natriuretic protein that causes renal salt wasting and new syndrome of renal salt wasting in alzheimers disease

The approach to hyponatremia is in a state of flux, especially in differentiating Syndrome of Inappropriate Secretion of Antidiuretic Hormone (SIADH) from cerebral-Renal Salt Wasting (RSW) because of diametrically opposite therapeutic goals of water-restricting in SIADH and administering saline in RSW. We differentiated SIADH from RSW by utilizing an algorithm based on Fractional Excretion (FE) of urate and failure of isotonic saline infusions to dilute the urine or correct the hyponatremia in SIADH as compared to excretion of dilute urines and correction of hyponatremia in RSW. We also identified the natriuretic factor we previously demonstrated in neurosurgical patients with RSW and in Alzheimer's Disease (AD).

Results: of 62 hyponatremic patients, (A) 17 patients (27%) had SIADH, 11 were nonresponsive to isotonic saline, and 5 normalized a previously high Feurate after correction of Hyponatremia; (B) 19 patients (31%) had a reset osmostat based on normal Feurates and spontaneously excreted Dilute Urines; (C) 24 patients (38%) had RSW, 21 had no clinical evidence of cerebral disease, 19 had saline-induced dilute urines; 2, 10 required D5W to prevent rapid increases in serum sodium to prevent osmotic demyelination, 11 had persistently increased Feurate after correction of Hyponatremia. (D) 1 patient had Addison disease with a low Feurate and (E) 1 patient (1.6%) had hyponatremia due to hydrochlorothiazide. We identified Haptoglobin Related Protein Without Signal Peptide (HPRWSP), the first potent inhibitor of proximal tubule sodium transport, as the natriuretic factor in a patient with RSW and in AD.

Conclusions: RSW is much more common than is perceived with 21 of the 24 patients with RSW lacking evidence of cerebral disease, supporting our proposal to change cerebral salt wasting to RSW. HPRWSP can serve as a biomarker for RSW to simplify diagnosis of RSW on first encounter, direct proper therapy, improve clinical outcomes and identifying a new syndrome of RSW in AD. Development of an inhibitor to HPRWSP will more effectively treat patients with RSW. HPRWSP will more effectively treat congestive heart failure when combined with a distal diuretic.

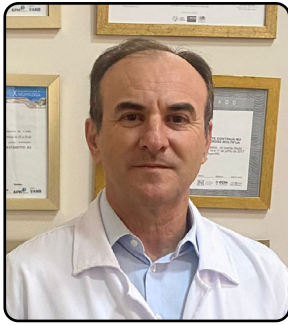
Audience Take Away Notes

- Audience will be presented with improved physiologic approach to hyponatremic and hyponatremia related conditions that have shown cerebral or renal salt wasting to be much more common than perceived with identification of the natriuretic protein that causes salt wasting, in addition to new syndrome of renal salt wasting in Alzheimer's disease
- This is a very complicated area of medicine that is undergoing a paradigm shift that will eventually be simplified by using the natriuretic protein as a biomarker of renal salt wasting to simplify diagnosis and treatment
- This is possible but a very difficult area to make contributions without a firm background in physiology
- Yes, this provide a practical solution to a problem that could simplify or make a designer's job more efficient

- Future studies will greatly simplify diagnosis and treatment of renal salt wasting

Biography

John Maesaka, professor of medicine at NYU Long Island School of Medicine and Chief Emeritus, Division of Nephrology and Hypertension at NYU Langone Hospital Long Island, was born in Hawaii, received a BA degree from Harvard University, MD degree from the Boston University School of Medicine and trained at Barnes Jewish Hospital at Washington University in St. Louis and the Mount Sinai Hospital and Medical School in New York. He spent 5 years exclusively in the physiology laboratory, which prepared him well for his future research endeavors. He has spent many years studying hyponatremic conditions, especially renal salt wasting and identifying the protein that causes it.



Milton C. R. Medeiros^{1*}, Milton T. Medeiros²

¹Irmandade Santa Casa de Arapongas – PR – Brazil

²UNIFAA – Valença – RJ – Brazil

Post-dural puncture headache treated with greater occipital nerve block

Post-Dural Puncture Headache (PDPH) is an important and relatively frequent complication after spinal anesthesia. It is intense pain that worsens when sitting or standing and improves when lying down. Epidural blood tamponade is the most effective treatment, but it is invasive.

Objective: To demonstrate the results of Greater Occipital Nerve (GON) block in the treatment of PDPH.

