Peripheral and Central Postural Disorders in the Elderly

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Contact information of lead PI
Country

USA

Title of project or programme

Peripheral and Central Postural Disorders in the Elderly

Source of funding information

NIH (NINDS)

Total sum awarded (Euro)

€ 2,820,108.26

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30/09/1989

Total duration of award in years

3

The project/programme is most relevant to:

Parkinson's disease & PD-related disorders

Keywords

Gait abnormality, mobility rehabilitation, Gait, Posture, Idiopathic Parkinson Disease

Research Abstract
DESCRIPTION (provided by applicant): Balance and gait is impaired in the majority of older people, especially those with age-related, neurological degeneration such as parkinsonism. We aim to compare the postural and locomotor impairments resulting from two types of

parkinsonism, idiopathic Parkinson's disease and Frontal Gait Disorder (also called vascular or lower body parkinsonism) using objective measures of postural control: anticipatory postural adjustments, postural sway in stance, automatic postural responses, locomotor measures of dynamic stability, arm swing, Freezing of Gait (FoG), and stride width. Our underlying hypothesis is that frontal lobe connections with the basal ganglia and brainstem posture/locomotor centers are responsible for postural deficits in both Parkinson's disease and Frontal Gait Disorders. Because of their common frontal cortex control, we predict that postural impairments will be related to executive cognitive impairments in both groups. We will also compare the integrity of brain locomotion circuitry in these patients who have as FoG, small APAs or impaired APRs. We predict that similar postural and locomotor disorders in both types of parkinsonism will share common neural network deficits, providing insight into which neural pathways are related to specific postural systems. We will also determine which postural, cognitive and circuitry impairments predict efficacy of a cognitively-challenging mobility rehabilitation. The specific aims are: I. To characterize postural and cognitive impairments in patients with Frontal Gait Disorders, compared to idiopathic Parkinson's disease. We hypothesize that postural impairments will be related to executive impairments in both FGD and PD. II. To relate postural and cognitive disorders with deficits in brain posture/locomotor circuitry. We hypothesize that parkinsonian patients, who have similar postural disorders will share common structural postural/locomotor brain circuitry deficits using diffusion tensor imaging. III. To determine which postural, cognitive, and brain posture/locomotor circuitry deficits predict responsiveness to Agility Boot Camp (ABC) rehabilitation. We hypothesize that cognitive, postural, and/or posture/locomotion circuitry impairments at baseline will predict which patients improve with rehabilitation. Specifically, we predict that parkinsonian patients with FoG, executive dysfunction, and reduced white matter tracks from PPN to frontal cortex will show limited rehabilitation efficacy. This project will improve our understanding of the role of the frontal cortex in balance and gait and how cognitive impairments relate to postural disorders with the goal of improving mobility rehabilitation in the elderly.

Lay Summary
PUBLIC HEALTH RELEVANCE: This is the first study to relate integrity of the brain's postural/locomotor circuits to objective measures of balance and gait disorders in patients with idiopathic Parkinson's disease compared to patients with Frontal Gait Disorders (e.g., vascular parkinsonism). This project will improve our understanding of the role of the frontal cortex in balance and gait and how cognitive impairments relate to postural disorders with the goal of improving mobility rehabilitation in the elderly.

Further information available at:

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Investments > €500k

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United States of America

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Parkinson's disease & PD-related disorders

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