



33rd Conference on

**Journal of Clinical Neurology and
Neurosurgery | Volume: 05**

**Clinical Neuroscience
and Neurogenetics**

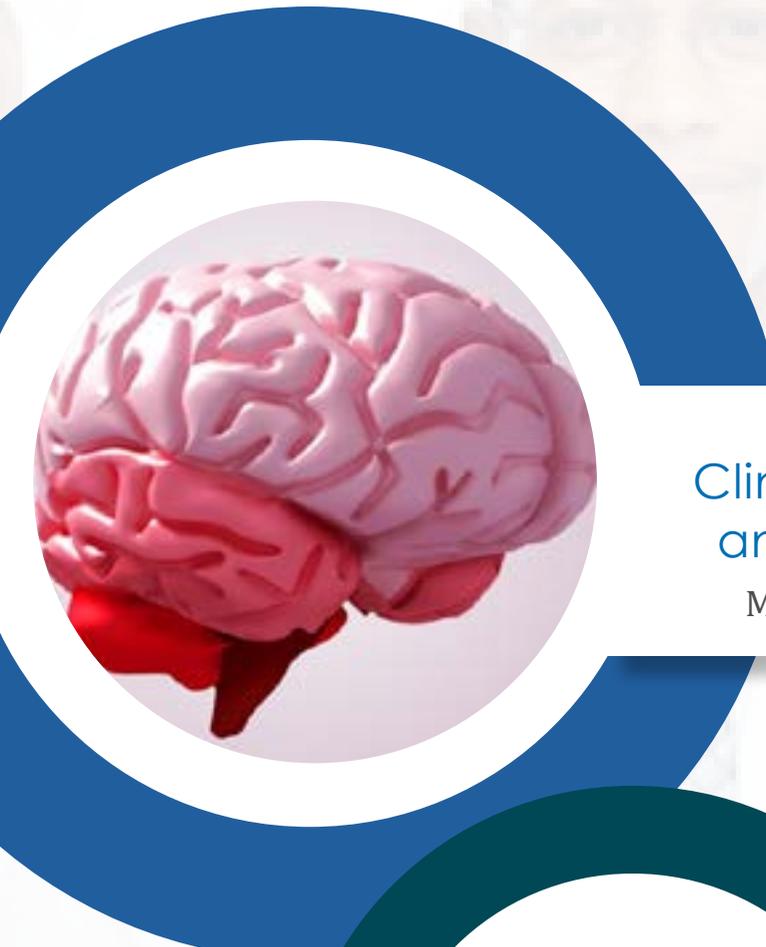
**March 25, 2022
Webinar**

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Neurogenetics 2022



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**Keynote
Sessions**

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Automated Emotional Distress Severity Classification for Children and Adolescents Using Speech Emotion Recognition and AI

Among the multitude of digital innovations to identify a biomarker for [psychiatric diseases](#) currently, as part of the macro-level digital health transformation, speech stands out as an attractive candidate with features such as affordability, non-invasive, and non-intrusive. TQI has developed a unique methodology, establishing a link between trauma, stress, and voice types partly related to the automatic nervous system changes, including disrupting speech-based characteristics.

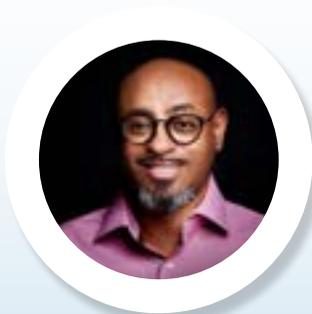
The voice-based algorithm TQI is developing will be trained to understand behavioral and emotional tendencies and to anticipate future behaviors to determine if a child's vocal utterances deviate from age-appropriate linguistic and speech patterns. Improving long-standing mental health treatment outcomes disparities for youth from low-income communities requires innovative approaches to measuring the severity of emotional distress in developing personalized treatment plans.

The high rate of mental health issues for children and adolescents in low-income communities is partly driven by multiple trauma incidents. Exposure to trauma has a pernicious impact on the development of children and adolescents, including signs of attention span [dysregulation](#), distractibility, and disorganized attachment. To this end, TQI is developing a one-of-a-kind proprietary clinical voice sample database and repository representing marginalized communities (African American, Latinx, and Caucasian) for developing a more accurate algorithm(s).

Biography

[Desmond Caulley](#) is a machine learning Ph.D. candidate at the [Georgia Institute of Technology](#) specializing in the area of speaker identification and speech recognition. His current research involves the automatic analysis of audio recordings from children with autism spectrum disorder to measure language progression and treatment effectiveness.

Dr. Alemu has over 20 years of experience as a psychologist, clinical supervisor, researcher, and administrator. He is an expert in digital mental [healthcare](#) and using technology to support precision and individualized treatment approaches to mental health treatment. TQI's digital mental health solutions address the stubborn disparities in mental health treatment outcomes.



Yared Alemu

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Received: December 22, 2021; **Accepted:** December 24, 2021; **Published:** March 25, 2022

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Easy Approach To TACS in Out Patient Department

Headache is the most common neurological disorder and the second leading cause of disability worldwide. Among the primary headache types, TACS are the more difficult to treat. The term TACS was first coined by Goadsby and Lipton to include a group of headache disorders characterized by moderate to severe short-lived headpain in trigeminal distribution with accompanying unilateral cranial parasympathetic autonomic features such as lacrimation, rhinorrhoea, conjunctival injection, eyelid oedema and ptosis.

TACS are of five types-

- A) Cluster Headache
- B) Paroxysmal Hemicrania
- C) Short Lasting Unilateral Neuralgiform Headache Attacks
- D) Hemicrania Continua
- E) PROBABLE TACS

In my clinic, distribution of headache cases in the last 3 years documentation, n=1,922 patients, Migraine was 50.6% (973), Tension Type Headache 45.2% (869), Cluster Headache 1.6% (30) and Other headaches 2.6% (50).

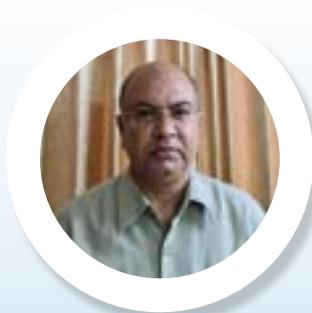
Cluster Headache is an archetypal TACS with severe pain and major autonomic activation. The unique feature I observed in Cluster Headache patients is a distinctive circadian and circannual periodicity in the episodic form. Unilateral lacrimation is the most frequent autonomic sign. The commonest provoking factor for Cluster Headache is alcohol. The most effective pharmacological treatment for episodic Cluster Headache is oxygen and Triptans, and for prophylaxis- Verapamil and Topiramate, according to my study. Paroxysmal Hemicrania is a rare variety of TACS. Autonomic signs may occur bilaterally. The commonest sign is ipsilateral lacrimation and nasal congestion. The treatment of choice is Indomethacin. Topiramate works very well where Indomethacin is resistant.

SUNCT and SUNA are unilateral headaches or facial pain with very brief paroxysmal attacks with ipsilateral autonomic signs. I have observed Lamotrigine to be the most effective treatment.

Hemicrania Continua may be remitting and continuous (>3 months) with paucity of autonomic signs. Indomethacin is choice.

