

6th International Conference on

DIABETES AND ENDOCRINOLOGY

December 05-07, 2016 Dallas, USA



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Parkinson's disease: A systematic evaluation of underlying mechanisms leading to motor symptoms

Parkinson's disease (PD) is a progressive disorder that affects 4.1 million world-wide and costs health care systems billions of dollars annually. While dopaminergic therapies remain the gold standard of treatment, pharmaceutical interventions only mask the symptoms of PD, rather than addressing the underlying cause of symptoms. In addition, many motor symptoms are resistant to dopaminergic treatments, while causing additional motor complications or side effects (including wearing off, motor fluctuations, dyskinesias; see Almeida & Hyson, 2010 review). Mobility deficits are arguably the most debilitating symptoms associated with PD, and studying them can serve as a valuable model that can shed light on mechanisms underlying all motor symptoms in PD and other movement disorders). One example is the so-called 'freezing phenomena', in which patients report feeling like their feet are glued to the ground leaving them unable to make their next step. This symptom is argued by many to be unresponsive to typical drug treatments, and often leads to an increased risk of trips and falls. Thus, it is considered the most severe gait disorder associated with advanced PD. Considering the vast neural networks essential for the planning and control of human locomotion, the interactions between sensory, perceptual, cognitive and emotional networks are not easy to disentangle. Sensory and perceptual systems are required to accurately detect and make judgments about objects and obstacles that we interact with. These systems are also needed to interpret the progression of successful (or unsuccessful) waking relative to environmental obstacles or threats. In addition, higher level emotional and cognitive processes (anxiety, attention, executive function) play an important role in recognition and semantic processing of environmental stimuli. Thus the goal of the presentation is to systematically consider the underlying factors that may underlie motor symptoms as well their interactions, in order to identify novel treatment strategies for PD.



Biography

Quincy Almeida is the Director of the Sun Life Financial Movement Disorders Research & Rehabilitation Centre at Wilfrid Laurier University. His research has been featured in the Toronto Star, the Globe & Mail, on CBC and CTV national news as well as featured in Maclean's magazine. He has been funded by NSERC, and multi-million dollar grants from the Canada Foundation for Innovation and CIHR, and has won several awards including the Franklin Henry Young Scientist Award for motor control in Canada, Parkinson's Society of Canada Young Investigator's Award, Polanyi Prize for Physiology and Medicine, the Queen's Elizabeth II Diamond Jubilee Medal and the Early Career Distinguished Scholar Award from the NASPSPA Organization. He has spoken about his novel approach to understanding Parkinson's disease across the world including widely across South America, Europe and Australia.

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