Method: 3 patients undergoing cesarean section with PDPH were evaluated, who agreed to GON blockade after failure of hydration, rest and analgesics. Blockade was performed bilaterally with 5 ml lidocaine (20 mg/ml) and 1 ml betamethasone (5 mg/ml).

Results: The Visual Analogue Scale before the procedure (VAS) was 8 for the first patient, 8 for the second and 9 for the third respectively, with the patients sitting (average 8.3). After 2 hours of GON blockade, the VAS was 1, 2 and 2 respectively (average 1.6). After 24 hours, the VAS was 0, 1 and 1 (average 0.6). No side effects were reported due to GON blockade.

Conclusion: In the cases in question, GON blockade showed good efficacy in the treatment of PDPH. The procedure is simple and quite safe. Although epidural blood patch is the definitive treatment for PDPH, GON blockade is an option to be considered for the treatment of these patients.

Biography

Dr. Milton C. R. Medeiros is a titular member of the Brazilian Academy of Neurology. Graduated in medicine from the State University of Londrina in 1994 (UEL). Medical residency in neurology at UEL, graduated as specialist in 1997. Member of the Brazilian Academy of Neurology since 2002. Member of the headache and pain scientific departments at the Brazilian Academy of Neurology. He is also a member of the scientific department of the cognitive neurology and aging. Dr. Milton is a writer. His latest book is *Fuja Do Alzheimer Agora Mesmo*, publisher Viseu, still an exclusive edition in Portuguese.



Rwakiseta Herbert

Golden Age Elderly Homes, Uganda

Tailored care homes for neurological disorders: A person-centered approach

This presentation, titled Tailored care homes for neurological disorders: A person-centered approach, delves into the critical role of care homes and assisted living facilities in developing and implementing individualized care plans for residents with neurological disorders. Recognizing the diverse and unique needs of individuals facing neurological challenges, the discussion emphasizes the significance of adopting a person-centered approach. The presentation will explore the methodologies employed by care facilities to craft care plans that go beyond standardized approaches, taking into account each person's specific symptoms, preferences, and abilities. By recognizing the distinct characteristics of various neurological disorders, caregivers can tailor interventions and support systems to enhance the overall well-being of residents. Attendees will gain insights into the importance of holistic assessments, ongoing communication with residents and their families, and the collaborative involvement of multidisciplinary teams in designing care plans. The presentation aims to foster an understanding of the nuanced nature of neurological disorders and highlight the positive impact that personalized care plans can have on the quality of life for individuals residing in care homes and assisted living facilities.

Audience Take Away Notes

- The insights from this presentation will empower care home professionals with enhanced skills and practical knowledge applicable to their roles. By adopting the principles of person-centered care, attendees can develop and implement tailored care plans for residents with neurological disorders, contributing to improved well-being and satisfaction. Integrating holistic assessment practices into routine caregiving will result in more informed decision-making, allowing professionals to address diverse resident needs comprehensively. Knowledge on fostering collaborative multidisciplinary teams will strengthen teamwork, leading to a more cohesive care environment and better outcomes. Implementing physical and environmental modifications within care homes will create supportive spaces, positively influencing residents' sense of security and comfort. Professionals will also be equipped to promote independence and dignity, fostering a positive caregiving environment and enhancing the overall effectiveness of their roles.

Biography

Dr. Gardner is a lawyer by profession holding a Doctorate of Philosophy in International Trade Law from Lund University, Sweden. He is enthusiastic about Mind- Education and Conscious Leadership; with various international certifications in; 1) Organisational Leadership and Management with California leadership Center & Employees Association, 2) Positive Intelligence with Positive Intelligence New York Shirzad Chamine, 3) Certified leadership and Management trainer with Warren Bennis (The leadership classic Blue Print, 4) Certified Thinking and Innovation with De Bano Institute of Creative Thinking and Innovation - Malta Msda and, 5) Certified teacher in Totality and wholeness of life with Jiddu Krishnamurti - The Rishi Valley School-Bengaluru, India.



Saadia Sattar^{1*}, Salma Tajuddin², Ayesha Kamran Kamal³

¹Senior Instructor (Research, Department of Medicine, Aga Khan University, Karachi, Pakistan

²Senior Instructor (Research, Department of Medicine, Aga Khan University, Karachi, Pakistan

³Professor Neurology, Stroke Service, Department of Medicine, Aga Khan University, Karachi, Pakistan

Computer-aided detection and classification of ischemic strokes from MRI images in LMIC- A retrospective cohort study

Ischemic stroke is a leading cause of morbidity and mortality globally. The high interfacing ratio of patients to professionals in Pakistan's population is a great hindrance to access to care. This study intends to develop a computer-aided detection and classification system that works on MRI images to help with the time economy of professionals. It is also expected to aid with the accuracy and early detection of Ischemic Strokes. The evaluation of the developed system will be documented by calculating standard performance metrics when deploying the algorithm in a test set with cases that were not used in the training and development of the algorithm. This will be a retrospective cross-sectional study, which intends to analyze the agreement between the prediction of the algorithm and actual ischemic stroke identification in the test set, as well as a detailed case-by-case analysis of points of disagreement. The study also intends to provide estimates of the time economy of the algorithm. This is a retrospective cross-sectional cohort study design that will work on ten years of MRI scans of AKU patients.