Biography

Dr Prosenjit Chakraborty has completed his MD Medicine from Patna, India, and his DM in [Neurology](#) from [King George's Medical College](#), Lucknow, India at the age of 31 years. He did his postdoctoral studies on Epilepsy from the National Hospital for [Neurology](#) and [Neurosurgery](#), Queen Square, London. He is a Fellow of American Academy of Neurology and also did his Fellowship from the Royal College of Physicians, Glasgow. He is a practicing Neurologist for the last 25 years. He is the HOD of Neurology of a Multispeciality Hospital, Ruby General Hospital, India. He has been the principal investigator in Drug Trials for medications for Parkinsons disease and also in Neuropathic low back pain where he had the highest recruitment of subjects in India.



Prosenjit Chakraborty

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Received: December 03, 2021; **Accepted:** December 05, 2021; **Published:** March 25, 2022

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SmartCST- Platform for Stress Coping and Reduction for Patients under Social Risk and submitted to Chronic Stress

The impact of stress on mothers and children relationship can have negative consequences not only in the short term, but in the overall child's development, affecting psychological, cognitive and physiological aspects. The use of new methodologies and techniques based on the most recent advances in neuroscience can support mothers in coping with chronic stress through planned activities carried out with the monitoring of biological signals, such as the electrical activity of the **brain** and heart rate. The SmartCST system consists on a computerized solution to support chronic stress coping and reduction in mothers under social risk, continuously submitted to chronic stress from Fortaleza, Brazil. The system is based on the monitoring of biological signals during a pre-planned personalized activity program. Hair cortisol levels are considered as a biomarker of chronic stress and quantitative EEG (qEEG) in the beginning and ending of the program were conducted to evaluate the electric activity in specific brain regions. The system extracts statistics, nonlinear and frequency domain features from biosignals processing and transfer to the artificial intelligence module for pattern recognition and machine learning. For this, three dynamically interacting subsystems are used: 1) RAS – Relaxation Activities Subsystem: which consists in brain stimulation exercises for relaxation. 2) PS - Perception Subsystem: responsible for the monitoring and processing biological signals, retrofitting the RAS with automatic definition of activities, with the possibility of external interaction. 3) RMS - Results Monitoring Subsystem: the analysis of results with reports and dashboards of individual progress.



Joao Alexandre Lobo Marques
University of Saint Joseph, China

Biography

Alexandre Lobo is PhD in [Bioengineering](#). He works as Associate Professor and Research Coordinator at the [University of Saint Joseph-USJ](#), Macao SAR, China. In 2019, he founded the Laboratory of Neuroeconomics FBL/USJ. In 2021 he co-founded the Institute of Data Engineering and [Sciences](#) (IDEAS/USJ). His research interests are data analytics, artificial intelligence, applied neurosciences, and chaotic and nonlinear analysis of time series.

Received: January 20, 2022; **Accepted:** January 22, 2022; **Published:** March 25, 2022



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**Scientific
Tracks**

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Evaluation of sleep in children with refractory epilepsy, how is it affected?

The sleep is a homeostatic state which is divided into 2 big stages, Rapid Eye Movement (REM) and Non REM, for subsequently divide the second one in N1, N2 and N3 stages depending on specific patterns found in the electroencephalogram (EEG), and each one of them has specific variables. Furthermore, there are some pathologies that could affect the sleep architecture in any of its variables, being epilepsy one of the most common that could affect the structure and architecture of the sleep. As we know, the brain activity varies depending on the sleep stage, as well as the interaction between neurotransmitters, but because of the altered brain activity due to the refractory epilepsy, the sleep variables could be affected. Nowadays there are some epileptic syndromes that affect directly during sleep time, but there are some others that could affect the patients' sleep. What our project aims to determine how is the sleep architecture affected when a patient has a refractory epilepsy not described as a sleep [epilepsy](#). In addition, there are very few studies made in patients with refractory epilepsy, both in general and in pediatric population (2 and 1 studies, respectively), reporting that there are important disturbances in some variables such as longer sleep latency, longer REM sleep latency, more arousals, increased total light sleep time (N1 and N2), and others. Therefore, our project will give us more information about the alterations found in sleep architecture in patients with this pathology.



Jesus Lagunas Garza
Hospital Infantil de Mexico
Federico Gomez, Mexico

Biography

Dr. [Jesús Lagunas Garza](#) is a Mexican physician who earned his medical degree from [La Salle University](#) (Mexico), then completed his residency in Pediatrics at the National Institute of Pediatrics (Mexico City), afterwards specializing in [Pediatric Neurology](#) in the Mexico Children's Hospital Federico Gómez (Mexico City). Dr. Jesús has a Fellowship in Sleep Medicine in the Sleep Clinic of the National Autonomous University of Mexico (UNAM). He also has a Master in [Neurosciences](#) by University Cardenal Herrera (Spain). Currently he works at the Pediatric Sleep Clinic in Mexico at the Mexico Children's Hospital Federico Gómez.

Received: December 12, 2021; **Accepted:** December 14, 2021; **Published:** March 25, 2022

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Fibromyalgia should be a common term for all inflammatory immuno allergic disorder

Fibromyalgia is a large immuno-allergic disorder, also collectively known as collagen vascular disorder ranging from skin, subcutaneous tissue, periostem, ligaments joint capsules, tendons and muscles inflammatory disorder. Fibrous tissue components are essential part all these tissues including. We tried to follow up most of the disease entities with common presentations, common reflection in investigations and common treatment started, results studied for 3 years. Total number of patients 1500 ; presenting with pain in 1450, stiffness in 150 fleeting character in 120, worsening at rest in 1300, skin rash 5 photosensitivity in 7. In investigation common abnormalities raised ESR in 1006, Rheumatoid factor positive in 206, CRP raised in 328, CPK raised in 52, ANF +ve in 35, HLAB -27 positive in 23 and pain and/or stiffness in all. Treatment started were steroid, immuno suppressants. Responses noted in 1500 patients. In long term follow up at rheumatology clinic and at pain clinic, patients were categorized in following entities according to their diagnostic criteria and according to investigation results. Tendinitis 655, Rheumatoid Arthritis 120, SLE 20, Systemic sclerosis 15, Myositis 450, MCTD 14, Sjogren syndrome 1, Soft tissue Rheumatism 45, Bursitis 35, Osteoarthritis peri-ostitis 70, JRA 50, Joint capsulitis 25. We conclude saying fibralgia, fibromyalgia with common immuno-allergic in origins which ultimately placed in different groups by rheumatologist, all have genetic predisposition in most of the cases according to isolated disease entities. All diseases mentioned can come under cover of our term “Fibromyalgia”.

Biography

Nihar Ranjan Haldar is 60 years old and a resident of Siliguri, Darjeeling, India. He completed his M.B.B.S from [Calcutta University](#) in 1982, MD (Medicine) in 1987 and DM (Neurology) in 1990 from PGIMER Chandigarh. He [Practicing Neurology](#) in India, Nepal, Bhutan & Bangladesh for 27 years. He presently works as a Professor in the Department of [Neurology](#) at Nobel Medical College Teaching Hospital & Research Centre, Biratnagar, Nepal. He is also Director of Tenovus Research & Diagnostic Centre and Founder Director of Mrigna Centre for Epilepsy. Nihar Ranjan Haldar engaged in patient care, [neuroelectrophysiology](#) and research work. He presented and published his work in various Conferences and Journals. He is also member of Neurology Society of India, Association of Neuroscientist of Eastern India, Indian Academy of Neurology and American Academy of Neurology.

