

The ARIC-PET Amyloid Imaging Study

<https://neurodegenerationresearch.eu/survey/the-aric-pet-amyloid-imaging-study/>

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Country

USA

Title of project or programme

The ARIC-PET Amyloid Imaging Study

Source of funding information

NIH (NIA)

Total sum awarded (Euro)

€ 3,154,727.52

Start date of award

15/09/2011

Total duration of award in years

6

The project/programme is most relevant to:

Alzheimer's disease & other dementias

Keywords

Acquired Cognitive Impairment... Aging... Alzheimer's Disease... Alzheimer's Disease Related Dementias (ADRD)... Alzheimer's Disease including Alzheimer's Disease Related Dementias (AD/ARD)... Atherosclerosis... Brain Disorders... Cardiovascular... Cerebrovascular... Clinical Research... Clinical Research - Extramural... Dementia... Diagnostic Radiology... Health Disparities for IC Use... Minority Health for IC Use... Neurodegenerative... Neurosciences... Prevention... Vascular Cognitive Impairment/Dementia

Research Abstract

Project Summary Identification of successful prevention and treatment strategies for Alzheimer's Disease (AD) has remained elusive, partially because clinical symptoms of AD have a late presentation in disease development, but also because there are not clear targets directly related to AD neuropathology for which definitive treatment is available. Thus, focusing on possible treatment and prevention targets that can be identified well before onset of clinical disease and which are known to be treatable is critical in addressing AD. The vascular contribution to cognitive impairment and dementia, including AD, offers an important opportunity for prevention and treatment. Further, evidence suggests that vascular risk factors, including hypertension and diabetes, as well as brain cerebrovascular changes (i.e. white matter hyperintensities), contribute most to the development of cognitive decline and dementia when they are present in midlife (well before clinical AD usually presents). Some of this evidence has been established by the ongoing Atherosclerosis Risk in Communities (ARIC) study, a community-based biracial cohort study of individuals from four US communities, with nearly 30 years of vascular risk factors and marker data, and its primary ancillary study, the ARIC Neurocognitive Study (ARIC- NCS). The ARIC-PET Amyloid Imaging Study, the renewal of which is being proposed in this application, built on the valuable data available in ARIC and ARIC-NCS. By focusing on brain amyloid- β deposition, which in leading hypotheses is responsible for the development of AD, the ARIC-PET study further evaluated the associations between midlife vascular risk factors and AD. In the initial phase of this study, we completed 347 brain amyloid PET scans, using florbetapir PET, among participants from three ARIC sites. We found higher rates of brain amyloid in participants who were older, female, carried an APOE ϵ 4 allele (the primary genetic risk factor for AD), and who were of black race. Although our data did not support a general association between midlife vascular risk factors and brain amyloid, for persons with "two hits": a high genetic risk (carriers of an APOE ϵ 4 allele) and elevated midlife vascular risk, our data do suggest more brain amyloid deposition. Finally, our data suggest that cognition is worse among participants who have both elevated brain amyloid and high amounts of brain cerebrovascular disease, on MRI. This renewal application proposes a repeat brain MRI and florbetapir (amyloid) PET scan among all surviving non-demented participants of ARIC-PET, to evaluate how vascular risk factors and brain subclinical vascular changes and APOE genotype each contribute to the progression of brain amyloid as well as the progression of clinical cognitive status, including conversion to mild cognitive impairment and dementia. Further, we will evaluate progression of brain cerebrovascular changes as a risk factor for progression of brain amyloid and clinical cognitive status, which we hypothesize may provide a critical link to explain some of our observed racial disparities in amyloid deposition rates. The ARIC-PET cohort provides unique data in a biracial sample; data from its renewal could identify important targets for prevention.

Lay Summary

Project Narrative Increasing evidence suggests that vascular risk factors play a major role in the development of dementia, including Alzheimer's Disease. The Atherosclerosis Risk in Communities (ARIC)-PET Amyloid imaging study used PET scans to further understand the role of vascular disease in Alzheimer's, and the studies proposed in this renewal will test how change in vascular disease relates to change in brain amyloid and cognition. Vascular risk factors and vascular disease may represent a treatable way to reduce the burden of dementia in the US and worldwide.

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