



VIRTUAL EVENT

3rd International Congress on

Future of Neurology & Neurosurgery

June 20-21, 2022

Future Neurology 2022

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PROGRAM-AT-A-GLANCE

FUTURE NEUROLOGY
2022

BST- British Summer Time

09:00-09:15 Opening Ceremony

Keynote Session

09:15-09:45

Title: Increased telomerase improves motor function and alpha-synuclein pathology in a transgenic mouse model of Parkinson's disease associated with enhanced autophagy

Gabriele Saretzki, Newcastle University, UK

09:45-10:15

Title: Neuronprotective effect of Artemisinin and its derivatives (Arts) and their implication in the treatment of Alzheimer's disease

Wenhua Zheng, University of Macau, China

10:15-10:45

Title: Pharmacology profile of f17464, a dopamine d3 receptor preferential antagonist potential antipsychotic

Cristina Cosi, CNS Innovation Unit, Pierre Fabre Laboratoires, France

Refreshment Break 10:45-11:05

Distinguished Speaker Talks

Sessions: Neuroscience | Neurology | Neursurgery | Neurological Disorders
Trauma | Epilepsy | Alzheimers Disease and Dementia
Multiple Sclerosis | Parkinsons Disease | Case Studies and Clinical Trials

11:05-11:30

Title: Comparing methods of adenosine administration in paroxysmal supraventricular tachycardia: A pilot randomized controlled trial

Phruek Daengbubpha, Chiang Mai University, Thailand

11:30-11:55

Title: Autoimmune glial fibrillary acidic protein astrocytopathy in children: A retrospective analysis of 35 cases

Liwen Wu, Hunan Children's Hospital, China

11:55-12:20

Title: Placenta-derived drug laennec and porcine improve hereditary hemochromatosis without phlebotomy and ameliorate neurological symptoms of wilson disease through the action of "hepcidin inducer"

Yuki HAMADA, HAMADA Clinic for Gastroenterology and Hepatology, Japan

12:20-12:45

Title: Transcriptome analysis of large to giant congenital melanocytic nevus reveals cell-cycle arrest and immune evasion: Identifying potential targets for treatment

Feng Xie, *Jiaotong University, China*

12:45-13:10

Title: Cerebrospinal and serum biomarkers in a multiple sclerosis cohort

Effrosyni Koutsouraki, *Aristotle University, Greece*

Lunch Break 13:10-14:00

14:00-14:25

Title: Trauma survivors' experiences of kundalini yoga in fostering posttraumatic growth

Veronica Dwarika, *University of Johannesburg, South Africa*

14:25-14:50

Title: The impact of neuroscience in criminal law: The concept of culpability

Susana Aires de Sousa, *University of Coimbra, Portugal*

14:50-15:15

Title: Spine myeloid sarcoma

Kajal Shah, *Gujarat Cancer Research Institute, India*

15:15-15:40

Title: Association of pain, social support and socioeconomic indicators in patients with spinal cord injury in Iran

Zahra Khazaeipour, *Tehran University of Medical Sciences, Iran*

15:40-16:05

Title: Recurrence of covid-19 in a patient with NMO spectrum disorder while treating with rituximab

Sepideh Paybast, *Qom University of Medical Sciences, Iran*

Refreshment Break 16:05-16:25

16:25-16:50

Title: Calculation of the fragility index of randomized controlled trials in epilepsy published in twelve major journals

Suja Xavier, *JIPMER, India*

16:50-17:15

Title: Essential guidelines for COVID-19 patient discharge instructions

Terrance L. Baker, *Johns Hopkins Medicine, USA*

17:15-17:40

Title: Detecting memory-related gene modules and causal regulations in snRNA-seq data by deep-learning

Yong Chen, *Rowan University, USA*

17:40-18:05

Title: A novel, safe, effective treatment for opioid use disorder

Fredric Schiffer, *MindLight, LLC, USA*

18:05-18:30

Title: Targeting neuroinflammation: A novel approach to treating vasospasm following subarachnoid hemorrhage

Brandon Lucke-Wold, *University of Florida, USA*

Panel Discussion

End of Day 1



BST- British Summer Time

Distinguished Speaker Talks

Sessions: Cognitive Neuroscience | Neuro-Oncology and Brain Tumors | Neuroscience Neurology | Neurosurgery | Neuroscience | Neurology | Neurosurgery | Neurological Disorders Trauma | Epilepsy | Alzheimers Disease and Dementia | Multiple Sclerosis | Parkinsons Disease Case Studies and Clinical Trials | Latest Advancement in Neurology

09:00-09:25

Title: Giant middle turbinate osteoma diagnosis and management
MohamedEisa El-Amin, Central Manchester University Hospitals NHS Foundation, UK

09:25-09:50

Title: Thalamic vs. midbrain tremor: Two distinct types of Holmes' Tremor
Sundus Alusi, The Walton Centre NHS Foundation Trust, UK

09:50-10:15

Title: DNA nanotechnology for modulating the growth and development of neurons
Mirza Muhammad Faran Ashraf Baig, The University of Hong Kong, Hong Kong SAR

10:15-10:40

Title: Longitudinal evaluation of striatal dysfunctions in autism spectrum disorders
Galvan Laurie, Université de Poitiers, France

10:40-11:05

Title: Aqueouslyophilisate of malvaviscus arboreus dill. Ex cav.ILeaves exerts antiepileptogenic properties via a modulation of gabaergic neurotransmission, neuroinflammation and oxidative stress in rats
Maxwell Blesdel ADASSI, University of Maroua, Cameroon

Refreshment Break 11:05-11:25

11:25-11:50

Title: Anti- β 2-glycoprotein I autoantibody expression as a potential biomarker for strokes in patients with anti-phospholipid syndrome
Husham Bayazed, *Zakho University, Iraq*

11:50-12:15

Title: Efficacy and toxicity analysis of imatinib in newly diagnosed patients of chronic myeloid leukaemia: 18-years' experience at a single large-volume centre
Kajal Shah, *Gujarat Cancer Research Institute, India*

Poster Session

12:15-12:35

Title: Effects of muscle vibration on human postural responses
Jana Kimijanová, *Slovak Academy of Sciences, Slovakia*

12:35-12:55

Title: Assessment of postural changes due to age and Parkinson's disease
Diana Bzdúšková, *Slovak Academy of Sciences, Slovakia*

12:55-13:15

Title: Dose-effects models for space radiobiology: An overview on central nervous system dose-effect relationship
Alessandro Bartoloni, *Istituto Nazionale di Fisica Nucleare (INFN) Rome-Sapienza Division, Italy*

Lunch Break 13:15-14:00

Distinguished Speaker Talks

14:00-14:25

Title: Bilateral open lip schizencephaly
Turyalai Hakimi, *Kabul University of Medical Science, Afghanistan*

14:25-14:50

Title: Physical activity affect executive functions in children with attention deficit disorder: A randomized, controlled trial with 3-month follow-up
Sakineh Soltani Kouhbanani, *Ferdowsi University of Mashhad, Iran*

14:50-15:15

Title: Teaching reflection of using technology tools in art and design courses with students of disability
Nouf Alsuwaida, *University of Ha'il, Saudi Arabia*

15:15-15:40

Title: Intersection of the digital phenotyping and digital neuromarketing? A threat or an opportunity?
Hossein Akbaraliabad, *Shiraz University of Medical Sciences, Iran*

15:40-16:05

Title: Numerical models for blood flow in carotid arteries

T S L Radhika, *BITS Pilani, India*

Refreshment Break 16:05-16:25

16:25-16:50

Title: Automatic micro-expression apex spotting using Cubic-LBP

Vida Esmaeili, *University of Tabriz, Iran*

16:50-17:15

Title: A novel approach to defeat Alzheimer's disease: Empowering the immune system to mobilize monocyte-derived macrophages

Michal Schwartz, *Weizmann Institute of Science, Israel*

17:15- 17:40

Title: The role of using Zebrafish model in spinal cord injury

Faezeh Soveyzi, *Tehran university of medical sciences, Iran*

Poster Session

17:40-18:00

Title: Combined use of deep brain stimulation and spinal neurostimulation in a patient with Parkinson's disease and operated spine syndrome (clinical case)

Naryshkin Alexander Gennadievich, *V. M. Bekhterev National Medical Research Center for Psychiatry and Neurology of the Russian Federation Ministry of Health, Russia*

18:00-18:20

Title: The effect of a supportive home care program on caregiver burden with stroke patients in Iran: An experimental study

Farshid Alazmani Noodeh, *AJA University of Medical Sciences, Iran*

End of Day 2

Closing Remarks





**BOOKMARK
YOUR DATES**

**4TH INTERNATIONAL CONGRESS ON
FUTURE OF NEUROLOGY
AND NEUROSURGERY**

MARCH 2023 | LONDON, UK
<https://neurology.peersalleyconferences.com/>

KEYNOTE PRESENTATIONS

DAY 1



Virtual Event

3rd International Congress on Future of Neurology and Neurosurgery

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FUTURE NEUROLOGY 2022

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BIOGRAPHY

Dr. Saretzki was born in Berlin, graduated from Sankt Petersburg (Russia) University 1982 and did her PhD at the Department of Genetics at the Humboldt-University Berlin (Germany) in 1990. Since 1990 she was involved in ageing research and worked on telomeres, telomerase, oxidative stress, DNA damage and cellular senescence. Since 2001 she worked at Newcastle University (UK) where she became a

lecturer in ageing research in 2002. In particular, her research interest were functions of telomerase in cancer and stem cells as well as non-canonical functions of the telomerase protein TERT in mitochondria. She extended this work to non-canonical functions of TERT in brain with an interest in neurodegenerative diseases and is now retired. She published more than 100 papers and has an H-index of 52.

Gabriele Saretzki

Newcastle University, UK

Increased telomerase improves motor function and alpha-synuclein pathology in a transgenic mouse model of Parkinson's disease associated with enhanced autophagy

Protective effects of the telomerase protein TERT have been shown in neurons and brain. We previously demonstrated that TERT protein can accumulate in mitochondria of Alzheimer's disease (AD) brains and protect from pathological tau in primary mouse neurons. This prompted us to employ telomerase activators in order to boost telomerase expression in a mouse model of Parkinson's disease (PD) overexpressing human wild type α -synuclein. Our aim was to test whether increased *Tert* expression levels were able to ameliorate PD symptoms and to activate protein degradation.

We found increased *Tert* expression in brain for both activators which correlated with a substantial improvement of motor functions such as gait and motor coordination while

telomere length in the analysed region was not changed. Interestingly, only one activator (TA-65) resulted in a decrease of reactive oxygen species from brain mitochondria. Importantly, we demonstrate that total, phosphorylated and aggregated α -synuclein were significantly decreased in the hippocampus and neocortex of activator-treated mice corresponding to enhanced markers of autophagy suggesting an improved degradation of toxic α -synuclein. We conclude that increased *Tert* expression caused by telomerase activators is associated with decreased α -synuclein protein levels either by activating autophagy or by preventing or delaying degradation mechanisms which are impaired during disease progression. This encouraging preclinical data could be translated into novel therapeutic options for neurodegenerative disorders such as PD.

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BIOGRAPHY

Dr. Wenhua Zheng, Professor, Principle Investigator in Faculty of Health Science, University of Macau, leading a group of scientists working on aging and neuronal degenerative disorders. He is a Section Editor for Encyclopedia of Gerontology and Population Aging; a Lead Guest Editor and Editor for several journals. Grant Reviewer for NSFC, Poland and CIHR in Canada. He is an Honorary Professor at the University of Queensland

(QS45) and an Adjunct Professor/visiting Prof at RMIT University and other universities. Dr Zheng has published >150 papers which have been cited over 6500 times.

Wenhua Zheng

University of Macau, China

Neuronprotective effect of Artemisinin and its derivatives (Arts) and their implication in the treatment of Alzheimer's disease

Alzheimer's Disease (AD), characterized by the progressive loss of cognitive function, is the most common neurodegenerative disorder. It is marked by the occurrence of neuronal loss, the accumulation of β -amyloid ($A\beta$) plaques and neurofibrillary tangles. AD etiology is still unknown, and currently there is no effective treatment to cure or prevent it. Artemisinin and its derivatives are safe and effective antimalarials, which have been used for decades in the clinic saving millions of lives. We have recently discovered that, artemisinin has a neuroprotective effect. Since it is affordable, safe and able to cross the blood-brain barrier, this discovery offers new promising therapeutic indications for artemisinin in diseases of the central nervous system. We have found that artemisinin/artemether promoted the survival of several neuronal cells. In fact, pretreatment of PC12 cells with artemisinin/artemether significantly inhibited $A\beta$ 1-42-induced cell death, reduced intracellular reactive oxygen species (ROS) production, prevented mitochondrial

membrane potential loss and reduced LDH release and caspase 3/7 activation. Western blot analysis revealed that artemisinin/artemether stimulated the phosphorylation/activation of ERK, AMPK and CREB while inhibition of the ERK/AMPK signaling pathways, by either ERK pathway inhibitor PD98059/AMPK inhibitor Compound C, reduced the expression of ERK/AMPK with siRNA blocking the protective effect of artemisinin/artemether. Similar results were obtained in other neuronal cells and primary cultured neurons. These findings suggest that artemisinin/artemether is a potential neuroprotective agent that inhibits various toxin-induced cell death by activating signaling pathways such as ERK/AMPK/autophagy. In addition, artemisinin/artemether significantly improved the cognitive impairment and reversed several pathological changes in AD mice. It reduced neuronal cell death, $A\beta$ deposit and tau phosphorylation. These findings support the potential application of artemisinin and its derivatives on the prevention and treatment of neurodegenerative diseases such as AD.

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BIOGRAPHY

Biologist and pharmacologist, biochemist by training, with a Master in Science from the University of Florence, Italy, and a PhD in Molecular Pharmacology from the University of Toulouse, France, 1997, Cristina Cosi has an extensive working experience in the Neuroscience research field, mostly in industry at Pierre Fabre, France, but also in academic environments, in Italy, University of Florence and Verona, and US, NIH. She

has focused her career on the understanding of neurodegenerative processes and mechanisms of neuronal plasticity in order to find medications that might be beneficial against neurodegenerative and neurodevelopmental diseases and pain.

Cristina Cosi

CNS Innovation Unit, Pierre Fabre Laboratoires, France

Pharmacology profile of f17464, a dopamine D3 receptor preferential antagonist potential antipsychotic

F₁₇₄₆₄ (N-(3-{4-[4-(8-Oxo-8H-[1,3]-dioxolo-[4,5-g]-chromen-7-yl)-butyl]-piperazin-1-yl}-phenyl)-methanesulfonamide, hydrochloride) is a new potential antipsychotic with D3 over D2 dopamine receptor preferential antagonism and 5-HT1A receptor partial agonism properties. Its selective D3 receptor occupancy has been demonstrated in a human PET imaging study (Slifstein et al., 2020 *Psychopharmacology*, 237:519-527). Reported F17464 behavioural work (Sokoloff and Le Foll, 2017 *Eur J Neurosci* 45(1):2-19.) has been here expanded to show the compound target engagement, neurochemical properties, effects on NMDA - glutamatergic alterations and its beneficial effects in a rodent model for autism (Cosi et al., 2021 *Eur J Pharmacol* 890:173635). F17464 exhibits high affinity for human dopamine receptor subtype 3 (hD3) (K_i = 0.17 nM) and the serotonin receptor subtype 1A (5-HT1A) (K_i = 0.16 nM) and a >50 fold lower affinity for the human dopamine receptor subtype 2 short and long form (hD2s/l) (K_i = 8.9 and 12.1 nM, respectively). [¹⁴C]F17464

has a slower dissociation rate from hD3 receptor (t_{1/2} = 110 min) than from hD2s receptor (t_{1/2} = 1.4 min) and functional studies demonstrate that F17464 is a D3 receptor antagonist, 5-HT1A receptor partial agonist. In human dopaminergic neurons F17464 blocks ketamine induced morphological changes, an effect D3 receptor mediated. In vivo F17464 target engagement of both D2 and 5-HT1a receptors is demonstrated in displacement studies in the mouse brain. F17464 increases dopamine release in the rat prefrontal cortex and mouse dorsal striatum, frontal cortex, n.accumbens, olfactory tubercle and attenuates the MK801-induced decrease of c-fos mRNA in c-fos medium expressing neurons in mouse cortical and subcortical regions. F17464 also rescues valproate induced impairment in a rat social interaction model of autism. F17464 dose range used both in rats and mice was 0.32–2.5 mg/kg i.p. The preferential D3 antagonist F17464, is potential antipsychotic that shows promise for treating the cognitive and negative symptoms of schizophrenia and possibly of autism.