Received: December 04, 2021; **Accepted:** December 06, 2021; **Published:** March 25, 2022

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Experiences of Social Isolation among Patients with Neuromyelitis Optica Spectrum Disorder in China: A Qualitative Study

Background:

Neuromyelitis optica spectrum disorder (NMOSD) is an autoimmune inflammatory demyelinating disease of the central nervous system, which mainly involves the optic nerve and spinal cord and has high recurrence and high disability rate, and patients with this condition are prone to social isolation, which is not widely studied. The purpose of this study was to investigate the experience of social isolation in patients with NMOSD.

Methods:

A qualitative descriptive approach was used to conduct in-depth, face-to-face, semi-structured interviews. Data were analyzed using thematic analysis.

Results: A total of 20 patients (19 females, 1 male) completed the interview. Patients ranged in age from 14 to 68 years, with disease duration from 1 month to 30 years and Expanded Disability Status Scale scores from 2.0 to 8.0; 60% of patients were unemployed. Four major themes were identified: (1) perception of social isolation, (2) reasons for isolation, (3) impacts of isolation, and (4) potential solutions.

Conclusions:

Social isolation affects patients of all ages with different levels of disability and duration of NMOSD. Isolation occurs as a result of multiple interactions between bodily functions and structures, the environment, and self-isolation. The effects of isolation are mainly physical, psychological, and familial. Although patients reported receiving good social support, they did not make good use of it. Comprehensive intervention to improve social isolation should be carried out based on these multidimensional influencing factors.

Biography

[Haifen Liao](#) has received her master's degree in nursing, and is currently studying for her doctor's degree in nursing at [Sun Yat-sen University](#) in China. Her main research interest is the nursing of [neuroimmune diseases](#).



Haifen Liao
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Received: December 29, 2021; **Accepted:** December 31, 2021; **Published:** March 25, 2022

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The Use of Natural Products Extract as a Neuroproductive Agent in Environmental Toxicants-Induced Neurotoxicity

Atrazine (ATZ) is a widely used herbicide with documented dopaminergic neurotoxicity, capable of altering striatal neurochemistry and causing dopaminergic neuron loss and oxidative stress in the substantia nigra. Kolaviron (KV), isolated from *Garcinia kola* seed, has been shown to possess wide pharmacological properties such as antioxidant, anti-inflammatory and neuroprotective effects. This study investigated the chemopreventive and neuroprotective effect of KV on ATZ-induced neurotoxicity in male Wistar rats.

A two-week study was conducted with 65 male Wistar rats weighing between 150-180g randomly distributed into 5 groups of 13 animals each. Neurotransmitter assay carried out showed an increase in dopamine transporter (DAT) level in ATZ only group indicating the neuropathologic damage caused by Atrazine in the striatum. However, cotreatment with KV (100 and 200mg) ameliorated this effect. There was a significant deficit in the exploratory behavior of the ATZ only treated group when compared with the control indicating loss of cognitive and motor functions. However, treatment with KV ameliorated this effect with 200mg dosage showing more therapeutic property. There was an increase in the level of oxidative stress markers such as hydrogen peroxide (H₂O₂) in the striatum of ATZ group resulting in an increase in the activities of antioxidant enzymes including catalase. Increase in activities of markers of apoptosis and autophagy such as Caspase 3, GRP 78, XBP1 in the striatum of the ATZ treated group suggests increase in cell death along the dopaminergic neuron. However, treatment with KV ameliorated the effect with 200mg showing more therapeutic effect.

Biography

Ogungbemi, [Oluwajuwonlo Justina](#) is a Biochemist and Researcher in the field of [neurotoxicology](#), with research experience in effects of toxicants on neuronal function. She's a graduate of [Biochemistry](#) with First Class honor (4.52/5.0) cum de laude. She recently completed her Masters program in [Molecular Drug Metabolism and Toxicology Laboratory](#), University of Ibadan, Nigeria. She have been opportune to work with and under the supervision of great researchers on [chemoprevention](#) and neuroprotective studies using natural bioflavonoids. Her experience thus far has driven her enthusiasm to go for a Ph.D. with specific research interest in diagnosis, prognosis and treatment of neurodegenerative diseases.

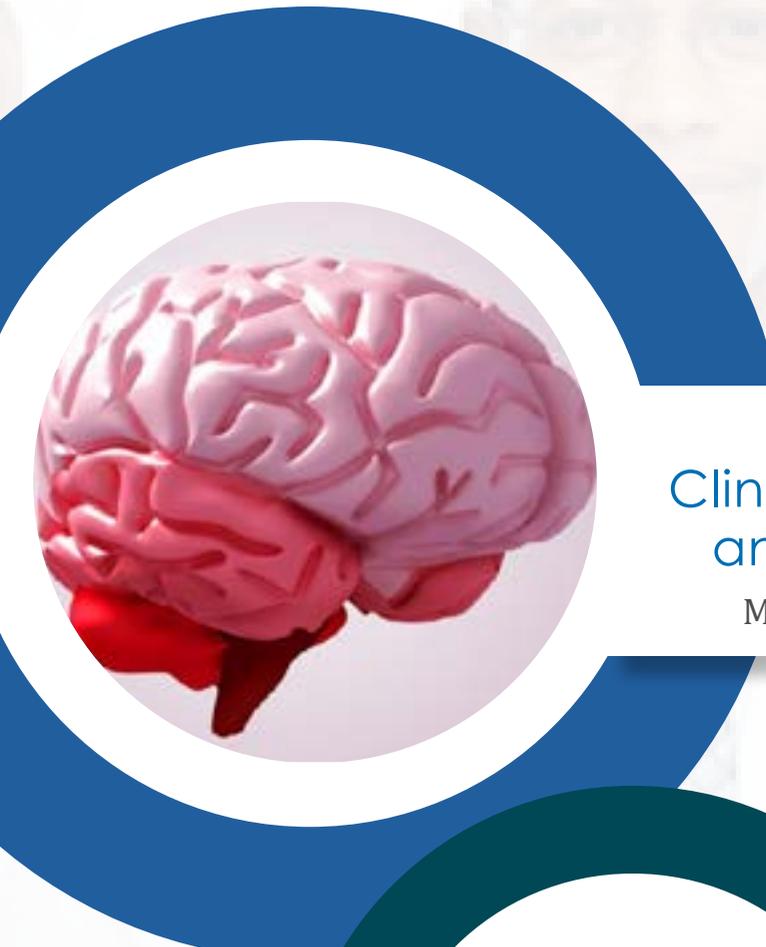


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Received: February 12, 2022; **Accepted:** February 14, 2022; **Published:** March 25, 2022



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Presentations**

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Study of ZNF804A and DISC1 Genes in Iranian Patients with Schizophrenia