Audience Take Away Notes

- Although a few algorithms have been developed for the detection of Ischemic Stroke with accuracies of Random Forest Learning algorithm working with 68% sensitivity and Convolution Neural Network based algorithm with 85% sensitivity. It is stated that work can be done on improving the performance of such algorithms. There have been algorithms designed to classify into ischemic and hemorrhagic. These have been developed in fully developed countries and trained on data sets pertaining to specific populations. In machine learning, the NFL theorem states that within certain constraints, over the space of all possible problems, every optimization technique will perform as well as every other one on average. This entails that in improving the performance of an algorithm an important aspect would be training the algorithm on a dataset closer to the population it is being designed for. Our approach is working on a dataset from the population it is being designed for which should provide greater performance metrics. There is limited to no work documented on the fully automatic detection of types of ischemic stroke based on cutting-edge machine learning techniques. This study intends to document the basic performance metric of a preliminary algorithm designed for the same purpose

Biography

Saadia Sattar completed her Masters in Epidemiology & Biostatistics from Aga Khan University Hospital in 2017. Currently, she is working as a Senior Instructor (Research) at the Department of Medicine, Aga Khan University Hospital. Currently, she has multiple intramural and extramural grants and supervises multiple clinical trials and observational studies. As an enthusiastic young researcher, she is more focused on behavioral modification, management accuracy, and preventive modalities improving disease prognosis in the field of vascular biology, as well as developing a diverse and productive mHealth-based research program in communicable and non-communicable diseases at a hospital and community level.



Se-Na Jang*, Hyeong-Yeong Park and Ji-Hoon Jeong

Department of Computer Science, Chungbuk National University, Cheongju 28644, Republic of Korea

Towards neurolinguistic processing transformer using EEG tokenization for smart brain-computer interaction

Transformers, one of the remarkable machine learning techniques, are widely used not only in the artificial intelligence fields due to their remarkable ability to handle the problem of long-term dependencies. In this study, our objective is to develop an Electroencephalogram (EEG) transformer that classifies actual speech task, speech imagery task, and rest states using only the EEG signals and to perform part of the speech tag of decoded sentences. The 64 EEG channels were acquired based on 10-20 international system. The EEG data were pre-processed through artifact removal such as eye blink and head movement. The EEG transformer tokenizes and randomly masks EEG tokens, which then undergo token embedding and position embedding processes. Token embedding maps input tokens into a high-dimensional vector space, allowing each token to be represented as a continuous vector. This transformation helps capture the semantic relationships between tokens and enables the model to understand the similarity between tokens. Position embedding provides information about the position of each token in the input sequence. It conveys this positional information to the transformer model, enabling it to understand the sequence of the input and learn temporal dependencies. The joint discriminative and self-supervised generative self-supervised learning framework pre-trained simultaneously conducts generation and discrimination. The discriminative model is trained to predict the ID of masked EEG tokens (e.g., actual speech task (S), speech imagery task (I), and rest states (None) considering the context, and predicts the part of speech tagging of masked EEG tokens by referencing speech tasks and imagined tasks. The generative model fills in the missing data at the masked positions and complements incomplete information, aiding in the training of the discriminative model. Through this framework, part of speech tagging of EEG speech segments is performed, allowing the distinction between speech tasks, imagined speech tasks, and rest states. To the best of our knowledge, it is the first token-based self-supervised learning framework in speech imagery decoding using EEG. Speech tagging results can be utilized to enhance the efficiency and accuracy for high-level semantic decoding of human speech intention.

Audience Take Away Notes

- Introduction of intuitive speech imagery decoding strategy
- Novel possibilities for understanding and interpreting EEG tokenization
- Necessity of bridging the gap between neural activity and semantic understanding

Biography

Ms. Jang is a Master's student in the Department of Computer Science at Chungbuk National University, having previously earned her Bachelor's degree at the same institution. She actively contributes to research at the Machine Learning and Neural Engineering Lab under the guidance of Prof. Ji-Hoon Jeong. Her research focuses on brain-machine interfaces, artificial intelligence, and nature language processing.