SCIENTIFIC ABSTRACTS

DAY 1



Virtual Event

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FUTURE NEUROLOGY 2022

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Comparing methods of adenosine administration in paroxysmal supraventricular tachycardia: A pilot randomized controlled trial

Phruek Daengbubpha and TheeraponTangsuwanaruk
Chiang Mai University, Thailand

Study objective: Adenosine intravenous is the recommended treatment for paroxysmal supraventricular tachycardia (PSVT). There is no official recommended method of giving adenosine. We aim to compare the success rate between the standard and alternative method of first dose intravenous adenosine in PSVT.

Methods: A pilot parallel randomized controlled study was conducted in the Emergency Department(ED) of a tertiary care hospital. Eligible patients were stable PSVT patients. We used block randomization and divided them into two groups, the standard method (double syringe technique of 6 milligrams adenosine), and the alternative method (similar to standard method, then immediately followed by elevating arm to 90 degrees perpendicular to a horizontal plane for 10 seconds). Primary outcome is the success

rate of electrocardiogram (ECG) response which demonstrated termination of PSVT (at least 2-fold of the RR-interval widening or sinus rhythm conversion). Secondary outcomes are complications within 1 minute after injection.

Results: We allocated 15 patients in each group and analysed as intention-to-treat. The success rate was 86.7 % in the alternative group and 80% in the standard group (risk difference 6.7%, 95% confidence interval -19.9 to 33.2%, P value 1). Complications within 1 minute after adenosine injection were also similar in both groups, 14 of 15 patients (93%) in each group have no complication, without significant difference.

Conclusion: No evidence difference between alternative and standard method, in terms of the success rate of ECG response and complications within 1 minute after adenosine injection. A further definitive study is required.

Biography

Phruek Daengbubpha received the Doctor of Medicine degree in 2014 from Chiang Mai university and recently graduated from Emergency Department, Faculty of Medicine, Chiang Mai University in 2021. After graduation, he has been working as Emergency Physician in Chom Thong Hospital, where is located 40 miles away from Chiang Mai. This research has done when he was training as a resident physician. Because in Thailand, they were taught to administer adenosine for SVT by elevate the arm. So, he was inspired and want to find out that is it possible if we do not elevate the arm. And what will be the result from this method.

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Autoimmune glial fibrillary acidic protein astrocytopathy in children: A retrospective analysis of 35 cases

Liwen Wu, Hongjun Fang, Wenjing Hu, Zhi Jiang, Haiyan Yang, Hongmei Liao and Liming Yang

Hunan Children's Hospital, China

Objective: To analyze the clinical manifestations, imaging, electroencephalography, treatment, and prognosis of autoimmune glial fibrillary acidic protein astrocytopathy (GFAP-A) in children.

Methods: There were 40 children positive for GFAP-immunoglobulin (Ig)G antibodies in the serum and/or the cerebrospinal fluid. Five children who were only positive for GFAP-IgG antibodies in serum were excluded, and the remaining 35 children were diagnosed with autoimmune GFAP-A. The clinical data derived from the 35 children were retrospectively analyzed.

Results: A total of 35 children, including 23 males and 12 females with a mean age of 6.3 ± 0.6 years, manifested clinical symptoms of fever (62.9%), headache (42.9%), convulsions (42.9%), abnormal mental behavior (51.4%), disorders of consciousness (54.3%), visual disturbance (22.9%), ataxia (11.4%), paralysis (40%), and autonomic dysfunction (25.7%). One child exhibited only the clinical symptom of peripheral facial nerve palsy. Eleven out of 35 children were also positive for other antibodies. In addition to the common overlapping autoimmune syndromes, one

case of autoimmune GFAP-A also manifested as Bickerstaff's brainstem encephalitis. Linear periventricular enhancement upon MRI was significantly less frequent in children (8.5%) than in adults. In pediatric patients, MRI contrast enhancement was principally seen in the meninges and brain lobes. Although repeated relapse (17.1%) and sequelae symptoms (20%) occurred in some cases, most children showed a favorable prognosis. Spearman's rank correlation showed that the antibody titer was not significantly associated with the severity of the initial disease conditions.

Conclusions: The disease diagnosis in children seropositive for GFAP antibodies only should receive a comprehensive diagnosis based on their clinical symptoms, imaging, electroencephalographic characteristics and treatment responses. Some patients with relapses should receive repeated gamma globulin and corticosteroid therapy or the addition of immunosuppressants to their therapeutic regimen, and slow-dose tapering of corticosteroids and extended treatment are recommended for patients with overlapping autoimmune syndromes.



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Biography

Liwen Wu, Doctor of pediatric neurology, associate professor, postgraduate supervisor. Deputy head of Neuroyouth Group of Scientific Branch of Chinese Medical Association, member of Youth Committee of China Anti Epilepsy Association, member of drug treatment professional committee of China Anti Epilepsy Association, and chairman of the Whole Course Management Committee of Nervous System Diseases of Hunan Health Management Society. Dr. Wu takes charge of Presided over 3 Projects from the National Natural Science Foundation of China, 1 Project from the Natural Science Foundation of Hunan Province and 1 Project supported by the Health Commission. She has published more than 30 academic papers as the first author/corresponding author; She was awarded the "May 4th Youth Medal" of Hunan Health Commission, Young Talents in Hunan and the Most Beautiful Doctor in Hunan Province.

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Placenta-derived drug laennec and porcine improve hereditary hemochromatosis without phlebotomy and ameliorate neurological symptoms of wilson disease through the action of “hepcidin inducer”

Yuki HAMADA¹ and Eichi HIRANO²

¹HAMADA Clinic for Gastroenterology and Hepatology, Japan

²Japan Bio Products Co. Ltd. Kurume Research Center, Japan

Human hepcidin made by hepatocytes controls extracellular iron by regulating its intestinal absorption, recycling by macrophages, and release from storage spaces. Recent studies indicate that hepcidin deficiency underlies most known forms of hereditary hemochromatosis (H.H).

Case1 (H.H): 44years-old male patient who developed type2 diabetes mellitus(T2DM) had elevated serum ferritin (SF) level (10,191ng/ml). Liver biopsy revealed remarkable iron deposition in hepatocytes and relatively advanced fibrosis (F3). Chromosomal analysis confirmed the presence of transferrin receptor type 2(TfR2) mutations. Infusion with Laennec has been done for 84 months as the substitute for the repeated phlebotomy. At the end of the treatment, the serum ferritin level was decreased to 428.4ng/ml (significantly lower than the started level). HbA1c also improved with the same or lower dose of insulin (8.8→6.8%). Plural liver biopsies revealed remarkable improvements in the grade of both iron deposition and fibrosis (F3→F1) of the liver tissue.

Case2(Wilson Disease): 34years-old male patient who was diagnosed as Wilson Disease (W.D) when he was 10 years old. Impaired biliary excretion leads to accumulation of copper in the liver. This copper promotes the generation of free radicals and cell damage. With a histidine residue of hepcidin at position 3, this region also has the potential to bind bivalent metal ions such as copper. The high affinity of hepcidin for copper suggests that hepcidin could bind copper in vivo. Here we showed that infusion with Laennec which was elucidated to induce hepcidin enhanced the urinary excretion of copper and improved neurological signs of W.D remarkably. The discovery of hepcidin and its role in iron and copper metabolism could lead to novel therapies for H.H. and W.D. The placenta-derived Laennec (parenteral) and Porcine (oral) which act as the “hepcidin inducer” actually improved iron overload of H.H patient without utilizing sequential phlebotomy. These drugs also could improve the neurological symptoms of W.D through the action of hepcidin inducer.

Biography

Yuki HAMADA Graduated from School of Medicine, Hokkaido University in 1975. From 1975-1977 He was medical trainee at Osaka Medical Center for Cancer and Cardiovascular Disease, Osaka, Japan followed by Lecturer, Gastroenterology and Hepatology Department, Hokkaido University in 1977-1989. Research Fellow, Faculty of Life Science (Prof.F.L.Bygrave), Australian National University in 1988-1989, 1991. Manager, Gastroenterology section, National Nishi-Sapporo hospital 1989-1998 and at present President, HAMADA Clinic for Hepatology and Gastroenterology from 1998. He is having membership of International Association for the Study of the Liver, membership of the Japan Society of Hepatology, Medical Specialist of the Japan Society of Hepatology, Board Certified Physician of the Japan Society of Internal Medicine, Medical Specialist of the Japanese Society of Gastroenterology, Medical Specialist of Japan Gastroenterological Endoscopy Society, Medical Specialist of the Japan Geriatrics Society and Medical Specialist of the Japan Society of Ultrasonic and Medicine.

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Transcriptome analysis of large to giant congenital melanocytic nevus reveals cell-cycle arrest and immune evasion: Identifying potential targets for treatment

Feng Xie, Boxuan Wei, Jieyu Gu, Min Wu, Bowen Gao, Ran Duan, Shengliang Zhou and Xiaolu Huang

Jiaotong University, China

Background: Large to giant congenital melanocytic nevus (IgCMN) are cutaneous benign tumors that develop during embryogenesis. A large number of IgCMN patients are ineligible for surgical treatment, hence the urgent need for developing pharmacological treatment. Clinically, tumorigenesis and progression mostly come to a halt after birth, resulting in homeostasis of growth arrest and survival.

Numerous studies on whole-genome or whole-exome sequencing in IgCMN have been reported to clarify its etiology. However, transcriptome sequencing is still lacking in IgCMN.

Objective: Through comprehensive transcriptome analysis, this study aimed to elucidate the ongoing regulation and homeostasis in IgCMN and identify potential targets for treatment.

Biography

Feng Xie is an Associate professor in Plastic & Reconstructed Surgery department in Ninth Hospital affiliated by medical school of Shang Hai JiaoTong University. He obtained the both his Doctor degree and PhD degree in Shang Hai JiaoTong University in 2006. He is engaged in treatment of Congenital giant naevus for more than 10 years. The department of Plastic & Reconstructive surgery of Ninth hospital is the most famous plastic center of China. It has 300 beds and more than 100 physicians in the department. Dr. Xie has engaged in Plastic surgery for more than twenty years. He usually use tissue expander to treat giant naevus. However, there are some patients with huge naevus that can not be treated using tissue expander. To solve this problem Dr. Xie is engaged in the study to treat the congenital giant naevus with target drug or immunotherapy. He has published over 20 English papers in this field.

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Cerebrospinal and serum biomarkers in a Multiple Sclerosis cohort

**E. Koutsouraki, Th. Kalatha, E. Hatzifilippou and
Th. Koukoulidis**

Aristotle University, Greece

The target of early and efficient treatment in patients with multiple sclerosis (MS) is hampered by a lack of prognostic biomarkers that can predict disease progression, severity, and responses to treatment.

The scope of the study is to evaluate neuron cytoskeletal and astroglial biomarkers in the cerebrospinal fluid (CSF) and serum (tau, phospho-tau and glial fibrillary acidic protein (GFAP) and correlate with clinical characteristics of MS patients.

87 MS patients (aged 41.1±11.96) enrolled in the study and 21 controls (aged 44.17±12.8). The female/male ratio was 8 females/12 males in the controls and 64 females/20 males in the patients' group. From the patients' cohort 86% (75 patients) were relapsing forms and 14% (12 patients) were progressive forms of the disease. From the total sample 60 patients had disease duration more than a year and 48 less or equal to 1 year. CSF levels of b-amyloid, tau, phospho tau and GFAP were determined

using enzyme-linked immunosorbent assay.

A significant difference was evident in the levels of phospho tau181 in the CSF of patients ($p=0.03$) with phospho tau median 34.5 (INQ 22-89) in the relapsing groups and phospho tau median 40.4 (INQ 26-267) in the progressive one. In a linear regression model a potential association was revealed between GFAP serum and Expanded Disability Status Scale change from baseline, with a negative association between GFAP serum levels and EDSS change ($b=-2.95$; 95%CI: from -4.58 to -1.32; $p=0.003$), adjusting for age. EDSS score showed correlation with age ($\rho=0.26$, $p=0.005$). Phospho tau proved the most important biomarker to discriminate between relapsing and progressive forms on multiple sclerosis patients.

More studies are needed to validate the results, but our study provides preliminary evidence of CSF phospho tau as potential end point surrogate biomarker of progressive MS, GFAP serum as a potential biomarker of relapse.

Biography

Effrosyni Koutsouraki is an associate Professor of Neurology – Neuroimmunology, Aristotle University, Thessaloniki, Greece. She is also a visiting Senior Investigator in the Cyprus Institute of Neurology and Genetics, Visiting Professor in the Frederick University (Cyprus) and Visiting Professor in Cyprus School of Molecular Medicine (Cyprus). From 2004 up to now: Head of the Outpatient Clinic for Multiple Sclerosis, from 2003 – 2011 & 2020 up to now: Outpatient Clinic for Dementia- Alzheimer's disease, 2007- 2017: Head of the Laboratory of Neuroimmunology. She was a part of Laboratory of Neuropathology at the Eppendorf Hospital, Hamburg, Germany, 1996, Laboratory of Biochemistry and Molecular Biology, Pasteur Research Institute, 2010 and Institute of Neurology and Genetics, 2016-2017. She is an invited speaker >80 conferences and won around 16 Awards and Honorary Titles.

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Trauma survivors' experiences of kundalini yoga in fostering posttraumatic growth

Veronica Dwarika

University of Johannesburg, South Africa

Background: The prevalence of traumatic events in South Africa is considerably high due to a history of political violence and the ongoing cycle of interpersonal, community-based, and socioeconomic violence. While conventional therapeutic techniques have been found to support trauma survivors in the local context, alternative approaches that focus on the mind-body connection have become increasingly popular. However, studies reporting on the use of these approaches remain scarce

Objective: This study aimed to add to the body of knowledge on yoga as a non-conventional therapy to support trauma survivors and foster posttraumatic growth. Semi-structured

interviews were conducted with a sample of seven Kundalini yoga practitioners who had been exposed to trauma

Method: Semi-structured interviews were conducted with a sample of seven Kundalini yoga practitioners who had been exposed to trauma

Results: A thematic analysis confirmed that Kundalini yoga was beneficial in fostering posttraumatic growth.

Conclusion: Overall, the study findings, evidence a pocket of success in relation to value of such an intervention within a low socio economic black South African context.

Biography

Dr Veronica Dwarika is the senior lecturer at the University of Johannesburg. She is the Deputy HOD in the department of Educational Psychology. She is involved with teacher training at undergraduate and postgraduate levels. She is involved at masters level with the training of student psychologist to become educational psychologist. She also co-ordinates the Professional Doctorate program in Educational Psychology. Her areas of research focus on trauma and resilience, trauma informed care, positive behaviour supports, as well as therapeutic interventions for children, parents and communities. She is involved in local projects to enhance the delivery of psychological therapeutic interventions to support disadvantaged communities.

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The impact of neuroscience in criminal law: The concept of culpability

Susana Aires de Sousa

University of Coimbra, Portugal

On the basis of clinical examples and experiments, neuroscientist have argued that the human mind – its emotions and its thoughts – develops according to positive and deterministic laws that occur before the consciousness of a decision. The search for consciousness is explained by neuronal causal mechanisms. Consciousness of a certain decision thus appears as a lengthy process which essentially escapes control and is causally determined. In this sense, all human behaviour and decisions are predetermined and caused by unconscious neurological processes and networks. Decisions are necessary consequences of neuronal courses]. In a subsequent and extreme step, the knowledge of these laws would enable us to predict or determine human behaviour, giving rise to a new form of determinism, “a neurodeterminism conception”.

These conclusions affect disciplines dealing with the idea of human freedom, such as philosophy, theology, ethics and law. Particular, criminal liability is built under the idea of a culpability connected with individual freedom. The determinism of human behavior questions the premise of individual freedom: I behave this way, because this is the way I am; being this way, I cannot choose to be another. The assumption that “the perpetrator had been able to act in a different way”, essential to a criminal concept of culpability is nullified. In face of the causal certainty in neuroscience, is there any room left for culpability in criminal law? Are law and neuroscience really considering the same problem? Those are the two questions we will address in our presentation.