The goal of this study was to see if there was a link between ZNF804A polymorphism and DISC1 gene polymorphism in schizophrenia patients in Iran. A total of 50 patients with schizophrenia and 50 healthy controls were investigated in this casecontrol research. Single nucleotide polymorphisms were assessed using the PCR-RFLP technique in both patient and control groups. In rs1344706, the frequency of TT, GT, and GG genotypes for the ZNF804A gene was 26 percent, 52 percent, and 22 percent, respectively, and 46 percent, 42 percent, and 8 percent in healthy participants. In the DISC1 gene, the frequency of TT, CT, and CC genotypes in the rs6675281 area was 2%, 14%, and 84 percent in healthy people and controls, respectively, and 2%, 14%, and 80% in healthy subjects and controls, respectively. For the ZNF804A gene in the rs1344706 area, the prevalence of homozygous GG and heterozygote GT genotypes was 8 percent and 14 percent higher in healthy patients, respectively, whereas the frequency of homozygous TT was 22 percent greater in healthy subjects than in those with schizophrenia. The prevalence of TT, CT, and CC genotypes in the rs6675281 area of the DISC1 gene, on the other hand, was fairly comparable in healthy people, with no significant difference between homozygous and heterozygous genotypes. As a consequence, the findings of our study may be used to provide appropriate information about the condition in order to better prepare patients and their families, as well as to provide tailored therapy to avoid catastrophic damage.

Biography

Parisa Azizi completed my bachelor at the age of 23 years from Islamic Azad University Central Tehran Branch and now she is studying Master of Science biochemistry at Tarbiat Modares University. She had published 2 articles reputed journals.



Parisa Azizi
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Received: December 17, 2021; **Accepted:** December 19, 2021; **Published:** March 25, 2022

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March 25, 2022 | Webinar

Therapeutic ketosis and the broad field of applications for the ketogenic diet: Ketone ester applications & clinical updates

It has been recently shown that nutritional ketosis is effective against seizure disorders and various acute/chronic neurological disorders. Physiologically, glucose is the primary metabolic fuel for cells. However, many neurodegenerative disorders have been associated with impaired glucose transport/metabolism and with mitochondrial dysfunction, such as Alzheimer's/Parkinson's disease, general seizure disorders, and traumatic brain injury. Ketone bodies and tricarboxylic acid cycle intermediates represent alternative fuels for the brain and can bypass the rate-limiting steps associated with impaired neuronal glucose metabolism. Therefore, therapeutic ketosis can be considered as a metabolic therapy by providing alternative energy substrates. It has been estimated that the brain derives over 60% of its total energy from ketones when glucose availability is limited. In fact, after prolonged periods of fasting or ketogenic diet (KD), the body utilizes energy obtained from free fatty acids (FFAs) released from adipose tissue. Because the brain is unable to derive significant energy from FFAs, hepatic ketogenesis converts FFAs into ketone bodies-hydroxybutyrate (BHB) and acetoacetate (AcAc)-while a percentage of AcAc spontaneously decarboxylates to acetone. Large quantities of ketone bodies accumulate in the blood through this mechanism. This represents a state of normal [physiological ketosis](#) and can be therapeutic. Ketone bodies are transported across the blood-brain barrier by monocarboxylic acid transporters to fuel brain function. Starvation or nutritional ketosis is an essential survival mechanism that ensures metabolic flexibility during prolonged fasting or lack of carbohydrate ingestion. Therapeutic ketosis leads to metabolic adaptations that may improve brain metabolism, restore mitochondrial ATP production, decrease reactive oxygen species production, reduce inflammation, and increase neurotrophic factors' function. It has been shown that KD mimics the effects of fasting and the lack of glucose/insulin signaling, promoting a metabolic shift towards fatty acid utilization. In this work, the author reports a number of successful case reports treated through metabolic ketosis.



Raffaele Pilla
St. John of God Hospital –
Fatebenefratelli, Italy

Biography

[Raffaele Pilla](#), Pharm.D., Ph.D., Doctor Europaeus, received his Master's degree in Pharmacy at G. d'Annunzio University in Chieti-Pescara, Italy in 2005, where he also served internships at the [Cell Physiology](#) Laboratory and Molecular Biology Laboratory. Prior, he was an Erasmus Student at Faculté de Pharmacie de Reims in Reims, France. He received his Doctor Europaeus in 2010 from Pitié-Salpêtrière Institute in Paris, France. Also in 2010, he received his Ph.D. in [Biochemistry](#), [Physiology](#), and Pathology of Muscle at G. d'Annunzio University in Chieti-Pescara, Italy. He was hired as a Postdoctoral Scholar in the Department of [Pharmacology](#) and Physiology at the [University of South Florida](#) in Tampa, on two research grants funded by the Office of Naval Research (US Navy) and Divers' Alert Network. He has written and lectured widely worldwide. He has been involved in ongoing research at the University of South Florida with the use of ketone esters.

Received: December 16, 2021; **Accepted:** December 19, 2021; **Published:** March 25, 2022



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E-Posters

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Genetics of photoparoxysmal response in idiopathic generalized epilepsy

Photoparoxysmal response (PPR) is an abnormal cortical response to photic stimulation manifesting as specific EEG changes. It is observed in 10% of idiopathic generalized epilepsy (IGE). The aim of this study is to understand the molecular genetics of Grade IV PPR, which is characterized by generalized spike and wave or polyspike and wave discharges. Fourteen children with IGE, exhibiting Grade IV PPR, were recruited for the study. Whole exome sequencing (WES) was done using SureSelectXT Human All Exon v5+UTRs kit on HiSeq 2500. Seventy six variants were observed in all the 14 samples. Among these, 65 variants were of missense, nonsense or frameshift types. Twelve of these variations were predicted to be deleterious. Eleven genes are novel candidate genes of epilepsy. The genes that had variations in all samples were enriched into the following biological processes (FDR <0.05), (i) development and functioning of the nervous system, (ii) axon guidance, (iii) NCAM1 interactions, (iv) LICAM interactions (v) laminin interactions (vi) NCAM signaling for neurite outgrowth. Dysfunction of these biological processes can lead to faulty neurodevelopment. Studies have shown that several developmental factors such as, altered neuronal signaling during embryonic life, defects in postnatal maturation of neuronal networks, and congenital brain malformations contribute to epileptogenesis. Hyperexcitability of neural network is a key neurophysiological mechanism in epilepsy. Migration defects of excitatory and inhibitory neurons and perturbations in the developmental refinement of neuronal circuitry during critical periods of neurodevelopment may trigger hyperexcitability and epilepsy later in life.

Anitha Ayyappan Pillai

*Institute for Communicative and
Cognitive Neurosciences, India*

Biography

Dr. **Anitha Ayyappan Pillai** did her Ph.D. at Rajiv Gandhi Centre for Biotechnology, Trivandrum in the field of **Population Genetics**. She then worked as a Postdoctoral fellow and then as Assistant Professor at **Hamamatsu University School of Medicine**, Japan. At present, she works as an Associate Professor at Institute for Communicative and Cognitive Neurosciences (ICCONS), Shoranur. Her main research area is **Neurogenetics**. Dr. Anitha has received research grants from national and international funding **agencies** in India and Japan. She has authored >40 scientific papers in leading international journals and has co-authored book chapters.

