NACC Project #2007-01
“Lewy Body Diseases Imaged with PiB”

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Project description
Parkinson disease (PD) is the second most common neurodegenerative disease, after Alzheimer’s disease (AD). Although idiopathic PD is traditionally considered a disease of the extrapyramidal system, there is growing realization that cognitive impairments are common in PD, and that dementia in advanced PD is nearly universal. There are two main clinical types of dementia in PD: PD dementia (PDD) in which dementia appears years after the onset of motor signs, and dementia with Lewy bodies (DLB) in which dementia is commonly the initial symptom. Although the timing of dementia in these two conditions differs dramatically, their neuropsychological profiles are more similar than dissimilar. Their neuropathological features also overlap, and include widespread limbic and cortical Lewy bodies, as well as a variable burden of neuritic plaques and neurofibrillary tangles characteristic of AD. The contribution of amyloid pathology to the clinical presentations of PDD and DLB is unknown; seeking an answer to this central question sparked the research proposed in this application. We will enroll 60 patients with PD, PDD and DLB in a cross sectional study combining formal neurological and neuropsychological testing with anatomical brain MRIs and PET scans with the amyloid radioligand PiB. By comparing these three patient groups, we will determine whether the different clinical presentations of PDD and DLB can be explained by differences in amyloid deposition; whether neuropsychological and neurological profiles vary according to PiB load; and whether the regional uptake of PiB correlates with specific domains of cognitive impairment across Lewy body diseases. This project draws on the patient populations and rich research environment of our three ADCs, and proposes innovative imaging technology, data management capabilities, and biostatistical analyses. Successful completion of this project will extend the potential of PiB imaging as a biomarker and advance insights into the cognitive impairments and dementia that are so common in the spectrum of Lewy body diseases.

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