Biography

Tenured Assistant Professor at Faculty of Law of the University of Coimbra. Member of the Institute for Legal Research of the University of Coimbra. Member of the Scientific Committee of the Institute of Interdisciplinary Research – University of Coimbra. Senior Fellow of the Carol and Lawrence Zicklin Center for Business Ethics Research, Wharton School, University of Pennsylvania. Visiting scholar of the Max-Planck-Institut für ausländisches und internationales Strafrecht, in Freiburg (2003, 2008, 2009). Has published several articles and jurisprudence annotations (90), monographic works (4) and co-edited books (3) in the area of criminal law, economic criminal law and criminal procedural law. Has been invited as key-note speaker in several conferences and seminars, in the scope of law and criminal procedure, in Portugal and abroad.

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Spine myeloid sarcoma

Kajal Shah, Harsha Panchal and Apurva Patel

Gujarat Cancer Research Institute, India

Myeloid sarcoma (MS) is a malignant extramedullary tumor consisting of immature cells of myeloid origin. It may precede, present concurrently or follow acute myeloid leukemia (AML) in de novo case or may also be present and might be the only manifestation of recurrent AML, myelodysplastic syndrome, or chronic myeloid leukemia. It frequently involves skin, orbit, bone, periosteum, lymph nodes, and gastrointestinal tract, soft tissue, central nervous system, and testis. Because of its

different localization and symptoms, and the lack of diagnostic algorithm, MS is a real diagnostic challenge particularly in patients without initial bone marrow involvement. The correct diagnosis of MS is important for optimum therapy, which is often delayed because of a high misdiagnosis rate. We reported three cases of MS derived from spine presented with back pain, paraplegia, paraparesis, respectively, and reviewed the relevant literature.

Biography

Dr. Kajal Shah is a Medical Oncologist and Haematologist and has an aim is deliver quality and compassionate care to her patients since 2012. Dr. Shah has left no stone unturned in making special efforts in accommodating individual needs of her patients. She utilizes her domain expertise and experience in providing best and state-of-the-art care by encouraging honest and transparent treatments. She is known for delivering patient centred and result oriented treatments. She uses chemotherapy, immunotherapy, hormonal therapy, targeted therapy and most importantly supportive/palliative care in an effective manner for treatment for all solid tumors as wells as haematological cancers in adults and children.

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Association of pain, social support and socioeconomic indicators in patients with spinal cord injury in Iran

Z Khazaeipour¹, E Ahmadipour¹, V Rahimi-Movaghar², F Ahmadipour¹, A R Vaccaro³ and B Babakhani^{1,4}

¹Brain and Spinal Cord Injury Research Center, Tehran University of Medical Sciences, Iran

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³Department of Orthopedics and Neurosurgery, Thomas Jefferson University and the Rothman Institute, USA

⁴Department of Anesthesiology, Academic Teaching Hospital Nordstadt, Germany

Objectives: Pain is a prevalent complication of individuals with spinal cord injury (SCI). Our objective was to examine the association between social support, socioeconomic factors and psychosocial factors and pain to develop more effective management strategies.

Setting: Brain and Spinal Cord Injury Research (BASIR) Center, Tehran University of Medical Sciences, Tehran, Iran.

Methods: The Persian version of the Brief Pain Inventory was used to measure the pain, and the Multidimensional Scale of Perceived Social Support was used to measure social support through structured face-to-face interviews in SCI individuals.

Results: The overall prevalence of pain was 50.7%; 79.3% of individuals had bilateral pain, with lower limbs and back being the most common location. The quality of pain

was described as aching (41.4%), tingling (32.9%), pressure (15.7%), coldness (5.7%) and feeling electric shock sensations (4.3%). The frequency of pain in individuals with paraplegia (60.9% vs 45.7%) and incomplete (53.5% vs 52.5%) SCI was higher than with other types of neurological injuries. Patients with a medium level of education had the least pain and those with good economic situation reported higher frequency of having pain ($P=0.034$). There was no significant relationship between pain and social support. There was a positive correlation between pain and impairment of mood, normal work, relations with other people and lack of sleep ($P<0.001$).

Conclusion: These novel findings will inform the development of strategies to manage pain by improving access to health-care facilities and supplies.

Biography

Zahra Khazaeipour, is Associate Professor of Preventive and Community Medicine, She completed Undergraduate medical education and Medical internship at Tehran University of Medical Sciences (1991, January - 1998, May). Then completed the Residency program (including one-year MPH program) at Shiraz University of Medical Sciences (2005, Sept - 2008, Sept). She has Iranian national board certification of Community Medicine.

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Recurrence of covid-19 in a patient with NMO spectrum disorder while treating with rituximab

Sepideh Paybast, Fereshteh Shahrab and Seyed A. Hejazi
Qom University of Medical Sciences, Iran

Introduction: In the context of coronavirus disease 2019 (COVID-19) pandemic, patients with neuromyelitis optica spectrum disorder (NMOSD) are vulnerable to develop COVID-19 due to the immunosuppressive therapy. The objective of this study is to describe a known case of NMOSD on rituximab who experienced 2 episodes of COVID-19.

Case Report: A 25-year-old woman, a known case of NMOSD on rituximab was diagnosed with asymptomatic COVID-19. Eight months later, following her last infusion of rituximab, she developed moderate COVID-19. After a partial recovery, she exhibited exacerbation of respiratory symptoms leading to readmission

and invasive oxygenation. She was eventually discharged home after 31 days. Her monthly neurological evaluation did not reveal evidence of disease activity. She later received intravenous immunoglobulin and the decision was made to start rituximab again.

Conclusions: Our case raises the possibility of persistent virus shedding and reactivation of severe acute respiratory syndrome coronavirus-2 in a patient with NMOSD and rituximab therapy. We aimed to emphasize a precise consideration of the management of patients with NMOSD during the COVID-19 pandemic.

Biography

Sepideh Paybast was born in 1988 in Iran. She passed the general medicine course at the University of ShahidBeheshti, Tehran, Iran, between 2007-and 2014. Then she took a specialized course in general neurology in 2014- 2018 at the University of ShahidBeheshti. After graduation, she started her job as an assistant professor of Neurology at the University of Qazvin (2019-2020) and subsequently Qom (2020-2021). While working in Qom, Iran, she was also a member of the research center of Qom universality of medical sciences, Iran. Afterward, she participated in the MS fellowship examination at the University of Tehran, Iran. Currently she is in the final half of my MS fellowship course, and she will graduate in the next six months. Her main research interest is devoted to central nervous system demyelinating disorders.

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Calculation of the fragility index of randomized controlled trials in epilepsy published in twelve major journals

Suja Xavier
 JIPMER, India

Objective: Fragility index is the minimum number of participants in a trial whose status has to be changed from an 'event' to a 'non-event' for a dichotomous primary outcome to turn the P-value (calculated by Fischer's exact test) statistically non-significant ($P > 0.05$). This study was performed to evaluate the fragility index of randomized controlled trials (RCTs) in epilepsy published in 12 major journals.

Methods: We identified the relevant RCTs published in six major epilepsy-related and six Neurology journals from January 2015 to September 2019 and determined the fragility index of those RCTs which reported statistically significant results of dichotomous primary outcomes. We also calculated the Spearman correlation coefficients between the fragility

index and the sample size, the event rate, and the reported P-value.

Results: A total of 1395 RCTs were screened and finally ten were eligible for the analysis. The median (IQR) fragility index was only 1.5 (11). There was no significant correlation between the fragility index and the sample size ($r = 0.620$, $P = 0.056$), the event rate ($r = < 0.0001$, $P = 1.0$), and the reported P-value ($r = - 0.315$, $P = 0.447$).

Conclusion: The median fragility index of the included RCTs on epilepsy was very low. The addition of only two alternate events to an arm of the average trial would have rejected the statistical significance. Fragility index should be used while reporting the results of dichotomous primary outcomes of RCTs.

Biography

Dr. Suja Xavier is presently working as senior resident in the department of Pharmacology, JIPMER, Puducherry. Areas of interest: Neuropharmacology, Pharmacovigilance, Therapeutic drug monitoring, Drug efficacy studies, Drug utilisation and audit studies. Presented papers and posters in national and international meetings. Bagged several awards for best paper presentations at national and international conferences. Reviewer of Journal of Pharmacology and Pharmacotherapeutics (JPP). Published several research papers in national and international journals.

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Essential guidelines for covid-19 patient discharge instructions

Terrance L. Baker¹ and Jack V. Greiner²

¹*Johns Hopkins Medicine, USA*

²*Harvard Medical School, USA*

Introduction: Clinicians treating COVID-19 patients face a major challenge in developing effective communication with patients who are discharged to home in order to promote and enhance safety. The purpose of discharge instructions is to provide guidance from health care personnel involving discharging COVID-19 patients. SARS-CoV-2 positive or suspected of being positive patients discharged to home following encounters at health care facilities require specific or tailored recommendations for continued care at home to promote the safe SARS-CoV-2 recovery of themselves, their families, and others.

Methods: A systematic literature-search of studies evaluating optimal performance criteria parameters was used to determine patient morbidity and mortality factors as they relate to both symptoms and signs of COVID-19. Discharge instructions were developed from 157 studies in response to the review of this broad-spectrum of literature. These instructions are key to educating patients in the parameters that require monitoring to determine disease improvement or the need for a medical reevaluation.

Results: These guidelines were developed for patient education and achieve the following essential goals: assisting patients to provide a basic understanding of their medical situation; reducing the likelihood of complications by providing instructions which assist patients to know when to use available health services. Patient stress can be reduced by giving patients comfort through the understanding of how to respond to their condition changes.

Conclusion: The COVID-19 has often created confusing for patients and their families. Clinicians must efficiently and effectively teach patients self-management strategies and what to expect when they return home and what to do when they experience possible changing conditions. The primary goal of the patient education discharge instructions (PED) is to provide the patient with understandable self-management strategies. These include prevention of disease transmission; prevention of complications by understanding the actions required to recover; and to know when conditions require medical reevaluation.

Biography

Terrance L. Baker, MD, MS, is board certified in family medicine, emergency medicine, and geriatrics. Dr. Baker is a graduate of George Washington University School of Medicine and holds a Master of Science degree from Johns Hopkins University. He is the medical director of Sollay Medical Center in Baltimore, Maryland. Dr. Baker is a member of the Department of Medicine at Johns Hopkins Medicine. He also holds teaching posts at the University of Maryland School of Nursing in Baltimore, and the New York University. Dr. Baker has multiple publications and has lectured in the USA and Internationally on SARS-CoV-2.

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Detecting memory-related gene modules and causal regulations in snRNA-seq data by deep-learning

Yong Chen

Rowan University, USA

To understand the detailed molecular mechanisms of memory formation in engram cells is one of the most fundamental questions in neuroscience and computational system biology. Recent single-nucleus RNA-seq (snRNA-seq) techniques have allowed us to explore the sparsely activated engram ensembles, enabling access to the molecular mechanisms that underlie experience-dependent memory formation and consolidation. However, the absence of specific and powerful computational methods to detect memory-related genes (modules) and their regulatory relationships in the snRNA-seq datasets has strictly limited the analysis of underlying mechanisms and memory coding principles in mammalian brains. We have designed a deep-learning method to detect memory-related gene modules in snRNA-seq datasets, and designed a deep-learning

method to infer causal regulatory relationships within gene modules. We applied them on snRNA-seq datasets of *TRAP; Ai14* mice brains with fear memory and detected not only known memory-related genes, but also the modules and potential causal regulations. Our results provided novel regulations within an interesting module including *Arc*, *Bdnf*, *Creb*, *Dusp1*, *Rgs4* and *Btg2*. Overall, our methods provide a series of computational tools for processing snRNA-seq data and delineate the regulation mechanisms underlying remote memory formation. The detected gene modules may provide potential targets and strategies for treatment of memory loss in neuron degenerative diseases. The methods can also be used to process general scRNA-seq datasets that are generated from case versus control studies.

Biography

Dr. Yong Chen is an assistant professor at the Department of Molecular and Cellular Biosciences, Rowan University, USA. He has a long-term training of mathematics and biology. His research has focused on bulk/single-cell omics studies, bioinformatics and mathematical modeling for cancer epigenetics and computational neuroscience. Current research topics include (1) designing novel experimental and computational methods to dissect 3-D chromatin interactions and how the disordered interactions (and epigenetic modifications) are associated with cancer/disease development; (2) designing deep learning methods to process and integrate single-cell omics datasets; (3) mathematical modeling the memory formation mechanism. He is an *ad hoc* reviewer for multiple bioinformatics journals, conferences, and federal level grants.



A novel, safe, effective treatment for opioid use disorder

Fredric Schiffer^{1,2}

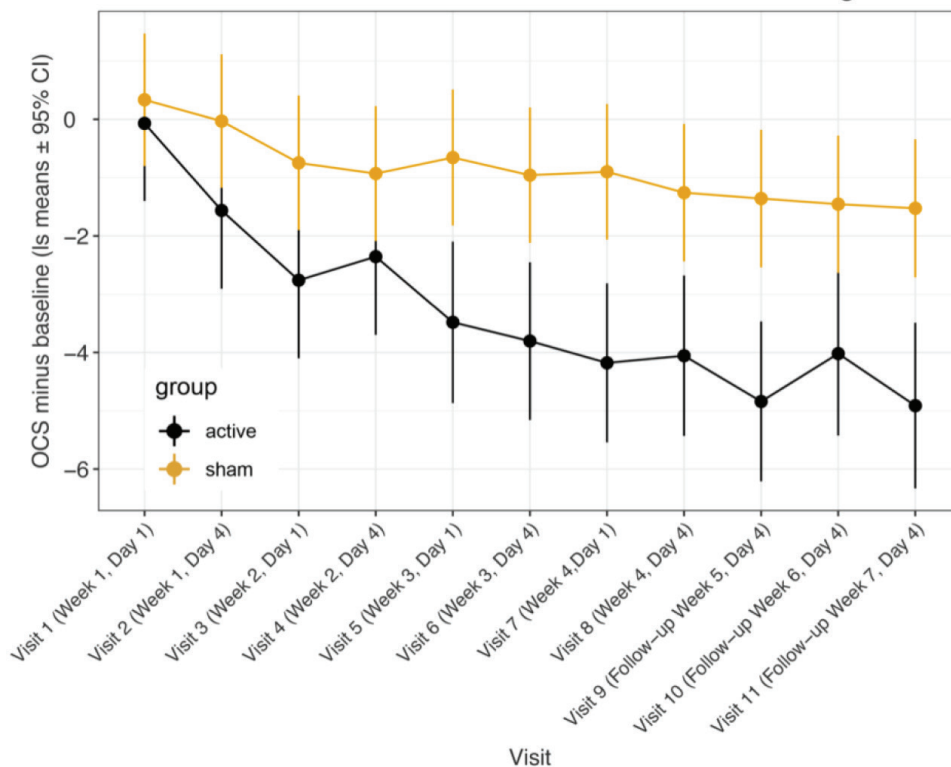
¹MindLight, LLC, USA

²McLean Hospital and the Harvard Medical School, USA

Schiffer has proposed and tested and published his novel hypothesis about the relation between the cerebral hemispheres and psychopathology. His ideas come out of his clinical observations and the split-brain studies and are combined in what he has termed dual-brain psychology (DBP), which posits that one brain hemisphere, left or right, as a trait in an individual is more

affected by early complex traumas and he has found in his clinical practice and in two published randomized control trials that activating the healthier hemisphere with unilateral transcranial photobiomodulation (UtPBM), near infrared mode has been highly successful in treating a range of psychiatric disorders including opioid use disorder. Here we will focus on the latest NIH funded trial

Effects of Active versus Sham Treatment on Craving



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in which we sought to treat 39 participants mostly from CraigsList.com who reported significant opioid cravings. 19 participants were treated with an active LED and 20 with a sham, which used the identical device with foil over the LED. The study was conducted and 2 sites, both of which reported similar results. The participants were treated twice a week for 4 weeks with 3 weekly follow-ups. The results as shown in Figure 1. showed that from baseline to the 3rd follow up there was a highly significant better improvement in the active group versus the sham and at the end of treatment and at the 3rd follow-up with an effect size was 1.5. At the McLean site

there was also a very significant decrease in opioid use in the active group but not sham. In Schiffer's private practice he combines this UtPBM treatment with psychotherapy based on DBP, but in this control study, participants received only a twice weekly UtPBM treatment or sham. We feel the study show that UtPBM can be used as a stand-alone treatment or in combination with buprenorphine. From private practice, we feel it is greatly augmented when combined with dual-brain psychotherapy and we feel that this randomized control trial supports the novel hypotheses of DBP from which the UtPBM evolved. There were no adverse reactions observed or reported.

