Molecular and structural imaging in atypical Alzheimers disease: a longitudinal study

https://neurodegenerationresearch.eu/survey/molecular-and-structural-imaging-in-atypical-alzheimers-disease-a-longitudinal-study/

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Country

USA

Title of project or programme

Molecular and structural imaging in atypical Alzheimers disease: a longitudinal study

Source of funding information

NIH (NIA)

Total sum awarded (Euro)

€ 1,744,595.41

Start date of award

01/04/2016

Total duration of award in years

1

The project/programme is most relevant to:

Alzheimer's disease & other dementias

Keywords

Acquired Cognitive Impairment... Aging... Alzheimer's Disease... Alzheimer's Disease including Alzheimer's Disease Related Dementias (AD/ADRD)... Aphasia... Brain Disorders... Clinical Research... Clinical Research - Extramural... Dementia... Diagnostic Radiology... Epidemiology And Longitudinal Studies... Neurodegenerative... Neurosciences

Research Abstract

? DESCRIPTION (provided by applicant): Alzheimer’s disease (AD) is a major public health problem affecting over 5 million people in the US. Patients with AD have beta-amyloid (A?) and tau pathology and typically present with memory loss. However, approximately 25% of AD subjects do not present with early memory loss and instead present with other cognitive complaints, and are referred to as atypical AD. The most common atypical AD syndromes include logopenic aphasia (LPA), a language syndrome, and posterior cortical atrophy (PCA), a visuospatial/perceptual syndrome. The biological underpinnings of these atypical AD syndromes are unclear. The goal of this R01 is to use longitudinal molecular PET (A? and tau-PET imaging) and structural MRI to assess the relationship between A? and tau deposition and structural brain damage in LPA, PCA and typical AD, with the ultimate goal of increasing our understanding of disease biology in these syndromic variants of AD. These analyses will also allow the assessment of neuroimaging biomarkers of disease progression that could be useful in future clinical trials. To accomplish our aims we will recruit 60 subjects that fulfill clinical criteria for LPA (n=30) or PCA (n=30) and show A? deposition on PET imaging. Each subject will undergo two serial assessments 24 months apart that will include neurological and neuropsychological testing, 3T structural MRI and diffusion tensor imaging, Pittsburgh Compound B PET and tau-PET performed with the AV-1451 ligand. These subjects will be compared to typical AD and cognitively normal cohorts already followed at Mayo Clinic. The regional distribution of A? and tau deposition, and change in protein deposition over time, will b assessed for LPA, PCA and typical AD. The relationship between protein deposition and grey matter atrophy and white matter tract degeneration will also be assessed. Region-level measures will then be generated from each imaging modality and statistical modelling will be used to determine what regions, or combinations of regions, provides the optimum biomarkers of disease progression. Biomarkers will be validated by generating sample size estimates for clinical trials and assessing the relationship with cognitive decline. Our R01 will have a major impact on public health since atypical AD effects ~1,000,000 Americans. Our research will increase understanding of disease biology and progression in LPA and PCA and provide biomarkers which will allow the inclusion of these subjects in future trials.

Lay Summary

PUBLIC HEALTH RELEVANCE: This grant aims to increase understanding of disease biology in patients with an atypical presentation of Alzheimer’s disease. We will use imaging techniques to assess the distribution of the proteins tau and beta- amyloid in the brains of patients during life, and will assess whether clinical features and patterns of brain shrinkage are associated with these proteins. We will also determine which neuroimaging measures would be the best to assess for treatment effects in clinical trials to allow patients with atypical Alzheimer’s diseaseto be included in such trials.

Further information available at:

Types:
Investments > €500k

Member States:
United States of America

Diseases:
Alzheimer's disease & other dementias

Years:
2016

Database Categories:
N/A

Database Tags:
N/A