Stacey Main*, Megan Esch

Department of Neuroscience, Geisinger Medical Center, Danville, PA,
United States

In patients with multiple sclerosis, does the transition from brand name tecfidera to generic dimethyl fumarate result in statistically significant shifts in laboratory surveillance data, MRI imaging, patient-reported side effects, and compliance?

Background: Multiple Sclerosis (MS) is an abnormal immune-mediated response that results in damage within the central nervous system causing physical limitations, cognitive changes, and psychological distress. With the advent of Disease-Modifying Therapy (DMT), patients can experience delayed progression of disability and reduction in the incidence of relapse and severity, ultimately improving quality of life.

Objectives: To determine if there is a difference between outcomes regarding laboratory abnormalities, patient-reported side effects, and breakthrough disease observed on MRI in patients with Relapsing and Remitting MS (RRMS) who were taking brand name Tecfidera and have transitioned to generic Dimethyl Fumarate (DMF).

Design/Methods: This is a retrospective chart review of 200 patients with RRMS who were on Tecfidera for at least 12 months and then transitioned to DMF following FDA approval. This study compared the preceding 12-month data of Absolute Lymphocyte Counts (ALC) and Liver Function Tests (LFT) and the comparative ALC and LFTs following the transition to DMF at 3-month intervals. Lastly, patient-reported side-effects preceding and following the transition were recorded.

Results: 23% and 8% of patients on the generic formulation for >6 months demonstrated reductions in ALC below the lower limit of normal by 3- and 6-months post-transition, respectively. There was also no significant ($p < 0.05$) difference in LFT values at 6 months pre- and post-transition. 3% of patients experienced breakthrough disease on MRI after transitioning. Lastly, 23% and 29% of patients who had been on DMF for >6 months and <6 months, respectively had reported worsened side-effects.

Conclusions: Our research shows there is no significant difference in the monitored laboratory values or on MRI imaging after transitioning from Tecfidera to DMF. Though clinical measures did not reveal any significance, the subjective worsening of side effects experienced while on DMF compared to Tecfidera could lead to poor compliance and subsequent worsened outcomes.

Audience Take Away Notes

- Patients with multiple sclerosis often endorse mistrust in generic medications and with many disease modifying therapies going generic evidence to support clinical equivalence may help ameliorate concerns and encourage compliance
- Audience will learn the comparative data including lab abnormalities, reported side effects of treatment, and disease breakthrough on MRI in demonstrating differences between generic and brand name Tecfidera
- Audience will also be able to compare clinical versus subjective outcomes and how it impacts medication compliance

- This study will help armor patients and providers with the information they need to make an informed decision about treatment options
- With evidence supporting equal outcomes, trust in generic medication efficiency may help encourage generic use which will help drive medication costs down as generic formulations are often more affordable than brand name

Biography

Dr. Stacey Main earned her Bachelor's degree at the University of Central Florida where she studied microbiology and molecular biology. She then volunteered at a research facility investigating the pathophysiological changes seen in Parkinson's and Alzheimer's disease. She later matriculated into Lake Erie College of Osteopathic Medicine's Master of Biomedical Sciences program she did a thesis on the neuropathological and behavioral changes associated with autism spectrum disorders. While in medical school, she contributed to numerous research projects. She is now the chief neurology resident at Geisinger Medical Center and plans to pursue a fellowship in clinical neurophysiology following graduation.

Wenqiang Tao

Department of Encephalopathy, Chongqing Traditional Chinese Medicine Hospital, Chongqing, China

The additive impact of obstructive sleep apnea syndrome and atrial fibrillation on the long-term outcomes in patients with ischemic stroke

Background: Obstructive Sleep Apnea Syndrome (OSAS) and Atrial Fibrillation (AF) has been previously linked to elevated risk of ischemic strokes. However, the additive impact of both OSAS and AF on the long-term outcomes of patients with ischemic stroke remains largely unknown.

Methods: Overall, 401 patients with ischemic strokes treated at the hospital during January 2018 and April 2020 were included in this prospective study. Patients were categorized into the 4 groups based on the status of OSAS and AF: OSAS-/AF- (reference group), OSAS-/AF+ group, OSAS+/AF- group and OSAS+/AF+ group. The primary outcome included a composite of all-cause mortality and cardiovascular events (stroke recurrence, myocardial infarction). The Cox proportional hazard ratio was applied to evaluate the associations between OSAS/AF status with the primary outcome.