Biography

Fredric Schiffer, MD, is a research associate at McLean and an assistant professor of psychiatry, part-time, at Harvard Medical School. He has been studying the relationship between past traumas, cerebral laterality, and depression, anxiety, and addiction and has developed a hypothesis on the physical nature of conscious experience and its relation to the brain and to psychological function. Dr. Schiffer also studies the role that near infrared light directed through the forehead to the brain may play as a treatment for psychological problems, including opioid use disorders. He maintains a private practice of adult psychiatry in Newton, Massachusetts and is the Founder and CEO of MindLight, LLC and the Dual-Brain Psychology Institute.

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Targeting neuroinflammation: A novel Approach to treating vasospasm following subarachnoid hemorrhage

**Brandon Lucke-Wold, William Dodd, Kartik Motwani,
 Koji Hosaka, Dimitri Laurent, Melanie Martinez, Victoria
 Dugan, Nohra Chalouhi, Richard Johnson and Brian Hoh**
University of Florida, USA

Background: Cerebral vasospasm (CV) can contribute significant morbidity for subarachnoid hemorrhage (SAH) patients. A key unknown is how CV induction is triggered following SAH.

Methods: c57/bl6 wild type and c57/bl6 IL-6 female knockout (KO) mice were utilized with groups: saline injected, SAH, SAH + IL-6 blockade, SAH IL-6 KO, SAH IL-6 KO + IL-6 administration. For SAH, 50 μ m blood was collected from tail puncture and administered into basal cisterns. IL-6 blockade was given at various time points. Various markers of neuroinflammation were measured with western blot and immunohistochemistry. Cerebral blood flow was also measured. Vasospasm was measured via cardiac injection of india-ink/gelatin. Turning test and Garcia's modified SAH score were utilized. $P < 0.05$ was considered significant.

Results: IL-6 expression peaked 3 days following SAH ($p < 0.05$). Human IL-6 was increased in aneurysmal blood ($p < 0.05$). Receptor upregulation was periventricular and perivascular. A significant increase in BBB

markers endothelin 1 and occludin were noted following SAH but reduced with IL-6 blockade ($p < 0.01$). CV occurred 5 days post SAH but was absent in IL-6 KO mice and mitigated with IL-6 blockade ($p < 0.05$). IL-6 blockade, and IL-6 KO mitigated effects of SAH on cerebral blood flow ($p < 0.05$). SAH mice had impaired performance on turn test and poor Modified Garcia Scores compared to saline and IL-6 blockade. A distinct microglia phenotype was noted day 5 in the SAH group (overlap coefficients $r = 0.96$ and $r = 0.94$) for Arg1 and iNOS, which was altered by IL-6 blockade. Day 7, a significant increase in toll-like receptor 4 and Stat3 were noted. This was mitigated by IL-6 blockade and IL-6 KO, which also reduced Caspase 3 ($p < 0.05$). Ventricular dilation and increased tunel positivity were noted day 9 but resolved by IL-6 blockade ($p < 0.05$).

Conclusion: Correlation between IL-6 and CV has been well documented. We show that a mechanistic connection exists via the inflammatory response, and IL-6 blockade provides benefit in reducing CV and its consequences.

Biography

Brandon Lucke-Wold was born and raised in Colorado Springs, CO. He graduated magna cum laude with a BS in Neuroscience and distinction in honors from Baylor University. He completed his MD/PhD, Master's in Clinical and Translational Research, and the Global Health Track at West Virginia University School of Medicine. His research focus was on traumatic brain injury, neurosurgical simulation, and stroke. At West Virginia University, he also served as a health coach for the Diabetes Prevention and Management program in Morgantown and Charleston, WV, which significantly improved health outcomes for participants. In addition to his research and public health projects, he is



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a co-founder of the biotechnology company Wright-Wold Scientific, the pharmaceutical company CTE cure, and was a science advocate on Capitol Hill through the Washington Fellow's program.

He has also served as president of the WVU chapters for the American Association of Pharmaceutical Scientists, Neurosurgery Interest group, and Erlenmeyer Initiative Entrepreneur group. In addition, he has served as vice president for the graduate student neuroscience interest group, Nu Rho Psi Honor Society, and medical students for global health. He was an active member of the Gold Humanism Honor Society and Alpha Omega Alpha Honor Society. He is currently a member of the UF House Staff Council and Positive Culture Committee. He is married to Noelle Lucke-Wold and has two children. As a family, they enjoy running with their dogs, rock climbing, and traveling. In his spare time, Brandon frequently runs half marathons and 10ks together with his wife. Brandon also enjoys reading and discussing philosophy and playing chess. He is currently a Pgy4 neurosurgery resident at University of Florida with R25 funding and plans to pursue endovascular training.

SCIENTIFIC ABSTRACTS

DAY 2



Virtual Event

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FUTURE NEUROLOGY 2022

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Giant middle turbinate osteoma diagnosis and management

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Sinonasal osteomas are the commonest benign tumours of the paranasal sinuses with an approximate true incidence rate between 0.014% and 3%.

We present a patient with intractable frontal headache and intranasal polyposis, who was found to have a massive, complex osteoma arising within a concha bullosa. A 23 year old male presented with severe symptoms poorly responsible to medical management with rapidly progressive, associated with diplopia and imbalance.

Investigations : The scan revealed a very large osteoma (59.81 mm × 33.38 mm × 32.00 mm) arising within a right-sided concha bullosa of the middle turbinate and extending into the nasopharynx was shown in CT scan.

Management : The patient underwent an urgent image-guided modified endoscopic

Lothrop's procedure to facilitate complete endoscopic excision through sinus drainage. To date, there are only 8 case reports of osteoma of the middle turbinate. We are, presenting the case where the osteoma of an aerated middle turbinate was of such a massive size. This case highlights the importance of giving common symptoms, such as headache, the required attention and consideration before dismissing them as trivial.

Conclusion: The case reported herewith represents the largest known concha bullosa osteoma. It is the first to be removed entirely endoscopically. It is also the first removed via a modified endoscopic Lothrop approach. This very challenging case highlights the importance of thorough interrogation of pre-operative clinical assessment, imaging and careful planning of the surgical procedure.

Biography

MohamedEisa El-Amin is MBBS faculty of Medicine at University of Khartoum, completed MRCS-ENT from Royal college of Edinburgh, MCh from Edge Hill University. He has done Core surgical training -ENT in Manchester UK



Thalamic vs. midbrain tremor: Two distinct types of Holmes' Tremor

S. Alusi¹ and N. Nsengiyumva²

¹*The Walton Centre NHS Foundation Trust, UK*

²*Hope Africa University, Burundi*

Introduction: Holmes Tremor (HT) is a unique and debilitating movement disorder. It usually results from lesions of the midbrain and its connection but can also result from posterior thalamic injury. Clinical examination can help lesion localization between these two areas. We studied the clinical features and their radiological correlations to distinguish midbrain HT (HT-m) from thalamic HT (HT-t).

Methods: Retrospective review of 17 patients with a HT-type presentation was conducted. Tremor characteristics, associated clinical signs and radiological findings were studied.

Results: Eleven patients had a myorhythmic rest tremor, large amplitude proximal tremor with

goal-directed worsening, with or without mild distal dystonic posturing, representing HT-m. Six patients had slow, large amplitude proximal tremors and distal choreathetoid movements, significant proximal/distal dystonic posturing, associated with proprioceptive sensory loss, representing HT-t. Haemorrhagic lesions were the predominant cause of HT-m; whereas, ischaemia was more commonly associated with HT-t.

Conclusion: When assessing patients with HT, attentiveness to the presence of associated signs in the affected limb, such as a proprioceptive sensory deficits and additional movement disorders, can aid lesion localisation, which can have implications for management.

Biography

Sundus Alusi, MBChB, MD, FRCP, is a consultant neurologist at the Walton Centre NHS Foundation Trust, UK. She subspecialises in Movement Disorders. She has a special interest in Tremor, Huntington's Disease, FXTAS and Deep Brain Stimulation. She has published her research in several peer reviewed journals.

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DNA nanotechnology for modulating the growth and development of neurons

Mirza Muhammad Faran Ashraf Baig

The University of Hong Kong, Hong Kong SAR

Objectives: DNA nanodevice was developed for the bioimaging of late prenatal growth, early postnatal growth, and layering of the neocortical neurons (NC-Ns) which play determining roles in the development of the cerebral cortex (CC).

Scope: Here, we systematically explore the interactive role of neuronal surface receptors (NSRs) on cytoskeleton activation (CA) and the piconewton (pN) force generation (P-FG) and their influence on the proper development, growth, and functioning of neurons using a designed DNA nanomechanical device (DNA-NMD).

Methods: The DNA-NMD, functioning as a molecular tension probe (MTP), was used to selectively bind the different NSRs (β -NGFR, Reelin, and Integrin) to mono-, bi-, and trip

specifically activate the receptors on the NC-Ns surface for imaging and calculating the P-FG involved in various processes.

Results: Measurements in vivo on the brain of newly born Institute of Cancer Research mice (early postnatal) or in vitro after extracting neurons from the fetal brain of pregnant Institute of Cancer Research mice (late prenatal) reveal that there are augmented interactive roles of the β -NGFR with Integrin and Reelin receptors (RR) on the CA and P-FG.

Conclusion: The DNA-NMD enhanced the cytoskeletal activations and directional migration of the neuronal endings (M-NEs), which favored layering, the somal terminal translocation (S-TT), and the early postnatal growth.

Biography

Dr. Mirza Muhammad Faran Ashraf Baig is a registered Pharmacist and currently a post-doctoral fellow at the Faculty of Dentistry, The University of Hong Kong under the supervision of Professor Chengfei Zhang. He received his Doctor of Pharmacy (PharmD) and MPhil (Pharmaceutical Chemistry) degrees from the Faculty of Pharmacy, Bahauddin Zakariya University (BZU), Multan, Pakistan, and a Ph.D. degree from the School of Chemistry and Chemical Engineering, Nanjing University (NJU), China under the supervision of Prof. Dr. Xing-Hua Xia. His research work is about Biomedical Engineering, Mechano-Pharmacology, Polymers, Material Chemistry, DNA Nanotechnology, Developmental Biology, Neuroscience, Nano-Therapeutics, Bio-sensing, Bio-imaging, Diagnostics, Biotechnology, Biophysics, and Biochemistry. His current research focus is designing DNA-based novel functional & bio-active nanomaterials to apply in Restorative Dentistry, Oral Microbiology & Oncology, Regenerative Therapeutics, Stem Cells Research, Drug Delivery, and Molecular Pharmaceutics. He published in the top journals e.g Nano Letters (ACS, USA), indexed in Harvard University Library Press.

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Longitudinal evaluation of striatal dysfunctions in autism spectrum disorders

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 AL. Huot⁴ and PO. Fernagut¹**

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⁴Plateforme Prebios, Université de Poitiers, France

The autism spectrum disorder (ASD) is a non-lethal neurodevelopmental disorder. The adult ASD patients carry a substantial comorbidity burden leading to a “premature aging” and a reduced life expectancy. Our main question was whether this “premature aging” is a mere consequence of initial neurodevelopmental deficits or due to a cumulative pathological process. We used *ex vivo* electrophysiology, optogenetics, chemogenetics, behavioural assessment and neuroanatomy to characterize the dysfunctions

at different ages. We focused on identifying the onset of striatal dysfunctions in mouse models of ASD. We observed a worsening in motor dysfunctions in aged ASD animals. In addition, our preliminary data showed premature morphological alterations of striatal neurons in adult ASD. In addition, our results suggest that striatal interneurons could also be dysfunctional. These results open up a new field of investigation to better understand lifelong consequences of ASD in adults.

Biography

Galvan Laurie is an associate professor at the University of Poitiers since 2017 and part of the LNEC (laboratoire de neurosciences expérimentales et cliniques (U-1084)). She obtained her PhD in 2011 (CEA) and she completed a postdoctoral stay at UCLA from 2011 to 2016 (project scientist from 2016-2017). She has been very interested in understanding the basal ganglia network in pathological conditions both during her thesis/post doc period (Huntington's disease) and currently (Autism Spectrum Disorders). She investigates the underlying mechanisms leading to a damageable phenotype in rodent transgenic model of the disease.

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Aqueously lyophilisate of malvaviscus arboreus dill. Ex cav. Leaves exerts antiepileptogenic properties via a modulation of gabaergic neurotransmission, neuroinflammation and oxidative stress in rats

**M. B. Adassi¹, G.T. Ngoupaye², F.A. Foutsop²,
F.B. Yassi³ and E. Ngo Bum¹**

¹University of Maroua, Cameroon

²University of Dschang, Cameroon

³University of Ngaoundéré, Cameroon

Epilepsy remains one of the most challenging neurological disorders worldwide and particularly in sub-Saharan Africa, where the epilepsy treatment gap remains very high. The present study thus aimed to evaluate the antiepileptogenic properties of *Malvaviscus arboreus* in rats. Apart from the vehicle, animals were challenged with Pentylenetetrazole (PTZ) (70mg/kg). All the challenged animals were later divided into the treatment groups (negative control, valproate 300 mg/kg, *M. arboreus* 122.5, 245 and 490 mg/kg). Except the vehicle, all the other groups were subjected to kindling PTZ, consisting of repeated administration of PTZ at a dose of 35 mg/kg every other day. The percentage of protection against seizure and the seizure progression were assessed. TNF α and TGF β 1 levels were assessed using ELISA. GABA, GABA transaminase and oxidative stress were assessed in the hippocampus using

spectrophometric assay and histological analysis using cresyl-violet staining. Results showed that the aqueous extract of *M. arboreus* leaves at a dose of 245 mg/kg significantly increased the number of injections needed to reach the kindled state ($p < 0.001$) and protected animals against the development of epilepsy ($P < 0.001$). The lyophilisate significantly decreased the activity of GABA transaminase ($p < 0.01$), the levels of TNF α ($P < 0.001$), TGF β 1 ($P < 0.001$) and Malondialdehyde ($P < 0.05$), and increased the concentration of GABA ($p < 0.05$), Reduced Glutathione ($p < 0.001$) and Catalase ($p < 0.001$), and also preserved the architecture of the hippocampus and prevented necrosis of neurons. The aqueous lyophilisate of the leaves of *M. arboreus* thus has antiepileptogenic properties and could therefore be of great benefit in the alternative and complementary therapy of epilepsy.

Biography

Maxwell ADASSI is a young scientist of Cameroonian nationality, holder of a Master of Science in Animal Physiology, specialty neurophysiology, and enrolled in the 3rd year PhD study at the University of Maroua in Cameroon. His research work focuses on the evaluation and enhancement of plants from the Cameroonian pharmacopoeia in the treatment of epilepsy and its comorbidities. He won 2 prizes from the Cameroon Association of Neurosciences (CAMANE), including the prize for the best oral presentation (2018) and the best poster presentation (2020). He also won the 3rd prize in the "my thesis in 180 seconds" competition organized by the Cameroon Biosciences Society (2019). He moreover actively participated in several editions of the Brain Awareness Week in Cameroon. This young enthusiast of everything concerning brain and its functioning, as well as phytopharmacology, is one of those who think that "when the Brain doesn't work, the rest doesn't matter".



Anti- β 2-glycoprotein I autoantibody expression as a potential biomarker for strokes in patients with anti-phospholipid syndrome

Husham Bayazed¹ and Zainalabideen A. Abdullah²

¹Zakho University, Iraq

²Mosul University, Iraq

Anti-phospholipid syndrome (APS) is an autoimmune disease. Cerebral ischemia associated with APS occurs at a younger age than typical atherothrombotic cerebrovascular disease and is often recurrent. This study sought to determine the frequency rates of anti-cardiolipin (aCL) dependent on the presence of β 2-GPI, anti- β 2-glycoprotein I (a β 2-GPI), and anti-phosphatidyl serine (aPS) IgG autoantibodies among stroke patients. Stroke patients and control subjects recruited from Mosul, Erbil, and Dohuk provinces in Northern Iraq were evaluated. All cases were under 50 years-of-age and had no recognizable risk factors. Using ELISA, the results indicated that the frequency of a β 2-GPI was 14/50 (28%), aCL was 11/50 (22%), and aPS was 9/50 (18%) among stroke patients. In contrast, aCL was detected in 2/30 (6.7%) of control

subjects; each of the other anti-phospholipid antibodies (APLA) was never observed. Of all the a β 2-GPI+ cases, the incidence of stroke patients having the combined profile of a β 2-GPI + aCL was 11/14 (78.6%) and of a β 2-GPI + aPS was 9/14 (64.3%). Only 2/14 (14.3%) of these a β 2-GPI+ patients also expressed aCL in the absence of aPS. In none of the APS/stroke patients were aCL or aPS expressed in the absence of the a β 2-GPI. Conversely, a β 2-GPI as a sole marker was seen in 3/14 (21.4%) of these patients (i.e., in absence of either other marker). It can be concluded from these studies that among the three major forms of APLA examined, the presence of a β 2-GPI IgG autoantibodies appeared to correlate best with stroke in patients who were concurrently suffering APS.

