Dr. Jose Luchsinger

Abstract

Our goal is to examine whether ethnic and racial differences in brain amyloid β (Aβ) and tau, the major neuropathology components of Alzheimer's disease (AD), explain reported ethnic disparities in dementia of the Alzheimer's type (DAT) in Northern Manhattan We will examine ethnic differences in brain Aβ and tau, ascertained in-vivo with positron emission tomography (PET), among Hispanics, Non-Hispanic Blacks (Blacks), and Non-Hispanic Whites (Whites) aged 60 to 69 years from Northern Manhattan. We will also *explore* whether ethnic differences in brain Aβ and tau explain ethnic differences in memory performance, the earliest clinical marker of AD; whether ethnicity modifies the relation of APOE-ε4 and brain Aβ; whether ethnic disparities in literacy and cerebrovascular disease (CVD) moderate the association of brain Aβ and tau with memory performance. Lastly, we will explore whether the higher risk of DAT attributable to hyperglycemia (pre-diabetes and type 2 diabetes) among Blacks and Hispanics compared with Whites is explained by higher brain Aβ and tau. The risk of DAT is higher in elderly Blacks and Hispanics in Northern Manhattan compared with Whites. It is unknown whether this disparity is due to differences in AD neuropathology, CVD, CVD risk factors, or social determinants of health (SDOH). There is a paucity of studies of AD biomarkers in Blacks and Hispanics to answer this question, particularly in late middle age. We propose to address these gaps in knowledge taking advantage of an ongoing funded study (R01AG050440) of Aβ and tau PET in 100 Hispanics between 60 and 69 years of age at the time of brain imaging, a critical period for accumulation of AD neuropathology. We propose to extend this funded project to 100 Blacks and Whites aged 60 to 69 years from the same community in order to compare brain Aβ, tau, CVD, and cognition among Blacks, Hispanics and Whites in this understudied age group. We will ascertain brain Aβ using Aβ PET, and tau using tau PET at 2 time points 24 months apart. We will also conduct brain magnetic resonance imaging (MRI) for co-registration of PET and for ascertainment of CVD (white matter hyperintensities and infarcts). Our primary aim is to examine whether there are ethnic differences in the presence of whole brain fibrillar Aβ, and tau in medial temporal and inferior temporal cortex, *cross-sectionally and longitudinally,* among Blacks, Hispanics and Whites aged 60 to 69 years from the community of Northern Manhattan. We will also *explore* across and within ethnic groups the association of whole brain fibrillar Aβ, and tau in medial temporal and inferior temporal cortex, with memory performance, and moderation of this association by CVD and literacy. Secondary aim 1 is to compare the association of APOE-ε4 with whole brain fibrillar Aβ and tau across ethnic groups cross sectionally and longitudinally. Secondary aim 2 is to explore if ethnic disparities in hyperglycemia explain ethnic differences in whole brain fibrillar Aβ, and tau in medial temporal and inferior temporal cortex and memory impairment.