Received: February 01, 2022; **Accepted:** February 02, 2022; **Published:** March 25, 2022

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The DNA methylation landscape of developmental language disorder

Developmental language disorder (DLD), a common language disorder, is a neurodevelopmental condition. DNA methylation has a pivotal role during neurodevelopment, regulating transcriptional plasticity in the developing brain. Alterations in DNA methylation could provide cues to the pathogenesis of neurodevelopmental disorders. In this study, we examined any differential DNA methylation of genes in individuals with DLD compared with healthy controls. Twelve individuals with DLD and 12 age- and gender-matched healthy controls were recruited for the study. Infinium Methylation EPIC BeadChip was used to examine genome-wide methylation. The differentially methylated genes were found to be enriched in biological processes such as, WNT signaling (APCDD1, AMOTL1, LRP5, TMEM64, BANK1, VEPH1, WNT2B, TRABD2B, MARK2), G protein coupled receptor (GPCR) signaling (GNB5, GNG5, GNG7, NGEF, VAV2, VAV3) and Notch signaling (FCER2, JAG1, MIB1, NOTCH4, POFUT1, DTX1). WNT signaling is fundamental for several neurodevelopmental and post-neurodevelopmental processes, such as central nervous system regionalization, neural progenitor differentiation, axon guidance, [synaptogenesis](#), and neural plasticity. The GPCRs are involved in several physiological functions including vision, taste, olfaction, and sympathetic and parasympathetic nervous functions. They are abundantly expressed in the brain, and known to regulate cognition, mood, appetite and pain. The Notch signaling pathway is involved in a wide range of developmental processes including hematopoiesis and neurogenesis, and has been implicated in early neurodevelopment, learning, and memory. Alterations in these signaling pathways have been reported in other neurodevelopmental disorders (e.g., autism). This is the first study that indicates the impairment of these signaling pathways in DLD.

Anitha Ayyappan Pillai

*Institute for Communicative and
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Biography

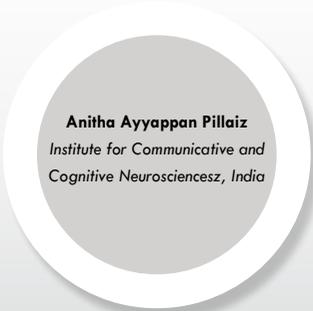
Dr. [Anitha Ayyappan Pillai](#) did her Ph.D. at Rajiv Gandhi Centre for Biotechnology, Trivandrum in the field of [Population Genetics](#). She then worked as a Postdoctoral fellow and then as Assistant Professor at [Hamamatsu University School of Medicine](#), Japan. At present, she works as an Associate Professor at Institute for Communicative and Cognitive Neurosciences (ICCONS), Shoranur. Her main research area is [Neurogenetics](#). Dr. Anitha has received research grants from national and international funding agencies in India and Japan. She has authored >40 scientific papers in leading international journals and has co-authored book chapters.

Received: February 01, 2022; **Accepted:** February 02, 2022; **Published:** March 25, 2022

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Novel candidate genes for autism spectrum disorders identified by whole exome sequencing of Indian autism twin, triplet and quadruplet families

Autism spectrum disorder (ASD) is a childhood-onset complex neurodevelopmental disorder with a complex genetic architecture. To identify the potential candidate genes of ASD, we carried out a whole exome sequencing (WES) study of ASD twin, triplet and quadruplet families in the Indian population. Five monozygotic twin-, five dizygotic twin-, one monozygotic triplet-, and one multizygotic quadruplet- families participated in the study. The monozygotic twins, triplet and quadruplet were discordant for ASD, while the dizygotic twins were concordant for ASD. WES was done for all the members of each family. The de novo and inherited variants of probands were filtered from WES data. Among the proband-specific de novo and inherited variants, there were 23 deleterious variants. Some of the novel ASD candidate genes include, TRAM2, DGKD, OR5AC2, FLNB, TENM2 and ADAMTS18. These genes are known to play crucial roles in neurodevelopment, axon guidance and synaptic plasticity. They have been implicated in the pathogenesis of neurobehavioral disorders such as epilepsy and Ehlers–Danlos syndromes that share genetic etiologies and biological processes with ASD. Gene ontology enrichment analysis showed that the genes harboring proband-specific variants were enriched in biological processes involving cell adhesion, synaptic transmission and nervous system development. Embryonic neurogenesis is considered as a potentially important period in the pathogenesis of ASD. The onset of ASD is early in life during the period of rapid synaptogenesis. Aberrations in the aforementioned **biological** processes may lead to altered neurogenesis causing ASD. This is the first comprehensive genetic study of ASD in any Indian population.



Anitha Ayyappan Pillai
Institute for Communicative and
Cognitive Neurosciences, India

Biography

Dr. **Anitha Ayyappan Pillai** did her Ph.D. at **Rajiv Gandhi Centre for Biotechnology**, Trivandrum in the field of Population Genetics. She then worked as a Postdoctoral fellow and then as Assistant Professor at Hamamatsu University School of Medicine, Japan. At present, she works as an Associate Professor at Institute for Communicative and **Cognitive Neurosciences** (ICCONS), Shoranur. Her main research area is **Neurogenetics**. Dr. Anitha has received research grants from national and international funding agencies in India and Japan. She has authored >40 scientific papers in leading international journals and has co-authored book chapters.

Received: February 01, 2022; **Accepted:** February 02, 2022; **Published:** March 25, 2022



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Abstracts**

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Towards therapeutic activation of neuronal K⁺-Cl⁻-cotransporter KCC2 through pharmacological WNK-SPAK kinase inhibition for epilepsy treatment

The Cl⁻-extruding transporter KCC2 (SLC12A5) critically modulates GABA_A receptor signaling via its effect on neuronal Cl⁻ homeostasis. Previous studies have shown that KCC2 was downregulated in both epileptic patients and various epileptic animal models. We discovered that the in vitro and in vivo dual phosphorylation of Thr906 and Thr1007 in the intracellular carboxyl (C)-terminal domain of KCC2, mediated by the Cl⁻-sensitive WNK-SPAK serine-threonine protein kinase complex, maintains the depolarizing action of GABA in immature neurons by antagonizing KCC2 Cl⁻ extrusion capacity. GABA_AR-mediated inhibition confines KCC2 to the plasma membrane, while antagonizing inhibition reduces KCC2 surface expression by increasing the lateral diffusion and endocytosis of the transporter. This mechanism utilizes Cl⁻ as an intracellular secondary messenger and is dependent on phosphorylation of KCC2 at threonines 906 and 1007 by the Cl⁻-sensing kinase WNK1. We propose this mechanism contributes to the homeostasis of synaptic inhibition by rapidly adjusting neuronal [Cl⁻]_i to GABA_AR activity. We further demonstrate here that this signaling pathway is rapidly and massively activated in an acute epilepsy model. This indicates that dephosphorylation of KCC2 at Thr906 and Thr1007 is a potent activator of KCC2 activity, and small molecular targets WNK-SPAK kinase signaling may be a novel therapeutic strategy for epilepsy.