Biography

Prof Dr. Husham Bayazed has completed his PhD from University of Mosul, College of Medicine. He is now Consultant Immunologist at Scientific Research Center, University of Zakho / Kurdistan Region. He is specialist in clinical Immunology with interest in Neuro-immunology and has published more than 25 papers in reputed journals and has been serving as scientific reviewers of many local and international medical journals. In addition of being Fellowship of ISC, Infection, Cancer and Immunology Advisory Board Member (EUROMDnet) (Belgium), Membership of World Stroke Organization, Membership of Metabolomics (USA), and Membership of American Association of Science & Technology.

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Efficacy and toxicity analysis of imatinib in newly diagnosed patients of chronic myeloid leukaemia: 18-years' experience at a single large-volume centre

K. Shah, R.Yadav, S. Parikh, H. Panchal, A. Patel, A. Garg, K. Shah, P. Basu, V.C. Patel, S.R. Ganta, S. Ravichandran and D. Banerjee

Gujarat Cancer Research Institute, India

Background: Imatinib (IM) remains a path-breaking treatment for chronic myeloid leukemia (CML). We report 18 years of experience in treating patients of CML with IM at a single large-volume center.

Methods: A retrospective analysis of 158 CML adult patients who received IM from September 2002 until August 2009 was done. Response (hematologic), progression-free survival (PFS) and toxicity were evaluated. RT-PCR was established in our institute in 2011; before that, its documentation was few and far between. On progression, dose of IM was sequentially increased to 600mg and 800mg.

Results: At a median follow up of 15.1 years, analysis of 132 patients was done; 26(16.7%) lost to follow-ups were excluded from the analysis. Median Age presentation was 37 (IQR 30-45), with a slight female skew (54%). The most common presentation was fatigue (41%) and abdominal fullness (23%), median haemoglobin was 9.6 gm/dl (IQR 8.4-11.3), and total leucocyte count 92×10^3 (IQR 32.2×10^3 - 15.7×10^4). Mean time to complete haematological response (CHR) was 2.6 months (S.D+0.7 months), and complete cytogenetic response (CCyR) was documented in 81.3%. Of

the analyzed, 58 (43.9%) progressed (loss of either CHR or CCyR) on IM 400, in these the dose of IM was escalated. Mean PFS on IM 400 was 146.4 months (95% CI; 131-161). On IM 600, 25 (43.1%) progressed and were started on IM 800; of these, 9(36%) progressed on IM 800mg and were shifted to second-line tyrosine kinase inhibitors (TKI). Haematological toxicity was seen in 32 (24%) patients; non-haematological side effects were seen in 36 (27.3%), both most commonly in first two years. Grade III or IV side effects were rare. At the time of analysis, 6 (4.6%) had progressed to blast crisis.

Conclusions: This 15.1-year median follow up has shown that IM is a highly effective and safe drug for first-line treatment of CML-CP. It is phenomenal in inducing CHR and CCyR with a safety profile to envy. For patients progressing on IM 400, the dose consequentially and subsequently be increased to 600 and 800, with acceptable toxicity. This data should benefit low- and middle-income countries where second-generation TKIs are not a financially feasible option upfront.



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Biography

Dr. Kajal Shah is a Medical Oncologist and Haematologist and has an aim is deliver quality and compassionate care to her patients since 2012. Dr. Shah has left no stone unturned in making special efforts in accommodating individual needs of her patients. She utilizes her domain expertise and experience in providing best and state-of-the-art care by encouraging honest and transparent treatments. She is known for delivering patient centred and result oriented treatments. She uses chemotherapy, immunotherapy, hormonal therapy, targeted therapy and most importantly supportive/palliative care in an effective manner for treatment for all solid tumors as wells as haematological cancers in adults and children.

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Bilateral open lip schizencephaly

Turyalai Hakimi, Khalid and M, Qasem

Kabul University of Medical Science, Afghanistan

Schizencephaly is a central nervous system (CNS) developmental disorder characterized by abnormal cleft extending from the lateral ventricles to the cerebral cortex. Clinically, it occurs as trans-mantle, closed lip and open lip types which may be unilateral or bilateral. The exact cause of schizencephaly is not known but genetic disorders, exposure to teratogens, viral infections and maternal

age are implicated. We present a case of bilateral open lip schizencephaly with some degrees of neurological disorders caused by increased intra-cranial pressure (ICP) due to ventriculomegaly. We applied ventriculo-peritoneal shunt (V-P shunt) to the patient with considerable improvement after post-operative follow-up.

Biography

Turyalai Hakimi is an associate professor and Head department of pediatric surgery, Kabul University of medical science, Maiwand teaching hospital. He is PEER REVIEWER (Baishideng Publishing Group Inc: Pleasanton, CA, US). He has over 23 research papers in the national and international journals.

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Physical activity affect executive functions in children with attention deficit disorder: A randomized, controlled trial with 3-month follow-up

Sakineh Soltani Kouhbanani

Ferdowsi University of Mashhad, Iran

Objectives: Since few studies have explored the impact of Physical Activity on cognitive functions in children with Attention Deficit/ Disorder (ADD), this study is designed to evaluate the impact Physical Activity training Affect executive functions in children with ADD.

Methods: sample of 60 children with ADD in the age range of 10 to 14 years were randomized into a 16-week Physical Activity training (n = 30) or control group (n = 30.). Also, the participants were followed up after 3months Physical Activity

Results: Significantly benefited performance in EF in post-test and follow-up, particularly in omission errors, commission errors, and reaction time ($p < 0.05$). also, the results showed that switching attention just significantly improved in post-test, in perseverative error, non-perseverative error, and total error ($p < 0.05$).

conclusion : Findings support Physical Activity on attention difficulties in in children with ADD.

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Teaching reflection of using technology tools in art and design courses with students of disability

Nouf Alsuwaida

University of Ha'il, Saudi Arabia

Speech disorders can affect students who attend university or colleges. They have difficulty communicating with regular students or teachers, especially face-to-face classrooms. Speech is one of the main ways students communicate their thoughts, feelings, and ideas with peers and teachers. However, Learning becomes successful with quality teaching. Technology is an effective tool for teaching students with diverse needs. It may be quite supportive in combining different approaches in lessons and addressing various intelligence of the students. With the advancement in technology, it has become easier for a teacher of the 21st century to incorporate different learning styles in a lesson. Such lessons facilitate students in acquiring knowledge according to their individual needs. It is an important aspect of diverse student populations that must be given particular attention to the students with special needs. In such a classroom scenario, where a teacher has students with special

needs and other students, he must be sensible enough to make special arrangements for the students with special needs to make their learning process smooth and useful. Learning technology is the best way for students with special needs. This article explores the challenges experienced by a faculty member as she taught her online Art & Design courses to students of disabilities. The study highlights how distance learning encourages students with special needs after teaching Art online courses with regular students. Utilizing an autoethnographic approach to examining her online courses, the author reflects on the challenges and successes experienced in designing and delivering an online environment. The instructor use technology to communicate with students with special needs. Recommendations are given for practical ways other Art & Design faculty can also build online classrooms that promote student of disability engagement and interactions using technology tools.

Biography

Dr.Nouf Alsuwaida is an assistant professor at the University of Hail in Saudi Arabia. Her doctoral studies focus on Educational Learning Technologies in the field of Art and Design at New Mexico State University in the United States. Nouf's teaching experience includes fashion design, textiles, Art and social media, Graphic Design, and the history of heritage in Saudi Arabia at the General Organization for Technical and Vocational Training, Princess Nora Bent Abdul Rahman University, and the University of Hail in Saudi Arabia. Her research interests are in women's education issues, women's traditional textiles and fashion, teaching and learning in art and design, social media in the curriculum, and technology theories in pedagogy.

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Intersection of the digital phenotyping and digital neuromarketing? A threat or an opportunity?

Hossein Akbarialiabad

Shiraz University of Medical Sciences, Iran

The new era of digitalized knowledge and information technology (IT) has improved efficiency in all medical fields, and digital health solutions are becoming the norm. There has also been an upsurge in utilizing digital solutions during the COVID-19 pandemic to address the unmet mental healthcare needs, especially for those unable to afford in-person office-based therapy sessions or those living in remote rural areas with limited access to mental healthcare providers. Despite these benefits, there are significant concerns regarding the widespread use of such technologies in the healthcare system. A few of those concerns are a potential breach in the patients' privacy, confidentiality, and the agency of patients being at risk of getting used for marketing or data harnessing purposes. Digital phenotyping aims to detect and categorize an individual's behavior, activities, interests, and psychological features to

properly customize future communications or mental care for that individual. Neuromarketing seeks to investigate an individual's neuronal response(s) (cortical and subcortical autonomic) characteristics and uses this data to direct the person into purchasing merchandise of interest, or shaping individual's opinion in consumer, social or political decision making, etc. This commentary's primary concern is the intersection of these two concepts that would be an inevitable threat, more so, in the post-COVID era when disparities would be exaggerated globally. We also addressed the potential "dark web" applications in this intersection, worsening the crisis. We intend to raise attention toward this new threat, as the impacts might be more damming in low-income settings or/with vulnerable populations. Legal, health ethics, and government regulatory processes looking at broader impacts of digital marketing need to be in place.

Biography

Dr. Hossein Akbarialiabad M.D.M.Sc. has been involved in multi-disciplinary research in the areas of global/public health, mentorship in academic medicine, mental health and digital health(digital phenotyping and artificial intelligence). He has recently focused on studying neuro-oncological problems associated with less known conditions such as space missions, and Antarctica (south pole).

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Numerical models for blood flow in carotid arteries

T S L Radhika
BITS Pilani, India

It is known that cardiovascular diseases are the major contributor to deaths every year worldwide. Most of these are due to atherosclerosis, a disease in which plaque builds up inside the arteries in the heart, brain, arms, legs, pelvis or kidneys, thus, leading to the development of Coronary heart disease, Carotid heart disease, Peripheral heart disease, chronic kidney disease. In this talk, I present our work on the blood flow dynamics in a diseased human coronary artery caused

due to atherosclerosis. This study is essential, particularly in the current situation where COVID-19 has affected the majority of the population across the globe, and studies have revealed that COVID-19 patients are more at risk for the occlusions in arteries and veins [1].

In our work, we developed numerical models using idealized geometry for the carotid artery with Newtonian and non-Newtonian models for blood.

Biography

Dr. T S L Radhika is working as an Assistant Professor in the Department of Mathematics at BITS Pilani, Hyderabad campus. She has a rich teaching experience of 25 years and has to her credit of publishing 25+ papers in various national and international journals.

Dr. T S L Radhika works in the area of Fluid mechanics. Her earlier works include the flow of non-Newtonian fluid past porous Spheroidal bodies and Spheroidal shells. She is currently working on semi-analytical solutions to fluid flow problems in flexible circular pipes with blood flow applications in the human circulatory system. Her other areas of interest include flow in curved pipes and heat and fluid flow past axisymmetric bodies in non-Cartesian coordinate systems like Spheroidal and Bipolar. She has co-authored a book on "Approximate methods for solving Ordinary Differential equations", published by CRC Press, Taylor and Francis Group, Boca Raton, 2015.

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Automatic micro-expression apex spotting using Cubic-LBP

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²Department of Electrical Engineering, Islamic Azad University, Iran

The main way to communicate is through non-verbal expressions, although it could totally be manipulated by the person to give false expression. Unlike ordinary facial expressions, facial micro-expression has characterized by subtle movement and short duration of appearance which unleashes the true expression beyond the control of the person. Due to the nature of micro-expression which is very brief in time and low in intensity, prevalent methods could not come up with its challenges. One of the well-known dynamic texture descriptors is Local Binary Patterns on Three Orthogonal Planes (LBP-TOP) which mainly

lacks in grabbing most vital information. To address this issue in this paper, we propose a novel feature extractor called Cubic-LBP that computes LBP on fifteen introduced planes. We demonstrate the effectiveness of these planes to find the apex frame where maximum facial movements within video sequences have occurred. Moreover, the whole process of spotting the apex frame in this paper is done automatically. Achieving results of apex frame spotting is satisfying on CASME and CASME II databases in comparison with most relevant state-of-the-art methods.

Biography

Vida Esmaeili received her B.S. degree in electrical engineering from the Azad University of Abhar, Iran, in 2015 and the M.S. degree in electrical engineering from the Azad University of Qazvin, Iran, in 2018. Since 2019, she has been working toward a Ph.D. degree in communication at Tabriz University, Iran. Her research interests include the area of image processing, machine learning, pattern recognition, and quantum communication.

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A novel approach to defeat Alzheimer's disease: Empowering the immune system to mobilize monocyte-derived macrophages

Michal Schwartz

Weizmann Institute of Science, Israel

Neurodegenerative diseases in general, and Alzheimer's disease (AD) in particular, are associated with multiple factors that contribute to disease escalation. Using immunological and immunogenomic tools, we described how aging of the immune system affects manifestation and progression of neurodegenerative diseases, which led us to envision that boosting the immune system might help supporting the brain. We found that one way to achieve this effect is by modestly reducing the restraints that are imposed on the immune system by the inhibitory immune checkpoint PD-1/PD-L1 pathway. Using this approach facilitated mobilization of bone-marrow-derived macrophages to the diseased brain in animal models of amyloidosis and tauopathy. Systemic blocking CCR2, the chemokine receptor for monocytes migration,

abrogated the beneficial effect. Transcriptomic profile of the MDM, using single cell RNASeq revealed that they express molecules associated with anti-inflammatory activity, and scavenger receptors that can uniquely remove the intermediate toxic forms of misfolded proteins, dead cells, and cell debris, and thereby rescue synapses and brain function. We further found that the treatment was also effective in Trem2-deficient 5xFAD mice, which exhibited improvement of cognitive performance, reduced inflammation, and reduction of the amyloid beta oligomers, though not the plaques. Overall, our results indicate that targeting systemic rather than brain-specific disease-escalating factors provides a potential multi-dimensional disease-modifying therapeutic for AD and dementia, regardless of the primary disease etiology.

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The role of using Zebrafish model in spinal cord injury

Faezeh Soveyzi

Tehran university of medical sciences, Iran

Given the significant prevalence of spinal cord injury in developed and developing societies and the involvement of all age groups, finding a new way to treat it is of interest to everyone. According to the World Health Organization, 250,000 to 500,000 people suffer from this problem every year, and this problem reduces their quality of life and increases their mortality. At present, the role of cell therapy and the use of stem cell types as reconstructive medicine in the treatment of damaged tissues is like spinal cord a new phenomenon. Nowadays, Zebrafish has been discussed to be used as a new and possibly the most effective approach in the treatment of spinal cord injuries. One of the reasons that makes this model superior to other conventional models is the ability of

Zebrafish in repairs related to nerve injuries. The ability of axons to regrow rapidly after injury, the absence of permanent scarring, and no existence of immune rejection after transplantation are cases that strongly support this opinion. Zebrafish cells are in small size, growth rapidly and their genomes are very similar to the human genome that makes them suitable for research in this area. Also, the advanced cognitive behaviors of this animal are amazing. There is no need to use drugs that reduce the immune system in Zebrafish model due to absence of immune rejection unlike other animal models. Therefore, these advanced features and significant superiorities in Zebrafish model should be further researched so that it can be used to discover the secrets of repairing spinal cord injuries.

Biography

Faezeh Soveyzi is 24 years old, born in Mashhad, Iran. She is a medical intern at Tehran University of Medical sciences. In addition to study medicine and working at the clinic, she is very interested in research, so from the beginning of medicine, she worked in various fields and had a special interest in neurosurgery. That's why she started research at the University-affiliated Cell Therapy and Regenerative Medicine Research Center. In this center, they tried to first do the necessary studies on new issues in the field of neurosurgery and then write an article about the best idea. She wishes to take a big step towards healing patients with spinal cord injuries.

