2234th Conference

Parkinson 2018

5th International Conference on

Parkinson's disease and Movement Disorders

October 19-20, 2018 | New York, USA

Workshop

Day 1

5th International Conference on
PARKINSON'S DISEASE AND MOVEMENT DISORDERS
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Azza A Ali

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Parkinson's disease and Dementia: Induction and protection

Parkinson's disease (PD) is the second most common neurodegenerative disorder after Alzheimer's disease and no longer considered merely as a motor disorder where dementia may precede motor deficits and enhance their onset. Age is the most significant risk factor for the development of PD and dementia where oxidative stress increases during aging making the brain more susceptible to neurodegeneration. The exact underlying mechanism responsible for neurodegeneration progression still remains elusive and incompletely understood. Several epidemiological studies suggested that exposure to different environmental toxic agents and heavy metals increase the risk of induction and progression of neurodegenerative diseases. On the other hand, moderate cigarette smoking and coffee drinking are inversely associated with the risk of their development.

Animal models of Parkinson's disease and Dementia: Typically, animal models of PD include environmental neurotoxins or genetic models (PD-related mutations model). Metal ions play a crucial role in the development of PD and dementia; excessive manganese exposure has been associated with manganism while aluminum has been linked with Alzheimer's disease and dementia. Manganism is characterized by extrapyramidal symptoms resembling idiopathic PD as well as psychiatric and cognitive deficits. Rotenone, a naturally occurring insecticide, and pesticide have been also linked to the two pathological hallmarks occur in clinical PD (motor and non-motor symptoms), but high mortality rate represents the major limitation for this model. On the other hand, the use of genetic animal models and identification of disease-relevant genes can encourage search to discover new promising disease-modifying therapies.

Neuroprotection strategies of Parkinson's disease and Dementia: Dopamine deficiency plays the central role in the pathogenesis of PD, thus it represents the focus of treatment efforts. Other neurotransmitters also play a major role in controlling symptoms that related to cognitive behaviors, depression, anxiety, and dementia. Oxidative stress, inflammation, and apoptosis are considered the main mechanisms implicated in the degeneration of dopaminergic neurons. Protein malnutrition can predict the progression of neurodegeneration by increasing oxidative damage. In general, protection and early diagnosis still represent the cornerstone and the golden strategy in delaying or preventing the progression of age-dependent neurodegeneration. The most promising PD-modifying therapies include natural products and nutrients having powerful antioxidants, anti-inflammatory and antiapoptotic as well as those which promote neurotransmitters synthesis or enhance their concentration. Moreover, therapies which reduce stress, depression and promote better memory have also a significant role in delaying disease progression and in enhancing the efficacy of different treatments. On the other hand, non-drug therapies as physical training and mental activity can improve motor functions and manage non-motor symptoms.

Biography

Azza A Ali has completed her PhD specialized in Pharmacology and Toxicology from Faculty of Pharmacy, Cairo University, Egypt. Her postdoctoral studies included different scientific aspects especially on neurodegenerative disorders; she also developed research line of behavioral pharmacology in Egypt. She is member of many scientific societies as (AAPS) and Alzheimer's Association (ISTAART). She is also Editorial Board Member of many international Journals as Brain Disorder & Therapy, Acta Psychopathologica, EC Pharmacology and Toxicology as well as Organizing Committee Member and Chairperson at many international Conferences as the International Conference on Brain Disorders & Dementia Care, Canada (2017) and International Conference on Parkinsons Disease & Movement Disorders, USA (2017). She published more than 60 papers in reputed journals, supervised and discussed more than 90 PhD and MSc thesis and actively participated by oral and posters presentations at many international conferences especially on Alzheimer's disease and Dementia as well as on Parkinsons disease as Dementia Conferences (2015, 2016), Alzheimer's Association International Conference (AAIC 2016, 2017) and Parkinsons Conference (2017). She has many appreciation certificates and certificate of best presentation award at 19th International Conference on Environmental Pollution and Pollution Control, London, UK (ICEPPC 2017). Now she is a Head of Pharmacology and Toxicology Department at Al-Azhar University, Egypt.

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Scientific Tracks & Abstracts

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Protection against development of parkinsonism in rats: Impact of nutrients versus the deleterious effects of manganese

Azza A Ali
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Background: Parkinson's disease (PD) is a degenerative progressive disorder in which symptoms occur after 80 percent of dopamine is lost. It mainly affects substantia nigra which responsible for relaying messages to plan and control body movement. Excessive exposure to manganese (Mn) is strongly associated with an extrapyramidal motor disorder similar to PD. Cocoa represents one of the most nutritious foods in the world. It reduces stress, depression and promotes better memory as well as concentration. Pomegranate (POM), Wheatgrass (WG) and Coenzyme Q10 (CoQ10) are powerful antioxidants but POM has also powerful anti-inflammatory and antiapoptotic activity. All of these nutrients exert neuroprotective effects; they can improve memory as well as cognitive and behavioral deficits.