Jinwei Zhang

University of Exeter, Hatherly
Laboratories, Exeter, UK

Biography

Jinwei Zhang has completed his PhD in 2011 from Newcastle University and postdoctoral studies from the MRC Protein Phosphorylation and Ubiquitylation Unit (PPU) and Yale School of Medicine. He is a Principal Investigator at the University of Exeter Medical School, UK. He has published more than 75 papers in reputed journals and has been serving as an Associate Editor for the *Frontiers in Pharmacology* and *Frontiers in Physiology*, and editorial board member of 15 scientific journals.

Received: December 22, 2021; **Accepted:** December 24, 2021; **Published:** March 25, 2022

33rd Conference on
Clinical Neuroscience and Neurogenetics
March 25, 2022 | Webinar

Circadian rhythm genes polymorphism associated with sleep disorders: epidemiological based study

Purpose:

To study the effect of circadian rhythm genes polymorphism on sleep disorders in male population of 25-64 year.

Methods:

Based on consequences screening II was conducted in 1988—1989 (n= 725, mean age 43.4±0.4y), in 1994—1995 (n=647, aged 44.3±0.4y), 2003—2005 (n=576, aged 54.23±0.2y) 2013—2016 (n=427, aged 34±0.4y), in 2016—2018 (n=275 men, aged 49±0.4y). The Jenkins questionnaire was used to assess sleep disorders. Genotyping of the studied polymorphisms of CLOCK, ARNTL, PER2, NPAS2, DRD4, DAT, genes was performed.

Results:

Carriers of the C/T genotype of the CLOCK gene rs2412646 more often than others reported having "satisfactory" or "poor" sleep. Carriers of the C/T genotype of the ARNTL rs2278749 gene were more likely to experience anxiety dreams, they woke up exhausted. Carriers of the A/A genotype of the PER2 rs934945 gene were more likely (25%) to wake up two or more times per night, a total of 4 to 7 times per week. In the population, C/T and T/T genotypes of the NPAS2 rs4851377 gene were significantly more common in individuals with 7-hour sleep (50% and 53.3%, respectively). Genotype 4/6 of the DRD4 gene and genotype 9/9 of the DAT gene were significantly associated with sleep disturbances.

Conclusion:

Association of certain polymorphisms of CLOCK, ARNTL, PER2, NPAS2, DRD4, DAT, genes with sleep disorders was found.

Biography

Professor Valery Gafarov, in 1974 - MD (Novosibirsk medical university). 1980 - Phd, theme "Epidemiological studying Acute Myocardial Infarction in conditions of large industrial centre of Western Siberia". 1991 - MPH; 2003 - professor on a specialty "cardiology"; 2003 - present time – head of collaborative laboratory of epidemiology cardiovascular diseases and Laboratory of psychological, sociological aspects of therapeutic diseases of Research Institute of Internal and Preventive Medicine. The author of 758 scientific publications (articles and abstracts), from them 6 monographs

Received: January 18, 2022; **Accepted:** January 20, 2022; **Published:** March 25, 2022

33rd Conference on
Clinical Neuroscience and Neurogenetics
March 25, 2022 | Webinar

Targeting intracellular signaling molecules in regeneration-competent cells: Novel promising drug targets for treating Alzheimer's disease

Currently used drugs for the treatment of Alzheimer's Disease, based on the modulation of the functions of nervous tissue mature cells preserved in the pathology conditions, are essentially untenable. Therefore, it is relevant to develop novel approaches that can increase the efficiency of neurogenesis by synchronizing the activities of regeneration-competent cells. As part of the implementation of this direction, the search for pharmacological targets among intracellular signaling molecules is promising. The purpose of the work was to study the participation of intracellular signaling molecules in the regulation of the functions of nervous tissue progenitors and in the production of growth factors by various cells of neuroglia in modeling β -amyloid-induced neurodegeneration. Here, we shown that β -amyloid ($A\beta$) causes divergent changes in the functioning of neural stem cells (NSC) and neuronal-committed progenitors (NCP). Also demonstrated that different populations of neuroglia respond differently to exposure to $A\beta$. These phenomena indicate a significant discoordination of the activities of various RCC. Among NF- κ B, IKK, PKC, PKB, PI3K, ERK $\frac{1}{2}$, p38, PKA, JAKs, STAT3, JNK, p53, we identified signaling molecules that play an important role in the regulation of progenitor and glial cell functions. Inhibitors of some signaling molecules have been found to cause synchronization of pro-regenerative activity of NSC, NCP, as well as oligodendrocytes and microglial cells under conditions of $A\beta$ -induced neurodegeneration. The results show the promise of developing a novel approach to treating Alzheimer's disease with inhibitors of intracellular signaling molecules. The study was carried out at the expense of a grant from the Russian Science Foundation No. 22-25-00069.

Biography

Gleb N. Zyuz'kov is a Scientist Secretary of Institute, Head of the Laboratory of Pathology and Experimental Therapy (Goldberg Research Institute of Pharmacology and Regenerative Medicine), Tomsk National Research Medical Center. Ph.D, M.D., Professor of Russian Academy of Sciences. The author of 65 patents for inventions in the field of pharmacology. International Award of Elsevier's "SciVal/Scopus Award Russia».



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Received: January 18, 2022; **Accepted:** January 20, 2022; **Published:** March 25, 2022

33rd Conference on
Clinical Neuroscience and Neurogenetics
March 25, 2022 | Webinar

Exploring the role of neurodevelopmental disorders associated proteins using brain organoids

Genomic studies in large cohorts of patients affected by neurodevelopmental disorders have identified mutations in genes expressed at the synapses. Many of these genes have been extensively studied in adult animal models due to their role in regulating synaptic connectivity and transmission in mature neurons. However, most of the neurodevelopmental disorders-associated genes are expressed much earlier in the brain, at the stage of embryonic development when neurons are still immature and neurogenesis is prominent. The lack of experimental models hindered the capability of researchers to study the effects of gene mutations on human brain development. The advent of human pluripotent stem cells (hPSC) and hPSC-derived neuron and brain organoids allowed researchers for a much deeper investigation of the cellular and molecular mechanisms disrupted by mutations in neurodevelopmental disorders-associated genes during brain development. We studied the effect of deletions in SHANK3, a synaptic scaffolding gene found mutated in Phelan-McDermid Syndrome (PMS) patients. Using hPSC-derived neurons, we found that SHANK3 deletions affect excitatory synaptic transmission, synaptic connectivity and spines development in excitatory neurons. Recently, using hPSC-derived telencephalic organoids harboring SHANK3 deletions, we confirmed synaptic deficit observed in neurons and we found dysregulation in the expression of clustered protocadherins. Our novel finding may provide new insights into the connectivity and developmental deficits associated with SHANK3 hemizygosity.



Simone Chiola

University of Utah, USA

Biography

Dr. Chiola has completed his PhD at the age of 28 years from University of Turin in Italy. He is a postdoctoral research associate at the [University of Utah School of Medicine](#) in the [Shecheglovitov Lab](#). He studies [neuropsychiatric disorders](#) and collaborates in many projects in the Lab and with external collaborators. He has published more than 3 papers as a first author in reputed journals and has been serving as a scientific board member of international foundations established by families of children affected by [neurodevelopmental disorders](#).