POSTER PRESENTATIONS

DAY 2



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Effects of muscle vibration on human postural responses

J. Kimijanová, Z. Hirjaková, F. Hlavačka and D. Bzdúšková

Department of Behavioural Neuroscience, Slovak Academy of Sciences, Slovakia

Human upright posture is maintained by the central nervous system via integration of afferent and efferent signals resulting in postural orientation and postural equilibrium. Small changes in body orientation with respect to gravity cause posture destabilization manifested as body deviations from the equilibrium position. To control body sway, the postural system requires multimodal integration of visual, vestibular, and proprioceptive information. When influencing individual sensory inputs, a sensory conflict occurs, followed by a disturbance of the internal representation of the body vertical. By experimental stimulation of sensory systems, it is possible to study their relative roles in maintaining balance, and simultaneously monitor the impact of sensorimotor dysfunctions caused by age, disease or injury. One of the most effective ways of experimental stimulation of the proprioceptive system is the vibration of postural muscles or tendons, which leads to the so-called direction-dependent postural response. In our studies, we examined the responses to lower leg muscles vibration with different frequency and duration

in young and elderly, as well as Parkinson's patients or patients after anterior cruciate ligament reconstruction. We also investigated effect of vibratory-visual, and vibratory-galvanic co-stimulations and evaluated postural responses during the stimulation and immediately after the vibration offset. We recorded body sway and kinematics of the trunk using a force plate, inertial sensors and motion capture system. Our results indicate that magnitude of postural responses increases linearly with increasing frequency and duration of vibration. We found that vision availability is crucial in responding to stimulus offset, with absent vision resulting in a greater postural response regardless of age. Significant differences due to age and Parkinson's disease were manifested as increased velocity of body sway and trunk tilts. A significant overshoot of the center of pressure over the initial equilibrium position suggests increased rigidity of movements in response to proprioceptive alteration.

This work was supported by the grants VEGA 2/0080/22 and APVV-20-0420.

Biography

Experimental researcher in the Department of Behavioural Neuroscience, Slovak Academy of Sciences. After studying natural sciences (MSc, DrSc), she obtained her PhD. in the field of Normal and Pathological Physiology at the Faculty of Medicine, Comenius University, Bratislava. Her work is focused on human balance control, influence of sensory information on maintaining static/dynamic balance during posture and gait. She is the first author and co-author of several publications in international current contents journals, co-investigator of national and international research projects, organizer of International Posture Symposium. She took part in research scholar in Balance Disorders Laboratory, Department of Neurology at Oregon Health & Science University, Portland, USA where she obtained experiences with evaluation of posture and gait in patients with Parkinson's disease and Multiple sclerosis. <https://orcid.org/0000-0002-8430-5666>



Assessment of postural changes due to age and Parkinson's disease

**D. Bzdúšková¹, P. Valkovič^{1,2}, J. Kimijanová¹,
 Z. Hirjaková¹ and F. Hlavačka¹**

¹Department of Behavioural Neuroscience, Slovak Academy of Sciences, Slovakia

²Department of Neurology, Comenius University, Slovakia

Postural instability and falls are major and devastating features of ageing and Parkinson's disease (PD). The balance problems and increased incidence of falls have been associated with decreased functional ability to adapt to altered sensory conditions. The aim was to clarify different effects of age and Parkinson's disease on dynamic postural responses to lower leg muscle vibration immediately after the stimulation offset. Sudden change of active sensory input represents a transient period in balance control. Understanding how early stages PD patients differ from neurologically intact peers is crucial for the appropriate medication and therapy before the PD full stage development, and thus contributes to improving the quality of life. Thirteen healthy young (mean age 25.0 ± 2.3), 13 healthy elderly (mean age 70.1 ± 4.5) and 13 PD patients (mean age 63.7 ± 5.7; mean duration of disease 1.9 ± 2.4 years)

participated in the study. Dynamic postural responses to bilateral vibration of soleus muscles during quiet stance were assessed by a force platform and two accelerometers attached on the upper and the lower trunk. While differences between young and elderly were seen during and after the vibration, PD patients were more influenced by the vibration offset. PD showed more unstable postural responses to selective sensory stimulation switch off, which may reflect impairment of sensory reweighting in balance control. Analysis of responses during the dynamic transient period immediately after stimulation offset can help to distinguish between age-related physiological changes and actual pathological changes in PD patients. Sudden changes of sensory inputs can challenge the postural stability of PD patients even in early stages with potential fall risk.

This work was supported by the grants VEGA 2/00080/22 and APVV-20-0420.

Biography

Experimental researcher in the Department of Behavioural Neuroscience, Center of Experimental Medicine of the Slovak Academy of Sciences, Bratislava, Slovak Republic. Her work is focused on standing balance analysis, especially for sensory stimulation during standing, postural leg muscle vibration and age-related changes in posture. She is the first author of several publications in international journals, co-investigator of international project EU FP6, principal investigator and co-investigator of national APVV and VEGA projects, a member of the organization committee of the International Posture Symposium focused on posture, gait and human balance.

<https://orcid.org/0000-0002-9142-2924>.

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Dose-effects models for space radiobiology: An overview on central nervous system dose-effect relationship

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 and A.G. Morganti**

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³Radiation Oncology Center, University of Bologna, Italy

Space radiobiology is an interdisciplinary science that examines the biological effects of ionizing radiation on humans involved in aerospace missions. The dose-effect models are one of the relevant topics of space radiobiology. Their knowledge is crucial for optimizing radioprotection strategies, the risk assessment of the health hazard related to human space exploration, and reducing damages induced to astronauts from galactic cosmic radiation.

Dose-effect relationships describe the observed damages to normal tissues or cancer induction during and after space flights. They are developed for the various dose ranges and radiation qualities characterizing the actual and the forecast space missions.

Based on a Pubmed search including 53 papers reporting the collected dose-effect relationships after space missions or in ground simulations, 7 significant dose-effect relationships (e.g., eye flashes, cataract, central nervous systems, cardiovascular disease, cancer, chromosomal aberrations, and biomarkers) have been identified. For each considered

effect, the absorbed dose thresholds and the uncertainties/limitations of the developed relationships are summarized and discussed. The current knowledge on this topic can benefit from further in vitro and in vivo radiobiological studies, an accurate characterization of the quality of space radiation, and the numerous experimental dose-effects data derived from the experience in the clinical use of ionizing radiation for diagnostic or treatments with doses like those foreseen for the future space missions.

The growing number of pooled studies could improve the prediction ability of dose-effect relationships for space exposure and reduce their uncertainty level. Novel research in the field is of paramount importance to reduce damages to astronauts from cosmic radiation before Beyond Low Earth Orbit exploration in the next future. The study aims at providing an overview of the published dose-effect relationships with a particular emphasis on the central nervous systems and illustrates novel perspectives to inspire future research.



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Biography

After the MD in Electronics Engineering, he joined the Italian Institute of Nuclear Physics (INFN) in 1992, working in the Rome division on developing supercomputers for theoretical physics numerical simulations. Later as a User Associate at the European Organization for Nuclear Research (CERN), I took part in the construction of the Compact Muon Solenoid (CMS) detector at the Large Hadron Collider (LHC). In 2012 CMS was one of the experiments that observed a new particle consistent with the predicted Higgs boson. For several years (1999-2011), he was a Lecturer at the Faculty of Engineering at the Sapienza University of Rome, responsible for courses on a computer science subject. Since 2000 he has been in the Alpha Magnetic Spectrometer collaboration (AMS) (<http://ams02.space>). AMS02 is a state-of-the-art particle physics detector operating on the International Space Station. His actual principal fields of interest are Space Radiobiology, Space Radiation Science and Cosmic Rays' Physics.

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Combined use of deep brain stimulation and spinal neurostimulation in a patient with Parkinson's disease and operated spine syndrome (clinical case)

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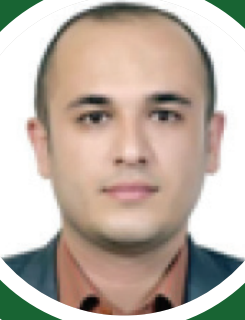
Spine degenerative lesions, particularly spinal stenosis and segmental instability, are often associated with Parkinson's disease (PD). A contributing factor to the cascade of degenerative changes in spinal structures is the disruption of the sagittal balance of the spine-pelvis axis. Among all comorbid conditions in PD, pain syndromes of various etiologies and varying degrees of severity occur in 92.3%. Back pain is the most common and occurring in 59.4%. Camptocormia (CC) among outpatients with PD ranges from 3 to 17%. Surgical treatment of PD patients, including CC for spinal

deformities, has recently become much more common. However, despite performing fixation surgeries on the spine, the impairment of the statics and dynamics of the spine is progressing and accompanied by further increase in pain syndrome. Information about the use of DBS in the treatment of PD-associated CC is accumulating in the current literature. However, there is no consensus among researchers on the choice of the optimal structure for deep brain stimulation (DBS) for the treatment of CC. The information about the combined use of different stimulation systems in one patient in available literature wasn't found.

Biography

Naryshkin Alexander Gennadievich graduated from the medical faculty of the Leningrad Sanitary and Hygienic Medical Institute in 1979. From 1984 to 1990 he worked as a neurosurgeon in the clinic of the USSR Academy of Medical Sciences. From 1990 to 1993 he was a neurosurgeon at the clinic of the "Human Brain Institute". From 1993 to 2005 he was the head of the neurosurgical departments of city hospitals. Since January 2006 he has been working at the "V. M. Bekhterev National Medical Research Center for Psychiatry and Neurology" as the leading scientific associate of the neurosurgical department. In 1991 he defended his dissertation "Clinical and pharmacological approaches to pathogenetic treatment of phantom pain syndrome". In 2006 he became a doctor of medical sciences with dissertation "The clinical and methodological aspects of transtympanic chemical destruction of vestibular receptors as a new method of functional neurosurgery (with the example of cervical dystonia)". He is a professor in the A.L. Polenov Neurosurgery Department of the Federal State Budgetary Institution of Higher Professional Education. The author of more than 200 publications, 10 inventions, and 16 textbooks.

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The effect of a supportive home care program on caregiver burden with stroke patients in Iran: An experimental study

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 T.Najafi Ghezalje² and Sh. Haghani³**

¹Critical Care Nursing Department, AJA University of Medical Sciences, Iran

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Background: Stroke can impose a heavy burden on caregivers. Caring for stroke patients at home is more challenging than in hospitals with facilities. The purpose of this study was to evaluate the effect of a supportive home care program on caregiver burden with stroke patients.

Methods: This was an experimental study. One hundred sixteen caregivers of stroke patients were recruited using convenience sampling from two university-affiliated hospitals in Tehran from June 2019 to February 2020. They were randomly allocated into two groups (supportive home care program and routine hospital education program) using a randomized block design. The supportive home care program included eight educational sessions delivered in the hospital before discharge, and with home visits after hospital discharge. Caregiver burden was measured using Caregiver Burden Inventory. The data

were analyzed using independent samples t-test and Analysis of Covariance.

Results: Caregiver burden in the routine education group increased significantly after 2 weeks, from 52.27 ± 23.95 to 62.63 ± 22.68 . The mean of caregiver burden scores in the supportive home care program decreased from 44.75 ± 17.21 to 40.46 ± 17.28 . The difference between the scores of the two groups before the intervention was not significantly different ($t = 1.941$, $df = 114$, $p = 0.055$). There was a significant difference between the two groups regarding caregiver burden scores after the intervention period ($\eta^2 = 0.305$, $P < 0.001$).

Conclusions: Caregiver burden increased significantly after the discharge without proper interventions in the caregivers of stroke patients. Providing support for home care providers can help to decrease or prevent the intensification of caregiver burden.

Biography

Farshid Alazmani Noodeh, is a 34 year old nurse. He was born in a green village in northern Iran. He lived there until the end of high school. After high school, he entered the university in the field of nursing. He graduated with my bachelor's and master's degrees from the Hamadan and Zanjan University of Medical Sciences in 2011 and 2015, respectively. In 2021, he received a PhD in nursing from Iran University of Medical Sciences. His focus was on nursing care for patients with neurological problems, so he conducted a dissertation about "Designing and Evaluating the Effect of a supportive program on the family caregivers' burden of patients with stroke in Tehran". Now, he is a faculty member of the Army University of Medical Sciences. In addition, he is a member of Iranian Nursing Organization.

ACCEPTED ABSTRACTS



Virtual Event

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FUTURE NEUROLOGY 2022

“
**Radiologically silent
 ruptured arteriovenous
 malformation of the
 brain with intracerebral
 hemorrhage in a neonate
 – case study and a
 literature review**
 ”

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Background: Pediatric arteriovenous malformations of the brain (bAVM) have a high morbidity rate when presented in neonates.

Objective: Our study aims to show that a bAVM isn't always a fatal cause in neonatal population and that it can be successfully treated.

Methodology: Literature review performed by F.D. and A.B. provides the means of understanding different clinical presentations and the success of surgical intervention of bAVMs in neonates. We present a case of a 2-day-old neonate suffering from a radiologically silent bAVM with a large intracerebral hematoma in left cerebral hemisphere. Patient was referred to the Department of Neurosurgery (CCUS), with Glasgow comma score (GCS) 4 co-occurring with right sided hemiparesis. Signs observed were: isochoric pupils, positive reaction on photo stimulation and flexion response upon pain stimulation. Computed tomography (CT) and magnetic resonance (MRI) showed large intracerebral hematoma with midline shift and compression effect on the brainstem.

Small parietotemporal craniotomy followed by microsurgical hematoma evacuation and resection of the bAVM was performed by senior authors A.A and E.B. Histological examination confirmed the diagnosis of bAVM. Following surgical treatment, patient recovers to GCS 15 and modified Rankin score (mRs) 0 with no major side effects besides minor hearing difficulties, but this also improves during the next 6 months. Postoperative MRI showed complete resection of the bAVM with residual porencephalic cyst without compressive effect and no seizure signs.

Conclusions: Conducting the literature review papers and comparing it to the case study presented, conclusion was made that urgent microsurgical evacuation of intracerebral hematoma and resection of the bAVM remains the gold standard treatment. The outcome is influenced by the timing of surgery as well as the clinical state of the patient. By our knowledge, this case report is a never-before-seen occurrence, where a fatal condition was resolved successfully.

“
**Could dapagliflozin
 attenuate COVID-19
 progression in high-
 risk patients with or
 without diabetes?
 Behind DARE-19
 concept**”

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Epidemiological studies indicate that diabetes is the second most common comorbidity in COVID-19 (Coronavirus Disease-2019). Dapagliflozin, a sodium-glucose co-transporter 2 inhibitor (SGLT2i), exerts direct cardioprotective and nephroprotective effects. DARE-19 (Dapagliflozin in Respiratory

Failure in Patients With COVID-19), an ongoing clinical trial, is designed to investigate the impact of dapagliflozin on COVID-19 progression. Our article discusses the potential favorable impact of dapagliflozin on COVID-19 and its complications.

“ A Mindfulness-based program for managing stress and promoting quality performed during hemodialysis: An experience report ”

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People with chronic kidney disease (CKD) undergoing hemodialysis have severe functional, psychological, and social limitations, causing suffering for the patient and high costs for the health system. Studies on Mindfulness-Based programs (MBPs) have shown positive effects for various mental and physical disorders. Evidence of the effects of MBPs for people with CKD is emerging and programs carried out during hemodialysis (HD) sessions are almost nonexistent. The present experience report aims to describe the Hemomindful Program, an MBP for managing stress and promoting quality of life for people with CKD undergoing hemodialysis. It was an eight-week MBI, performed individually, during the hemodialysis sessions. In the protocols used for the basis of this program, the learning of mindfulness is progressive, considering the needs of the participants and context, with these adjustments in the Hemomindful Program proving to be relevant to the process of developing the participants' mindful ability. A total of 15

adults undergoing hemodialysis treatment, 7 women and 8 men, with a mean age of 54 years (SD=14.9) participated in this study. A total of 80.0% of the participants completed the 8-week MBI program (n=12), with 03 losses throughout the process. All the participants considered the program accessible because it was performed during the HD sessions. The participants referred to positive benefits of the practice, such as greater awareness of body sensations, emotions and thoughts, less reactivity to deal with stressful situations, greater acceptance of experiences, feelings of well-being, changes in eating and fluid consumption habits, improved family relationships and better self-care. The Hemomindful Program presented positive indicators of feasibility, acceptability and safety and how it can contribute to managing stress and promoting quality of life for people with CKD undergoing HD. These results may contribute to future research projects and interventions with Mindfulness in the context of HD.