Results: There were 251 (62.59%), 59 (14.71%), 54 (13.47%) and 37 (9.23%) patients in the OSAS-/AF- group, OSAS-/AF+ group, OSAS+/AF- group and OSAS+/AF+ group. During a median follow-up time of 41 (IQR 23-50) month, a total of 39 all-cause mortality and 53 cardiovascular events had occurred. The hazard ratios and 95% Confidence Intervals (CI) for the primary outcome were 1.42 (1.02-2.03), 1.31 (1.01-1.82) and 3.21 (1.46-5.32) for the OSAS-/AF+ group, OSAS+/AF- group and OSAS+/AF+ group, respectively, as compared with the reference OSAS-/AF- group (P for trend < 0.001) after fully adjustment. Subgroup analysis showed that the results were robust among patients with different age, sex, hypertension and diabetes status.

Conclusions: The presence of both OSAS and AF significantly increased the risk of all-cause mortality and cardiovascular events in patients recovering from ischemic stroke. Appropriate measures to manage OSAS and AF may be beneficial for improving outcomes in this patient population.

Audience Take Away Notes

- Both OSAS and AF could increase the risk of all-cause mortality and cardiovascular events in patients recovering from ischemic stroke
- This research give a advice to clinical physicians that how to choose the most appropriate measures to manage OSAS and AF may be beneficial for improving outcomes
- The results of this research are based on a 401 subjects research, the conclusion is convinced

Biography

Mr. Wenqiang Tao is a associate chief physicians working in Chongqing Traditional Chinese Medicine Hospital. He is work as a doctor in department of encephalopathy for years.

Xiong Yujin

People's Hospital of Chongqing City Thirteenth, Chongqing, China

Clinical research on acupuncture calming the mind in treating patients with post-stroke depression

Background: On the basis of conventional treatment, explore the clinical efficacy of acupuncture calming the mind on the functional impact of patients with Post-Stroke Depression (PSD).

Methods: Select hospitalized PSD patients treated in our hospital from January 2019 to December 2020, with a total of 372 patients screened and 146 meeting the inclusion criteria. According to a random number table, patients were simply randomized into an acupuncture group and a conventional treatment group, with 73 cases in each group. All patients received drug treatment for the underlying disease and acupuncture treatment for stroke, rehabilitation training, etc. On this basis, patients in the acupuncture group also received acupuncture calming the mind treatment at Neiguan, Shenmen, Yintang, Baihui, and Sishencong, once a day, for a continuous treatment of 8 weeks. Compare the scores of the National Institutes of Health Stroke Scale (NIHSS), the Hamilton Depression Scale-24 item (HAMD-24), and the Activities of Daily Living (ADL) scale of the two groups before treatment, 4 weeks and 8 weeks after treatment, and the usage of the antidepressant sertraline hydrochloride.

Results: Before treatment, there was no statistical difference in the scores of various scales between the two groups ($P > 0.05$), which were comparable. After 4 weeks of treatment, both the conventional treatment group and the acupuncture group significantly improved NIHSS and HAMD-24 scores ($P < 0.05$). In the HAMD-24 score, the acupuncture group was better than the conventional treatment group ($P < 0.05$). Compared with the conventional treatment group, acupuncture also significantly improved the ADL score ($P < 0.05$). After 8 weeks of treatment, both acupuncture and conventional treatment significantly improved the NIHSS, HAMD-24, and ADL scores ($P < 0.05$); in the comparison between groups, the therapeutic effect of acupuncture was better than that of the conventional treatment group ($P < 0.05$). Additionally, the number of patients using sertraline hydrochloride, the duration of use, and the incidence of adverse reactions in the acupuncture group were significantly lower than those in the conventional control group.

Conclusion: On the basis of conventional treatment, the application of acupuncture calming the mind may have good therapeutic effects on improving the depressive state of PSD patients, restoring mental function, and improving the quality of life. Furthermore, acupuncture also has the potential to reduce the use and adverse reactions of antidepressants in PSD patients.

Keywords: Acupuncture, Post-Stroke Depression, Mind.

Biography

Xiong Yujin, Male, University Undergraduate, mainly engaged in Traditional Chinese Medicine, the main research direction of spleen and stomach diseases and mental diseases, has rich clinical experience.

*We wish to meet you again at our
upcoming events*

10th Edition of International Conference on

Neurology and Brain Disorders

October 21-23, 2024 | Baltimore, Maryland, USA | Hybrid Event

<https://neurologycongress.com/>

11th Edition of International Conference on

Neurology and Neurological Disorders

June 12-14, 2025 | Hybrid Event

<https://neurology.magnusconferences.com/>

Questions? Contact

+1 (702) 988-2320 or

neuro@magnusconference.com