Objective: To evaluate and compare the potential protective effect of Cocoa, POM, WG, CoQ10 and their combinations against PD induced by Mn in rats.

Methods: Six groups of rats were used: one received saline while five received MnCl2 (10mg/kg IP) daily for 4 weeks either alone or in combination with one of the following: Cocoa (24mg/kg PO), POM (150mg/kg PO), CoQ10 (200mg/kg PO), WG (100mg/kg, PO) or their combinations. All rats were subjected to five behavioral tests; Grid, Bar, Swimming, Open-field, and Y-maze. Biochemical changes in monoamines as well as in AChE, BDNF, GSK-3, Glutamate, GABA, INOS, Cox2 and in oxidative markers besides excitotoxicity, apoptotic and neuroinflammatory markers were evaluated together with histopathological examinations.

Results: Mn increased catalepsy while decreased neuromuscular co-ordination together with locomotor, emotionality and exploratory activity. It also impaired vigilance, spatial memory, and decision making. Most behavioral impairments induced by Mn had been improved using Cocoa, POM, WG or CoQ10, especially with POM and Cocoa. Combination of Cocoa, POM, WG, and CoQ10 showed more pronounced improvements which confirmed by biochemical as well as histopathological examinations in all brain regions.

Conclusion: Cocoa or POM showed more pronounced protection against neuronal degeneration and behavioral impairments induced by Mn than WG or CoQ10. However, nutrients combination showed maximum protection as compared to each of them alone against PD induced by Mn in rats.

Biography

Azza A Ali has completed her PhD specialized in Pharmacology and Toxicology from Faculty of Pharmacy, Cairo University, Egypt. Her postdoctoral studies included different scientific aspects especially on neurodegenerative disorders; she also developed research line of behavioral pharmacology in Egypt. She is member of many scientific societies as (AAPS) and Alzheimer's Association (ISTAART). She is also Editorial Board Member of many international Journals as Brain Disorder & Therapy, Acta Psychopathologica, EC Pharmacology and Toxicology as well as Organizing Committee Member and Chairperson at many international Conferences as the International Conference on Brain Disorders & Dementia Care, Canada (2017) and International Conference on Parkinsons Disease & Movement Disorders, USA (2017). She published more than 60 papers in reputed journals, supervised and discussed more than 90 PhD and MSc thesis and actively participated by oral and posters presentations at many international conferences especially on Alzheimer's disease and Dementia as well as on Parkinsons disease as Dementia Conferences (2015, 2016), Alzheimer's Association International Conference (AAIC 2016, 2017) and Parkinsons Conference (2017). She has many appreciation certificates and certificate of best presentation award at 19th International Conference on Environmental Pollution and Pollution Control, London, UK (ICEPPC 2017). Now she is a Head of Pharmacology and Toxicology Department at Al-Azhar University, Egypt.

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Parkinson's disease: Novel thoughts

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Parkinson's disease (PD) is a neurodegenerative disorder characterized by progressive loss of dopaminergic neurons in substantia nigra pars compacta. The incidence is increasing with the aging population. Epidemiological studies imply that environmental and genetic factors are important in the development of Parkinson's disease. Although the pathogenesis of the disease is not fully understood, mechanisms related to free radical stress, mitochondrial dysfunction, neuroinflammation, apoptosis, and protein aggregation are the major factors in the degeneration of dopaminergic neurons. The clinical features of the disease are non-motor symptoms such as hyposmia, sleep disorder, and depression and motor symptoms such as tremor, rigidity, and imbalance that appear as the disease progresses. The available treatment of Parkinson's disease is so that novel neuroprotective or neurorestorative treatments are needed. Therefore, understanding the molecular mechanisms of Parkinson's disease pathogenesis is crucial in the development of the novel therapies for Parkinson's disease. Increasing number of studies indicate the important role of epigenetic mechanisms in Parkinson's disease pathogenesis and histone deacetylase inhibitors have been implicated in the treatment of neurodegenerative disorders. Promising studies show that histone deacetylase inhibitors increase the acetylation levels in the brain and provide neuroprotection via affecting many genes involved in cell cycle regulation, apoptosis, and DNA repair process. In the studies conducted in our laboratory, the anticonvulsant drug valproic acid has been found to effective by producing antioxidant and antiapoptotic effects. Epigenetic modulation was also effective. In an animal model of Parkinson's disease developed in rats, stereotaxic injection of 6-OHDA (8μg/2μL) to the right substantia nigra pars compacta was conducted. The following coordinates of substantia nigra pars compacta were used: (AP) = –4.8mm, (ML) = –1.8mm and (DV) = –8.2mm. Only the rats showing pronounced rotational behavior (more than 5 contralateral turns) were included in the study after apomorphine (0.5mg/kg sc) test. The effects of valproic acid were compared with levodopa.