“
**Measures
 of interjoint
 coordination
 post-stroke
 across different
 upper limb
 movement tasks**
 ”

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Background: Deficits in interjoint coordination are frequent symptoms in stroke subjects with upper limb impairments that hinder them from regaining normal motor function. Kinematic measurements allow a fine-grained assessment of movement pathologies, thereby complementing clinical scales, like the Fugl-Meyer Motor Assessment of the Upper Extremity (FMMA-UE). The study goal was to investigate the effects of the performed task and the tested arm on spatiotemporal parameters of the elbow, shoulder, and trunk. The construct validity of the metrics was examined by relating them with each other and the FMMA-UE.

Methods: This cross-sectional observational study included chronic stroke patients with mild to moderate upper limb impairment. Kinematic measurements were taken using a wearable

sensor suit while performing four movements with both upper limbs: (1) isolated shoulder flexion, (2) pointing, (3) reach-to-grasp a glass, and (4) key insertion. The kinematic parameters included the joint ranges of shoulder abduction/adduction, shoulder flexion/extension, and elbow flexion/extension; trunk displacement; shoulder-elbow correlation coefficient; median slope; and curve efficiency. The effects of the task and tested arm on the metrics were investigated using a mixed-model analysis. The validity of metrics compared to clinically measured interjoint coordination (FMMA-UE) was done by correlation analysis.

Results: Twenty-six subjects were included in the analysis. The movement task and tested arm showed significant effects ($p < 0.05$) on all kinematic parameters. The level of upper limb



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function showed influences on curve efficiency. Relations with the FMMA-UE revealed the strongest and significant correlation for curve efficiency ($r = 0.75$), followed by shoulder flexion/extension ($r = 0.68$), elbow flexion/extension ($r = 0.53$), and shoulder abduction/adduction ($r = 0.49$).

Conclusion: The kinematic parameters of the upper limb after stroke were influenced largely by the task. These results underpin the necessity to assess different relevant functional movements close to real-world conditions rather than relying solely on clinical measures.

“
**Inflammatory gene
 expression profiling in
 peripheral blood from
 patients with Alzheimer’s
 disease reveals key
 pathways and hub genes
 with potential diagnostic
 utility: A preliminary study**
 ”

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¹Universidad Autónoma de Manizales, Colombia

²Genetracer Biotech, España

Background: Alzheimer’s disease (AD) is an age-related neurodegenerative disease caused by central nervous system disorders. Late-onset Alzheimer disease (LOAD) is the most common neurodegenerative disorder worldwide. Differences at the expression level of certain genes, resulting from either genetic variations or environmental interactions, might be one of the mechanisms underlying differential risks for developing AD. Peripheral blood genome transcriptional profiling may provide a powerful and minimally invasive tool for the identification of novel targets beyond A β and tau for AD research.

Methods: This preliminary study explores molecular pathogenesis of LOAD-related inflammation through next generation sequencing, to assess RNA expression profiles in peripheral blood from five patients with LOAD and 10 healthy controls.

Results: The analysis of RNA expression profiles revealed 94 genes up-regulated and 147 down-regulated. Gene function analysis, including Gene Ontology (GO) and KOBAS-Kyoto Encyclopedia of DEGs and Genomes (KEGG) pathways indicated upregulation of interferon family (INF) signaling, while the down-regulated genes were mainly associated with the cell cycle process. KEGG metabolic pathways mapping showed gene expression alterations in the signaling pathways of JAK/STAT, chemokines, MAP kinases and Alzheimer disease. The results of this preliminary study provided not only a comprehensive picture of gene expression, but also the key processes associated with pathology for the regulation of neuroinflammation, to improve the current mechanisms to treat LOAD.

“ **The influence of
 forehand spin level on
 potential development
 of epicondylitis in
 experienced tennis
 players** ”

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Tennis is a sport that can put remarkable stresses on the human body. One particular source of injuries in tennis players involves vibrational damage to the elbow and arm due to repetitive exposure to forces of impact when hitting the ball. Although there have been a number of biomechanical and surface electromyography studies that have investigated aspects of the tennis swing in relation to ball hitting, to date no one has looked in detail at the influence of the forehand spin level on forearm muscle activity and its potential influence on the development of the common elbow injury epicondylitis. The aetiology of epicondylitis is unknown, however, it is commonly believed to develop due to damage in the musculotendinous region of the extensor carpi radialis (ECR) muscles in the case of tennis elbow (lateral epicondylitis) and for golfer's elbow (medial epicondylitis), the flexor carpi radialis (FCR) muscle. In this project we aimed to address the overarching hypothesis that forehands hit with different

spin levels (flat, topspin and lob) have significant influence on the level of forearm muscle activity and that this may contribute to the development of epicondylitis. In order to achieve this we developed a low-cost microcontroller based wearable device that could measure the EMG activity of the forearm muscles associated with the development of elbow injuries in tennis players. This device was then tested on experienced male tennis players hitting forehand strokes under realistic tennis playing conditions. The device TRAM successfully measured the EMG activity of the forearm extensor and forearm flexor muscles under realistic tennis playing conditions for all three spin levels. We found that spin level did have a significant effect on the level of maximal forearm extensor activity in the flat stroke compared to the topspin and lob spin levels. Our results suggest that coaches could consider recommending players to hit forehands with topspin in order to potentially reduce the risk of developing lateral elbow tendinopathy.

“ **Spaceflight
 decelerates the
 epigenetic clock
 orchestrated with
 a global alteration
 in DNA methylome
 and transcriptome
 in the mouse retina** ”

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Astronauts exhibit an assortment of clinical abnormalities in their eyes during long-duration spaceflight. The purpose of this study was to determine whether spaceflight induces epigenomic and transcriptomic reprogramming in the retina or alters the epigenetic clock. The mice were flown for 37 days in animal enclosure modules on the International Space Station; ground-based control animals were maintained under similar housing conditions. Mouse retinas were isolated and both DNA methylome and transcriptome were determined by deep sequencing. We found

that a large number of genes were differentially methylated with spaceflight, whereas there were fewer differentially expressed genes at the transcriptome level. Several biological pathways involved in retinal diseases such as macular degeneration were significantly altered. Our results indicated that spaceflight decelerated the retinal epigenetic clock. This study demonstrates that spaceflight impacts the retina at the epigenomic and transcriptomic levels, and such changes could be involved in the etiology of eye-related disorders among astronauts.



Assessment of private health sector prescribing patterns and adherence to prescription format using World Health Organization core drug use indicators in Addis Ababa, Ethiopia



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²Arabisa Health Center, Ethiopia

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⁴Department of Pharmaceutics, University of Gondar, Ethiopia

Background: Currently, the private healthcare sector's role in healthcare delivery is growing in Ethiopia. However, there are limited studies on private healthcare sector drug use patterns. This study aimed to evaluate the private healthcare sector prescribing practices and adherence to prescription format, using some of the World Health Organization (WHO) core drug use indicators in Addis Ababa, Ethiopia.

Methods: A retrospective cross-sectional study design was used to collect quantitative data from prescriptions pre-scribed and dispensed by private healthcare sectors in the Lemi-Kura sub-city, Addis Ababa. The study was conducted from June to July 2021. Prescriptions, kept for the last 1 year that were prescribed between January 1, 2020, to January 1, 2021, by private drug outlets, were analysed. Simple random and systematic sampling procedures were employed in selecting drug outlets and prescriptions, respectively.

Results: Of a total of 1,200 prescriptions, 2,192 drugs were prescribed and the average number of drugs per prescription was 1.83. Generic names, antibiotics, injections, and drugs on the Ethiopian essential medicines list accounted for 77.4, 63.8, 11.5, and 80.6% of all prescriptions, respectively. Among the patient identifiers, the patient card number (54.3%), weight (2.3%), and diagnoses (31.7%) were less likely to be completed. In terms of the drug-related information, the dosage form (35.5%) was the least likely to be completed. Only 36.6 and 25.8% of prescriptions contained the names and qualifications of the prescribers, respectively.

Conclusion: The study findings indicated prescribing and prescription completeness indicators all considerably deviated from WHO standards and hence unsuitable. Consequently, it could play a considerable role in increasing irrational medicine use in Ethiopia.



Multilevel anterior cervical discectomy and fusion (ACDF) – systematic literature review



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 Kenan Arnautović³**

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Background: The degenerative pathologies of the cervical spine remain one of the most common spinal conditions. Anterior approach to the cervical spine has shown positive results for the treatment of a single or two levels. However, anterior cervical discectomy and fusion (ACDF) have become highly successful surgery in multilevel cervical disc disease. Nowadays, even when the fusion rate in a single or two-level is excellent, a certain amount of patients will suffer from further degeneration at the adjacent level within 10 years of the initial surgery. Furthermore, multilevel ACDF was found beneficial regarding kyphosis correction in degenerative spine.

Objective: To report literature review data regarding the safeness of the three and four levels ACDF as well as long-term advantages.

Methodology: A systematic literature review was performed by the author; H.R. The systematic literature search was performed in Google Scholar, Springer link, PubMed, Journal

of Neurosurgery, Journal of Neurological Surgery part A: Central European Neurosurgery, National Center of Biotechnology Information (NCBI), Asian Journal of Neurosurgery, Japanese Journal of Neurosurgery in the period between 2015-2021 with the exception of very informative earlier published studies.

Results: A total of 39 articles demonstrating varying degree of kyphosis correction were found. However, dysphagia and pseudoarthrosis remain the most common complications which lead to higher readmission rate. Usage of anterior cervical plating system is often recommended to improve the rate of fusion.

Conclusion: ACDF is recognized as a safe and satisfactory microsurgical treatment of the multi-level degenerative cervical disc disease in selected cases. However, there is still a lack of the data in prospective studies. Even though there was a significant rate of kyphosis correction found, minor complications are still present and need to be overcome.

“
**A study of the
cognitive function
of Chinese
characters based
on the semiotics
of writing**
”

Hyounjoo Shim

Inha University, South Korea

This paper attempts to critique phonocentrism based on linguistic signs and explores the cognitive functions of Chinese characters through semiotic concepts and approaches. From the semiotics of writing, this paper suggests a model of Chinese characters' perceptive cognition which works on schema of character codes and signification. This model logically demonstrates the process by which consumers recognize Chinese orthographic signs and associate with certain meanings. This paper also analyzes the process of signification performed by consumers in the

Sinosphere. Specifically examining some cases of branding strategies by Chinese and Korean companies, it endeavors to test the efficacy of the model by applying it to the model for perception cognitive of Chinese character. This study aims at expanding the discursive space for the incorporation of convergence theory and methodology. Presenting a semiotic model of sensory perception, the paper attempts to contribute to the establishment of semiotics based on Chinese characters which display eminent iconic, symbolic and cognitive function.

“
**Emergence of de
novo cutaneous
vasculitis post
coronavirus disease
(COVID-19)
vaccination**
”

Liang, I, Lee, Adrian Y.S and Swaminathan, S

Westmead Hospital, Australia

A 62 year old Asian female with no past medical history presents with bilateral lower limb non-blanching petechial rash 7 days after the first dose of Astra-Zeneca COVID-19 vaccination. She had associated generalized headache, myalgia and symmetrical large joint arthralgias. Further investigations did not reveal any other systemic features. Skin punch biopsies revealed findings consistent with a leukocytoclastic vasculitis.

The patient was commenced on a rapid tapering course of oral prednisone with good resolution and improvement in her symptoms. This is a case report highlighting that the Astra-Zeneca COVID-19 vaccination can result in the development of vasculitis. It is hoped that this presentation can help clinicians be aware that vasculitis can be a possible adverse reaction to the ChAdOx1 nCoV-19 vaccine, both de novo and pre-existing.

“ **Visual
neuroscience
in renaissance
paintings:
Role of spatial
frequencies** ”

Kishore Dutta

Department of Physics, Handique Girls' College, India

Understanding the relationship between the neural map of the human brain and the aesthetic behaviour was of great importance to Leonardo da Vinci (1452-1519) as a painter. His knowledge about the interconnectedness of human vision and emotion was best reflected in his Mona Lisa — one of the perennial portraits that bear witness to a transcendent level of creative art. It is one of his unique touchstones where he played with light and shade in such a way that the spatial frequency filtering process of our central and

peripheral parts of the visual field together with the tones and textures play a crucial role in creating the illusionistic and lifelike smile in Mona Lisa's face. By explaining how Leonardo created an unfathomable emotion in her smile and veiled her face by optics of uncertainty through the fusion of art and neuroscience, in this talk I would like to explain the connectivity between the neuroscience of human vision and the visual art that depicts elusive as well as illusive visual effects of optical perception.

“
**Transcranial direct
 current stimulation
 (TDCS) effects
 on attention
 enhancement: A
 preliminary event
 related potential
 (ERP) study**”

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Transcranial Direct Current Stimulation (tDCS) is a noninvasive tool for improving attention. But the impact of tDCS on attention enhancement is not yet well understood. The main goal of this paper is using Event Related Potentials (ERPs) to assess the impact of tDCS on brain activity during an attentional task. Thirteen subjects (6 males and 7 females, with mean age 24.53 ± 4.5), participated in this study. tDCS was used to stimulate Dorso Lateral Prefrontal Cortex (DLPFC) in the left hemisphere of subjects for 5 consecutive days. Immediately before and after the tDCS sessions, the subjects performed the Integrated Visual and Auditory-Adult Edition (IVA-AE) task while behavioral (reaction time) and neurophysiological (ERP) responses were measured. Specifically, the

amplitude of P600 was compared before and after stimulation. tDCS to the DLPFC led to a significant improvement in reaction time and an increase in visual P600 amplitude ($p < 0.05$). Also, the percent changes of P600 amplitude during visual target stimulation was significantly correlated with the percent changes of reaction time to visual targets ($r = -0.704$, $p = 0.007$). This is the first study to assess the tDCS effect on cognitive function by the biomarker extraction in the IVA task. The role of ERP in conflict-related tasks was found; tDCS applied over the DLPFC modulates executive function especially in visual attention during the IVA-AE task, as shown by an enhancement of visual P600 amplitude. Therefore, cognitive processing especially visual attention can be enhanced by using tDCS.

“
**Modeling of the
 electromagnetic
 field effect on the
 neuron electrical
 activity and its use
 for the treatment
 of certain cerebral
 pathologies**”

Marcel Wouapi Kemayou¹ and Florent Feudjio Kemwoue²

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Taking into account the external waves of the brain and mainly those coming from the electromagnetic radiation(s) surrounding us are essential for a good analysis of the different behaviors of human beings through the electrical activity described by their nervous system. For this, in this contribution, we propose a neuronal model which takes into account the diffusion phenomena of Ca⁺ and K⁺ ions on either side of the neuronal cell membrane. For this model, we show that it is able to reproduce the different behaviors reflecting the state of the neuron and generally obtained in the laboratory by electrophysiologists using electroencephalograms. Thus, considering the effect of the electric field that is produced on the dynamic behavior of neurons, the essential properties of the model such as equilibrium point and its stability, bifurcation diagrams, Lyapunov spectrum, frequency spectra, time series of the membrane potential and phase portraits

are thoroughly investigated. For a possible use in medical engineering, we continue by showing that the modified neuron model that we present can be realized physically through some basic electronic components such as the operational amplifiers TL084, the electronic multipliers (MULT) and the analog component versions AD633JN. When we assume that the subject whose neuron electrical activity is being studied is exposed to electromagnetic radiation, we thoroughly investigate their effects on the behavior of the latter. Finally, we show that cerebral pathologies (e.g. epilepsy, schizophrenia, Alzheimer's disease, Parkinson's disease, and autism just to name these few) that arise as a result of the regularity in the behavior of the electrical activity of neurons, can be corrected. This requires finding the right levels of electromagnetic radiation to which the patient must be subjected without the risk of having considerable negative effects.

“ **Giant cell arteritis with rare manifestations of stroke and internal carotid artery dissection: A case study** ”

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Giant cell arteritis (GCA) is the most prevalent systemic arthritis that influences medium-sized and larger extramural arteries, usually in the fifth decade of life.

