Cardiac function as a mechanism for maladaptive brain aging

https://neurodegenerationresearch.eu/survey/cardiac-function-as-a-mechanism-for-maladaptive-brain-aging/

Principal Investigators

JEFFERSON, ANGELA L.

Institution

VANDERBILT UNIVERSITY

Contact information of lead PI
Country

USA

Title of project or programme

Cardiac function as a mechanism for maladaptive brain aging

Source of funding information

NIH (NIA)

Total sum awarded (Euro)

€ 4,212,757.80

Start date of award

15/03/2011

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/ADRD)... Basic Behavioral and Social Science... Behavioral and Social Science... Brain Disorders... Cardiovascular... Cerebrovascular... Clinical Research... Clinical Research - Extramural... Dementia... Diagnostic Radiology... Heart Disease... Minority Health for IC Use... Neurodegenerative... Neurosciences... Prevention... Vascular Cognitive Impairment/Dementia

Research Abstract
DESCRIPTION (provided by applicant): As the population continues to age, the incidence of dementia is dramatically increasing, resulting in an urgent need to identify risk factors for abnormal brain aging and dementia. Alterations in cardiac function influence systemic blood flow, which impacts cerebral blood flow homeostasis as demonstrated by animal models. Such changes in cerebral blood flow homeostasis may pose a risk for accelerating age-related brain injury. Our preliminary research suggests that cardiac function is related to markers of maladaptive brain aging. It is not yet clear if cardiac function accelerates neuroimaging or cognitive markers of cerebrovascular or Alzheimer’s disease among aging individuals with mild cognitive impairment (MCI). Individuals with MCI are at increased risk for cognitive progression and susceptible to more rapid abnormal brain aging when concomitant vascular disease is present. Our proposed study will examine relations between cardiac function and maladaptive brain aging and provide important information for developing novel strategies to delay the progression from MCI to dementia. Using a prospective observational matched design, we will cross-sectionally and longitudinally relate cardiac function to neuroimaging and cognitive markers of early Alzheimer’s disease and cerebrovascular changes among aging adults with MCI and age-, sex-, and race-matched cognitively normal adults. Clinical or subclinical cardiac dysfunction may be due to complex systemic mechanisms that are preventable or treatable, such as enhanced inflammatory markers and insulin resistance, or genetic factors, such as apolipoprotein E. Therefore, we will consider systemic and genetic factors as potential mediating mechanisms in relations between cardiac function and brain aging. The proposed study leverages an existing Alzheimer’s Association funded study directed by the principal investigator, the participant registry of our NIA-funded Boston University Alzheimer’s Disease Center, a recent American Recovery & Reinvestment Act supplement grant focused on African American recruitment and retention, and the unique resources afforded by our local Clinical and Translational Science Institute housing the General Clinical Research Unit.

Lay Summary
PUBLIC HEALTH RELEVANCE: The incidence of dementia is dramatically increasing, and in the absence of effective therapies, there is an urgent need to identify risk factors and prevention strategies. Our preliminary data suggest cardiac function may be an unrecognized risk factor for maladaptive brain aging. The proposed project will generate evidence to support the development of novel strategies for delaying dementia onset and progression.

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