Biography

Ece Genc has been with Yeditepe University Department of Medical Pharmacology since 2004 where she teaches to medical as well as dentistry students and conducts research. Her previous experiences include professor at the Pharmacology Department of Istanbul Faculty of Medicine, visiting professor at Clinical Neuroscience branch of National Institutes of Health USA, Lab manager at Department of Pharmacology of the University of California Irvine, an instructor at California State University Los Angeles.

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Basal ganglionic lesions in egyptian children: Radiological findings in correlation with etiology and clinical manifestations

Hamada Ibrahim Zehry
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Background: In childhood, the metabolic activity of the basal ganglia is greater and they are particularly prone to injury, that causes problems controlling movement, muscle tone and cognition.

Aim of the study: to determine the etiology of basal ganglionic disorders in a sample of Egyptian children.

Methods: A cross sectional observational study was utilized on 34 patients attended at the Pediatric Neuro Outpatient Unit of Neurology department at f Al-Azhar University Hospitals during a period of one year from November 2014 to November 2015. A specialized pediatric neurological sheet, Cognitive assessment using Stanford-Binet Intelligence Scale and Laboratory investigations were performed. The included patients were classified according to MRI into two groups; ganglionic (included patients with isolated basal ganglionic lesions) (n=23) and para-ganglionic (included patients with combined ganglionic and para-ganglionic lesions) (n=11).

Results: Frequency of male was higher than female patients in both groups without significant difference (13 (56.5%) versus 6 (43.5%) and 10 (54.5%) versus 5 (45.5%), in ganglionic and para-ganglionic groups, respectively). acute ischemic stroke was the most frequent cause, which was found in 12 (35.3%) cases, followed by 10 (29.4%) had metabolic and infectious causes, and lastly 2 (5.9%) had toxic causes. The incidence of toxic causes (CO poisoning) was higher among ganglionic group compared to para-ganglionic group (2(8.7%) versus 0(0.0%), respectively).

Biography

Hamada Ibrahim Zehry is working in the faculty of medicine in Al-Azhar University, Cairo, Egypt in the department of Neurology.

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Young Research Forum

Day 2

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The development of a multicellular three dimensional neurovascular unit model with a functional blood- brain barrier

Goodwell Nzou
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Increased cerebrovascular permeability due to the blood-brain barrier (BBB) disruption is known for destabilizing brain homeostasis, neuronal function and nutritional distribution in brain tissue. The BBB controls these functions through a dynamic structure of tight junctions and adherent junctions formed mainly between endothelial cells. The integral selectivity characteristic of the BBB limits therapeutic options for many neurologic diseases and disorders. Currently, very little is known about the mechanisms that govern the dynamic nature of BBB. To date, most *in vitro* models only utilize endothelial cells, pericytes, and astrocytes. These models neglect the role of other cell types in the brain cortex such as the neurons, microglia, and oligodendrocytes. Thus, we seek to create a 3D spheroid model of the blood-brain barrier consisting of all major cell types that closely recapitulate normal human brain tissue. Spheroids containing 6 cell types were maintained in static culture with growth media exchange every other day and were fixed in 4% formaldehyde and Immunohistochemistry was performed for TJ, AJ and cell-specific markers. Our data demonstrate the expression of TJs and AJs. Furthermore, our data on BBB functionality assessment using MPTP, MPP+ and mercury chloride in our spheroids indicate charge selectivity through the barrier. Our spheroid model would have applications in drug discovery and neurotoxicity and cytotoxicity testing. This model can serve as a tool for individualized, patient-specific blood-brain barrier disease models through the use of representative cell types derived from induced pluripotent stem cells (iPSCs).

Biography

Goodwell Nzou, born and raised in a small, remote village in Zimbabwe near the Mozambique border, Goodwell jokingly credits the snakebite to which he lost his right leg and led him to "escape the crude village life" and to move to the city where he continued school with much bigger goals that he would have ever imagined in the village. With a Bachelor of Science in Chemistry from Nazareth College and now studying molecular medicine, he has an unwavering commitment to playing a role in improving health standards in underserved communities after he completes doctoral studies at Wake Forest University.

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