A 51-year-old man was presented with sudden onset of right-side blurred vision, frozen movements, and ptosis in the right eye

and left side paresis. The right pupil was not responding to light, and the right eye's visual acuity was no light perception. Examination of ocular movements affirms a complete right ophthalmoplegia. Evaluation of the left eye was unremarkable. Spiral brain computed tomography (CT) scan and brain magnetic resonance imaging (MRI) showed multifocal diffusion restricting lesions involving all lobes

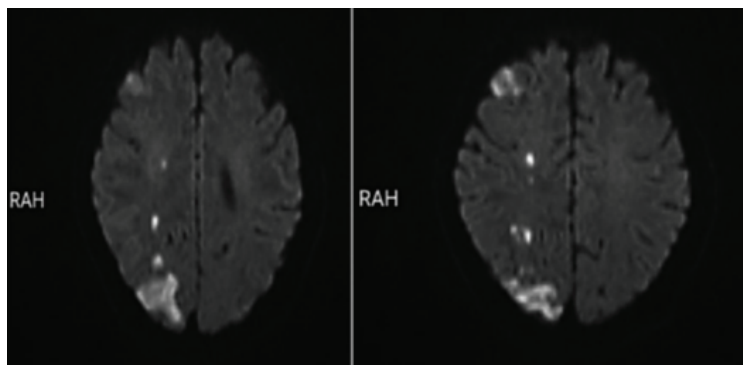


FIGURE 1: Diffusion-weighted brain magnetic resonance imaging showing watershed infarct in the right hemisphere



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of the right hemisphere (Figure 1) and some involvements in the maxillary sinus that spread to the cavernous sinus.

Brain magnetic resonance angiography (MRA) demonstrated significant stenosis with a large clot in the right internal carotid artery (ICA) that spreads to the sinus cavernous. After this report, we promote a CT angiography that shows internal carotid artery dissection. Also, due to the history of ipsilateral frontotemporal headache and the high ESR level, we started pulse of Methylprednisolone 1 gram daily in suspicion of GCA, and temporal artery biopsy was done after 1 week, which was

positive for GCA in pathology findings. After 10 days of undergoing corticosteroid therapy, inflammatory markers were reduced (ESR:40). Besides improving headaches, there was no significant change in ptosis and ocular movements, visual acuity, and reduction of left limb's force.

Diagnosis of GCA is critical because delay can cause irreversible loss of vision in patients. Also, it can be challenging for those without the classic symptoms, such as headaches. The diagnosis of GCA with first manifestations of stroke and carotid dissection may be neglected as an underlying cause.

“
**Brain function
 during central
 fatigue induced by
 intermittent high-
 intensity cycling**
 ”

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Background: The central governor model putatively explains the mechanism of endurance exercise-induced central fatigue, however high-intensity exercise-induced central fatigue strategies have not been investigated yet. This study aimed to examine how central fatigue affects neural response alterations, as measured by electroencephalographic (EEG) recordings, in intermittent high-intensity cycling.

Methods : Neural responses were assessed by measuring the alteration of brainwaves based on spectral energy band estimates during an intermittent, high-intensity, 60-min exercise bout on a cycle ergometer. The cycle ergometer incline was changed every 10 min in an intermittent pattern (10-20-5-20-5-10°). EEG was used to analyze altering brain function. Heart rate (HR), blood lactate (BL), and rating of perceived exertion (RPE) were measured

after the participants completed each change in incline.

Results: The results showed that HR, BL, and RPE increased at an incline of 20° in comparison to a 5° incline. The spectral power of EEG was significantly increased ($P < 0.01$) in the alpha and beta frequency ranges with a change in inclines between 5 and 20°. The spectral power of the EEG was significantly increased ($P < 0.01$) over the whole frequency range from rest (theta + 251%, alpha + 165%, beta + 145%).

Conclusion: Higher, relative intensities (10 and 20°) increased brain function, regardless of fatigue occurrence. HIIT (high-intensity interval training) led to an alteration in the neural response. Further work investigating the usefulness of HIIT to improve brain function is warranted.

“
**Long covid-19
 syndrome: A
 comprehensive review
 of its effect on various
 organ systems and
 recommendation on
 rehabilitation plans**
 ”

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Background : The majority of people infected with SARS-CoV-2 fully recovered within a few weeks. However, a considerable number of patients of different ages, still suffer from long-lasting problems similar to the multi-organ damage in its acute phase of infection, or experience symptoms continuously in a longer term after the recovery. Post-COVID-19 syndrome refers to survivors 4 months after initial symptoms onset. It is important to understand the systemic effects of Post-COVID-19 syndrome, its presentations and the need for rehabilitations to restore functional recovery in survivors.

Population: Discharged COVID-19 survivors for at least 4 months after initial symptom onset.

Setting : Public health care

Funding source : None.

Innovation/methods: Literature search was done on electronic databases (Pubmed, Embase, Cochrane, Medline) on 6 July 2021. The keywords were: Long Covid-19 Syndrome, Post-COVID-19 Syndrome, Rehabilitations. Studies fulfilling the inclusion criteria were selected to evaluate the systemic effects of Post-COVID-19 syndrome, its clinical presentations and rehabilitation approach and efficacy.



Pain pharmacotherapy in a large cohort of patients with osteoarthritis: A real- world data analysis



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Introduction: There is limited evidence on the consumption of analgesics in real-world large cohorts of patients with osteoarthritis (OA), especially in those with comorbidities. We aimed to characterize the use of pharmacological analgesic treatments, evaluate standardized comorbidity rates, and assess treatment trends. Our hypotheses were: (1) OA patients generally consume low and inconsistent pharmacological analgesic treatments; (2) analgesic treatment is often non-congruent with comorbidity-related safety concerns.

Methods: The study was carried out at the second largest health maintenance organization in Israel (MHS). Members aged 18 years or above who were diagnosed with OA before December 31, 2018, were included. Information was obtained from the members' electronic medical record (EMR) including data on dispensed prescriptions, which were used to estimate analgesic consumption

Results: A total of 180,126 OA patients were

included in our analyses; analgesics were dispensed to 64.2% of the patients, with oral NSAIDs and opioids dispensed to 34.1 and 22.9% of the OA population, respectively. Analgesic use increased with time lapsed from OA diagnosis ($p < 0.001$), up to a median of 59 days covered (IQR, 20–175) after 21 years. Rates of most comorbidities in the OA population were higher compared to the MHS general population. Patients with comorbidities used more NSAIDs and opioids compared to those without them.

Conclusions: Most OA patients use analgesics, usually oral NSAIDs. Analgesic use remains relatively low throughout the years, indicating that many OA patients are not being treated pharmacologically for pain on a regular basis. Despite having higher rates of several comorbidities compared to MHS general population, many OA patients are still treated with analgesics that can be associated with a worsening in comorbidity.

“
**Mucormycosis
of paranasal
sinuses of
odontogenic
origin post covid
19 infection: A
case series**
”

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The Severe acute respiratory syndrome and the Middle East respiratory syndromes emerged in 2002 and 2012 respectively. Currently the world is witnessing a global pandemic caused by a novel coronavirus, the severe acute respiratory syndrome coronavirus 2 (SARS CoV- 2) causing the Coronavirus 2019 (COVID-19). Mucormycosis is a fungal infection primarily affecting individuals with

an immunocompromised state like diabetes mellitus, malignancies etc. Patients who have or have had COVID-19 infection with pre-existing uncontrolled Type 2 Diabetes mellitus are presumably more vulnerable for emergence of fungal infections cases. This article presents a report of 6 cases with histopathological proven mucormycosis associated with COVID-19 and uncontrolled Diabetes mellitus.

“
**Role of micro-
 RNA132 and its
 long non coding
 SOX2 in diagnosis
 of lupus nephritis**”

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Skin and kidney are commonly affected in systemic lupus erythematosus (SLE) with similar molecular mechanisms. Although clinical indicators of renal injury in SLE are fairly -uncontroversial, few biomarkers are reliable. The role of micro-RNAs (mi-RNAs) in lupus nephritis (LN) pathogenesis has been investigated to help in early diagnosis. The aim of work is to evaluate miRNA132 and SOX2 expressions in SLE Egyptian patients; with and without nephritis, and the relation between miRNA132 and its long non-coding gene SOX2 in both patients groups. This is a case-control study involving 100 SLE patients with and without LN (LN and non-LN groups), and 50 age-and sex-matched healthy controls. The study was carried out to detect miRNA132

and SOX2 expression by quantitative Real-Time Polymerase chain reaction methods. The SLE disease activity index (SLEDAI) was assessed. Our results showed that SLEDAI increased in LN compared to non-LN. Micro-RNA132 expression was significantly increased in patient groups compared to control and increased in LN more than non-LN group. SOX2 significantly decreased in patient groups compared to controls, and decreased more in LN compared to non-LN group. There was a negative correlation between miRNA132 and SOX2 expression in both patients groups. In conclusion, miRNA132 and SOX2 may play a role in SLE activity and help in the early non-invasive diagnosis of LN.

“ Prediction score for cervical spine fracture in patients with traumatic neck injury ”

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Background: Cervical spine fracture is approximately 2%-5%. Diagnostic imaging in developing countries has several limitations. A computed tomography scan is not available 24 hours and not cost-effective. This study aims to develop a clinical tool to identify patients who must undergo a computed tomography scan to evaluate cervical spine fracture in a noncomputed tomography scan available hospital.

Methods: The study was a diagnostic prediction rule. A retrospective cross-sectional study was conducted between August 1, 2016, and December 31, 2018, at the emergency department. This study included all patients aged over 16 years who had suspected cervical spine injury and underwent a computed tomography scan at the emergency department. The predictive model and prediction scores were developed via multivariable logistic regression analysis.

Results: 375 patients met the criteria. 29 (7.73%) presented with cervical spine fracture on computed tomography scan and 346 did not. Five independent factors (i.e., high-risk mechanism of injury, paraparesis, paresthesia, limited range of motion of the neck, and associated chest or facial injury) were considered good predictors of C-spine fracture. The clinical prediction score for C-spine fracture was developed by dividing the patients into three probability groups (low, 0; moderate, 1-5; and high, 6-11), and the accuracy was 82.52%. In patients with a score of 1-5, the positive likelihood ratio for C-spine fracture was 1.46. Meanwhile, those with a score of 6-11 had an LR+ of 7.16.

Conclusion: In a noncomputed tomography scan available hospital, traumatic spine injuries patients with a clinical prediction score ≥ 1 were associated with cervical spine fracture and should undergo computed tomography scan to evaluate C-spine fracture.

“ Nuclear Medicine in Neurology and Psychiatry ”

Soumendranath Ray

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Nuclear medicine in Neurology and Psychiatry involve the use of different radiopharmaceuticals exhibiting uptake by brain and imaged using emission tomography (SPECT or PET). Most radiopharmaceuticals detect perfusion or metabolic abnormalities of the brain, and some radiotracers bind with basal ganglia receptors . Newer compounds

bind to abnormal cerebral deposition of proteins such as amyloid. After basic introduction of Nuclear Imaging Cerebrovascular disease, epilepsy, neurodegenerative disorders and dementia (especially Alzheimer’s disease) brain tumours and other neurological and psychiatric disorders will be discussed with examples.

“
**Emergency
 thrombectomy for
 cerebrovascular
 occlusion in a
 patient with mirror
 dextrocardia: A
 case report**
 ”

Wensheng Zhang and **Jinzhao He**

Department of Neurology, HeYuan People's Hospital, China

Objective: Cases of Patients complicated with dextrocardia who suffered from acute cerebral infarction with large vessel occlusion and receive emergency thrombectomy are quite rare which have not been reported widely and are worthy of attention and learning.

Methods: We report a case of a patient with mirror dextrocardia who suffered from cerebral infarction with large vessel occlusion and received emergency thrombectomy.

Results: A male patient in his early 60s with dextrocardia had acute cerebral infarction with posterior circulation large vessel occlusion and underwent emergency thrombectomy. During the operation, rapid confirmation of

dextrocardia and flexible use of interventional instruments helped establish the pathway, We used an intracranial thrombectomy stent and intracranial balloon dilation catheter to restore the cerebral blood supply. The modified Ranking scale (mRS) scores was 0 three at 3 months after thrombectomy, which means that the prognosis of the patient was good.

Conclusions: Acute cerebral infarction with large vessel occlusion in patients with dextrocardia is extremely rare, Emergency thrombectomy is feasible to recanalize cerebral blood flow and give patients a chance to recover well.



Health-related risky behaviors in Chinese adolescents with autism



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Objectives: We aimed to investigate health-related risky behaviors in adolescents with autism.

Scope: We mainly discussed the characteristics of health-related risk behaviors in adolescents with autism and high-function autism. Participants in the case and control groups were aged 12-19 years.

Results: The results showed that the total score of AHRBI and scores of "aggression and violence (AV)", "suicide or self-injury (SS)", "health-compromising behavior (HCB)", and "unprotected sex (US)" subscales in the autism group (including high-autism group) were significantly higher than those in the control group (all $P < 0.05$). Anxiety, depression, low self-esteem, low IQ score, low ToM test score, increasing age, poor adaptation to school life and communication disorder were found as risk factors for health-related risky behaviors in autistic adolescents.

Methods used: Our study included case group and control group. The case group consisted of adolescents who met the Diagnostic and Statistical Manual of Mental Disorders 4th

edition criteria (DSM-IV) for autism. There were also age, sex matched controls enrolled who came from a public school in Beijing, China. Both groups completed the Adolescents Health-related Risky Behavior Inventory. Nonparametric tests were carried out for comparison of the Adolescents Health-related Risky Behavior Inventory scores between the two groups. Expression recognition, the Inventory of Subjective Life Quality for Child and Adolescent, Chinese Wechsler Intelligence Scale for Children, Wechsler Intelligence Scale for Adult-Chinese Revised, Theory of Mind test, Zung Self-rating Anxiety Scale, Zung Self-rating Depression Scale, Self-Esteem Scale and Autism Spectrum Screening Questionnaire were assessed in the autism group to explore factors associated with health-related risky behaviors. Multivariate regression analysis was conducted to explore the risk factors of health-related risky behaviors in the autism group.

Conclusion: This study showed that adolescents with autism were more likely to be involved in health-related risky behaviors. Different health-related risky behaviors have different reasons.

“ Complement 4 aids in the prediction of newly diagnosed multiple myeloma outcomes in patients ”

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Background: A cure for the heterogeneous hematological malignancy multiple myeloma (MM) is yet to be developed. To date, the early risk factors associated with poor outcomes in MM have not been fully elucidated. Studies have shown an aberrant complement system in patients with MM, but the precise association necessitates elucidation. Therefore, this study scrutinizes the correlation between serum complement level and the disease outcome of patients with MM.

Methods: A retrospective analysis of 72 patients with MM (new diagnosis) with complement C4 and C3 along with common laboratory indicators was done. The Pearson χ^2 test and the Mann-Whitney U-test were done to evaluate categorical or binary variables and intergroup variance, respectively. Kaplan-Meier test and Cox proportional hazards regression were used for quantification of overall survival (OS) and univariate or multivariate analyses, respectively.

Results: The Cox proportional hazard model analysis unveiled the following: platelet $\leq 115.5 \times 10^9/L$ (hazard ratio [HR] = 5.82, 95% confidence interval [CI] = 2.522-13.436, $P < 0.001$),

complement C4 ≤ 0.095 g/L (HR = 3.642, 95% CI = 1.486-8.924, $P = .005$), age ≥ 67 years (HR = 0.191, 95% CI = 0.078-0.47, $P < 0.001$), and bone marrow plasma cell percentage $\geq 30.75\%$ (HR = 0.171, 95% CI = 0.06-0.482, $P = 0.001$) can be used as independent predictors of OS. Of these, advanced age, low platelet level, and a high proportion of bone marrow plasma cells have been implicated in poor outcomes in patients with MM. Interestingly, a low complement 4 level can function as a new indicator of poor prognosis in patients with MM.

Conclusion: Low levels of C4 are indicative of a poor outcome in newly diagnosed patients with MM.

	HR	95% CI	P value
Age ≥ 67 y	0.191	0.078-0.47	<.001
BPC $\geq 30.75\%$	0.171	0.06-0.482	.001
C4 ≤ 0.095 g/L	3.642	1.486-8.924	.005
PLT $\leq 115.5 \times 10^9/L$	5.821	2.522-13.436	<.001



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