Received: January 25, 2022; **Accepted:** January 27, 2022; **Published:** March 25, 2022

33rd Conference on
Clinical Neuroscience and Neurogenetics
March 25, 2022 | Webinar

Evidence of Neurovascular Un-Coupling in Mild Alzheimer's Disease through Multimodal EEG-fNIRS and Multivariate Analysis of Resting-State Data

Alzheimer's disease (AD) is associated with modifications in cerebral blood perfusion and autoregulation. Hence, neurovascular coupling (NC) alteration could become a biomarker of the disease. NC might be assessed in clinical settings through multimodal electroencephalography (EEG) and functional near-infrared spectroscopy (fNIRS). Multimodal EEG-fNIRS was recorded at rest in an ambulatory setting to assess NC and to evaluate the sensitivity and specificity of the methodology to AD. Global NC was evaluated with a general linear model (GLM) framework by regressing whole-head EEG power envelopes in three frequency bands (theta, alpha and beta) with average fNIRS oxy- and deoxy-hemoglobin concentration changes in the frontal and prefrontal cortices. NC was lower in AD compared to healthy controls (HC) with significant differences in the linkage of theta and alpha bands with oxy- and deoxy-hemoglobin, respectively ($p=0.028$ and $p=0.020$). Importantly, standalone EEG and fNIRS metrics did not highlight differences between AD and HC. Furthermore, a multivariate data-driven analysis of NC between the three frequency bands and the two hemoglobin species delivered a cross-validated classification performance of AD and HC with an Area Under the Curve, $AUC=0.905$ ($p=2.17 \times 10^{-5}$). The findings demonstrate that EEG-fNIRS may indeed represent a powerful ecological tool for clinical evaluation of NC and early identification of AD.

Biography

Pierpaolo Croce has a background in Engineering and [Electrophysiological Data Analysis](#) with specific emphasis on [Electroencephalography](#) (EEG), Functional Magnetic Resonance (fMRI) and Functional Near-Infrared Spectroscopy (fNIRS) data analysis. In particular, his work is focused on evaluation of global connectivity metrics extracted from multimodal Electrophysiological measurements (EEG, fMRI, fNIRS) to be used as prognostic indices in neurological diseases such as [Alzheimer disease](#) or Stroke. Moreover, his activity is also focused on the evaluation of modifications of such indices obtained by trans-cranial magnetic stimulation (TMS). This aspect is strictly related to the use of connectivity indices as tools for the evaluation of the [disease recovery](#).



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Received: December 06, 2021; **Accepted:** December 08, 2021; **Published:** March 25, 2022

33rd Conference on
Clinical Neuroscience and Neurogenetics
March 25, 2022 | Webinar

Head Tap-Induced Seizure in Patient with GABRG2 and HSD17B10 Mutations

We describe a patient displaying unusual head tap-induced seizures. The patient is 15 years old and suffers from drug-resistant epilepsy, intellectual disability, and developmental delay. A seizure can be induced in the patient when they receive an unexpected tap to the side of the head. The patient possesses mutations in the GABRG2 and HSD17B10 genes, mutations in these genes are known to cause epilepsy syndromes and may explain the patient's unusual seizure symptom.

Biography

Brenden is currently pursuing his Honours Bachelor of Science in **Biology**; Biomedical Science Stream at **York University**. Brenden has a passion for neurology and neuroscience, with an emphasis on **neuroplasticity**, learning, psychedelics, and medical cannabis for neurological conditions. He strives to attend medical school to become a practicing neurologist and medical researcher. Brenden's areas of research include novel pediatric **neurogenetic disorders**, psychedelic-assisted **psychotherapy**, psychedelic and cannabinoid neuropharmacology, nutrition, and exogenous cannabinoids used to treat various neurological and non-neurological conditions. Brenden has worked at the **Neurology Centre of Toronto** since 2019, where he leads the Special Projects and Research Team. At NCT, Brenden helped develop the novel Virtual Rapid Access Clinics (VRAC), and has published multiple papers, with manuscripts currently in the development and submission process.



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Received: January 24, 2022; **Accepted:** January 26, 2022; **Published:** March 25, 2022

33rd Conference on
Clinical Neuroscience and Neurogenetics
March 25, 2022 | Webinar

PeriOrbital Hyperpigmentation's Relation to Neurology and Mental Health: Psychosis Accompanying Maladaptive Daydreaming, and its Treatment Methods

Objective:

To test the hypothesis of the relation between POH and mental health.

Methods:

We have studied the relationship between Psychosis accompanying MD and POH to a 17 years old female individual. We established some physical exercises to strengthen the eye and the eyelid muscles and to develop and construct new dopaminergic and excitatory neurotransmitters pathways in new neural networks; to enhance the effort of the visual cortex and the primary motor cortex to see the results if they would support the hypothesis. A 22-inquiries questionnaire was conducted on 22 participants about Maladaptive daydreaming accompanying mental health issues and Peri-Orbital Hyperpigmentation.

Results:

In brain stimulation, POH decreased which means the individual has developed new circuits participating the visual cortex neurons in them. The muscles strength increased increasing the eyes' plasticity in addition to increasing the plasticity/action potential of the frontal cortex. 68% of the individuals said they had POH which support the hypothesis' consistency. $p\text{-value} = .06$. $p < .10$.

Conclusion:

After analysis of the leading causes of POH and the experiment of the physical exercises and the ratio of confirming individuals with MD of having POH, we postulate that POH is related to mental illness due to insufficient effort on them that is caused by the low eyes activity and that frequently occur in Psychosis symptom (according to the 17 yo female individual), or any other mental disorder.

Discussion:

The excess amount of Dopamine may lead to the hyperpigmentation of the eyelids due to the synthesis of eumelanin from levodopa in eyelids due to the lack of neural effort (Dopamine neurotransmitter consumption). It is supposed that the presence of ROS molecules in the eyelids area is a reason for the occurrence of POH.

Biography

[Samar Khalifa](#) a clinical psychology student at Kafrelsheikh University in Egypt. She is interested in neuroscience field and plans to get my master in [neuroscience](#). She is a reviewer in many journal including Wiley and BMC journals. She is a Founder and co-president at Kafr Elsheikh Psychology Society. She is a contributing author at [AI NeuroCare Academy](#). She is a mentor at [Clarivate](#). She posted some scientific papers at research square and other papers are under submission. She also has a passion in art and music and writes songs.



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Received: January 20, 2022; Accepted: January 22, 2022; Published: March 25, 2022

33rd Conference on
Clinical Neuroscience and Neurogenetics
March 25, 2022 | Webinar

Arsenic-induces cognitive dysfunction through disruption of estrogen signalling: Resveratrol to the rescue?

Prolonged inorganic arsenic (iAs) exposure induces deleterious effects on brain including oxidative stress, cognitive dysfunction and neurochemical changes. Little is known about the association between iAs and estrogen receptor regulation in brain areas. Owing to the neuroprotective and estrogenic activities of resveratrol (RES), we examined the combined effects of arsenic trioxide (As₂O₃) and RES on neurobehavioural functions, estrogen signalling and associated [neurochemical alterations](#) in mouse hippocampus. As₂O₃ alone (2 and 4 mg/kg bw) or along with RES (40 mg/kg bw) was administered orally for 45 days to adult female mice. From days 33 to 45, open field, elevated plus maze and Morris water maze tests were conducted to evaluate locomotion, anxiety and learning and memory. On day 46, animals were euthanized and brain tissue and hippocampi obtained therefrom were processed for atomic absorption spectrophotometry and western blotting respectively. As₂O₃ alone exposure resulted in enhanced anxiety levels, reduced locomotion and impaired learning and memory. As₂O₃-induced behavioural deficits were accompanied by downregulation of estrogen receptor (ER α) expression with a concomitant reduction of BDNF and NMDAR 2B levels in the hippocampus. However, the behavioural alterations and expression of these markers were restored in RES-supplemented mice. Moreover, a dose-dependent iAs accumulation was observed in serum and brain tissues of mice receiving As₂O₃ alone whereas simultaneous administration of As₂O₃ with RES facilitated iAs efflux. Together, our findings indicate that reduced ER α expression with associated downregulation of BDNF and NMDAR 2B levels could be a potential mechanism by which iAs induces cognitive impairment; hence, the modulation of estrogen-NMDAR-BDNF pathway by RES represents a potential avenue to recover behavioural deficits induced by this neurotoxin.



Kamakshi Mehta
The University of New Mexico
Health Sciences Center, USA

Biography

Dr. [Kamakshi](#) has completed her PhD in the subject of Anatomy at the age of 28 years from All India Institute of [Medical Sciences](#) (New Delhi, India) and currently pursuing her postdoctoral fellowship from [The University of New Mexico](#), School of Medicine. My current research work intends to understand the role of hyperhomocysteinemia in the progression of age-associated [neurological diseases](#) like stroke. Additionally, the research aims to determine how predisposition to [hyperhomocysteinemia](#) impacts the outcome of cerebral stroke and to develop potential therapeutic targets to mitigate ischemic brain injury under hyperhomocysteinemic condition. My previous work dealt with the arsenic-induced adverse effects in various brain regions and our lab made an attempt to explore the neuroprotective activities of plant-based [polyphenols](#) like curcumin and resveratrol against arsenic-induced neurotoxicity. I have published more than 5 manuscripts in reputed journals and my research work has been awarded by various prestigious associations of neuroscience and [toxicology](#) as well.

Received: January 20, 2022; **Accepted:** January 22, 2022; **Published:** March 25, 2022

33rd Conference on
Clinical Neuroscience and Neurogenetics
March 25, 2022 | Webinar

Brain Activity for happiness and peace in relation to Neurosciences

Buddhist scriptures speak of eighty-four thousand kinds of negative emotions, but they can be represented by five main ones: hatred, hostility or anger; desire, attachment, or craving; confusion, ignorance, or delusion; pride; and jealousy (the inability to rejoice in others' happiness). In addition, the mental states of afflictive doubt and afflictive views are considered destructive. Buddhists are not so much concerned with the fact that the above mentioned emotions make it difficult for us to enter into and enjoy relationships. Instead, they know that these emotions make the one who experiences them unhappy, and to be unhappy makes it difficult to make progress on a spiritual path. Therefore, feelings were certain kinds of self-respect and self-esteem, self-worth, and self-accomplishment, as well as romantic love and friendship. People have high levels of brain activity in the left prefrontal cortex, they simultaneously report feelings such as happiness, enthusiasm, joy, high energy, and alertness. Rather, a decision to sit quietly, breathing into the heart centre, and intending to awaken compassion within and breathe it out to all is sufficient. The Expression of the Emotions in Man and Animals that "facial expressions of emotion are universal, not learned differently in each culture". Persons who tend to get upset easily by the smallest surprise of one kind or another might try practicing the Open State meditation.

Ven Dr. Sumedh Thero
Sumedh Bhoomi Buddha
Vihar, India

Biography:

Ven Dr. Sumedh Thero (Dr Banwari Lal Suman) PhD in Agronomy. Ex Principal Scientist Agronomy, Chief Buddhist Monk and Founder of Sumedh Bhoomi Buddha Vihar Dr Ambedkar Park Jhansipura Lalitpur 284403 India. Credited 14 books (9 in Hindi and 5 in English) 350 Research papers in reputed Journals seminar symposium etc. Publisher and Founder Editor *Ancient Buddhism* ISSN 2395-471X. Supervised ; 2 Ph. D., 7 M. Sc. Students theses in Crop production and Soils Management Visited; Myanmar in Dec 2004, USA in July 2006, Sri Lanka 2012, 2017, 2018, 2019 Thailand Aug,2017, Vietnam May 2019, Nepal 2019

Received: December 10, 2021; **Accepted:** December 12, 2021; **Published:** March 25, 2022

33rd Conference on
Clinical Neuroscience and Neurogenetics
March 25, 2022 | Webinar

Retrospective study on the relationship between tumor location, size and who grade in meningioma at tikur anbesa specialized hospital & mcm, addis ababa, ethiopia

Objective:

A number of previous studies were done to investigate risk factors for meningioma. However, a few studies were done to investigate the association between size and location of a tumor with tumor grade. The objective of this study is to look for the relationship between tumor size and location with tumor grade in patients operated for intracranial meningioma at two neurosurgical training hospitals in Addis Ababa.

Methods:

A retrospective clinical, neuroimaging and pathological data was collected from patients undergoing meningioma resection. The largest tumor diameter on contrast enhanced MRI is used as tumor size. The location of a tumor is determined both from MRI and intraoperative finding and classified into skull base, non-skull base and intraventricular. SPSS version 25 was used. Univariate and multivariate logistic regression was done to investigate the relationship between tumor size and location with tumor grade.

Results:

Of the total 250 operated patients, 192 patients were included in the current study. Univariate logistic analysis was done if age, sex, tumor location and size were significantly associated with tumor grade. Age was not found to be a significant risk factor for atypical meningioma ($P=0.29$). Male sex was a significant predictor of tumor grade (OR 3.44, 95% CI 1.41-8.39, $P=0.007$). Larger tumor size was significantly associated with a meningioma being WHO grade II ($P=0.028$). Tumor location was found to be a significant predictor of being atypical meningioma, predicting that convexity, PSM and falx meningiomas have atypical WHO grade (OR 10.625, 95% CI 3.03-37.2, $P=0.000$). We also found that patients with atypical meningioma has higher risk of having visual impairment at presentation (OR 4.5, 95% CI 1.23-15.79, $P=0.018$). Other signs and symptoms of meningiomas have no association with WHO grade. Up on multivariate logistic analysis in which all significant variables from the univariate models are included, only tumor location was found to be independently associated with atypical meningioma (OR 6.93, 95% CI 1.828-26.275, $P=0.004$). Non skull base meningiomas were associated with WHO grade II tumors.

Conclusions:

In our series, tumor location is an independent risk factor for atypical meningioma but size or gender are not.

Biography

Dr. Temesgen Geto Assefa has completed his undergraduate doctor of medicine degree at the age of 24 years from university of Gondar and his postgraduate neurosurgery specialty training from Addis Ababa University School of medicine. He is an assistant professor of Neurosurgery at Bahir Dar University. He is actively participating in clinical, academic and research activities in the university.



Temesgen G. Assefa
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Received: November 28, 2021; **Accepted:** November 30, 2021; **Published:** March 25, 2022

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February 24-25, 2023 | Tokyo, Japan

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