

Adiposity, Inflammation and Neurocognitive Decline in African Americans

<https://neurodegenerationresearch.eu/survey/adiposity-inflammation-and-neurocognitive-decline-in-african-americans/>

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Country

USA

Title of project or programme

Adiposity, Inflammation and Neurocognitive Decline in African Americans

Source of funding information

NIH (NIA)

Total sum awarded (Euro)

€ 1,124,669.72

Start date of award

15/06/2014

Total duration of award in years

3

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)... Behavioral and Social Science... Brain Disorders... Cardiovascular... Dementia... Epidemiology And Longitudinal Studies... Mental Health... Minority Health for IC Use... Neurodegenerative... Neurosciences... Nutrition... Obesity... Prevention

Research Abstract

DESCRIPTION (provided by applicant): Alzheimer Disease (AD) and dementia affect an estimated 5.4 million people in the US with a new case diagnosed every 68 seconds. Obesity is a proposed modifiable risk factor for dementia and cognitive dysfunction. Obesity and dementia disproportionately affect African Americans (AA), yet AAs are underrepresented in studies of adiposity and cognitive function and mechanisms through which obesity increases dementia risk are poorly understood. In addition, risk scores to aid clinicians in identifying AA at risk of cognitive dysfunction are lacking. We will examine vascular and non-vascular mechanisms through which adiposity may affect brain structure, cognitive function (cross-sectional) and cognitive decline (longitudinal) using the GENOA study, a cohort of AA sibships. Adiposity measures, traditional and novel biomarkers, and vascular risk factors will be used to develop a cognitive dysfunction clinical risk tool for AA. We hypothesize a cascade of adiposity effects occurring through inflammation, adipokine, and vascular risk factor pathways which contribute deleteriously to cognitive function/decline. The specific aims of this study are: (1) Quantify cross-sectional adiposity and brain structure relationships, and cross-sectional and longitudinal relationships between adiposity and cognitive function, accounting for brain structure. We hypothesize that: 1.1) Greater central and overall adiposity will be associated with more brain atrophy, white matter hyperintensities, increased ventricular and decreased total brain volume across age. We also hypothesize that, accounting for brain structure, cardiovascular risk factors and clinical disease: 1.2) Greater adiposity will be associated with poorer cross-sectional cognitive function; and 1.3) Greater increases in adiposity will be associated with greater cognitive decline; and 1.4) Cross-sectional associations of CT-imaged abdominal adiposity will have stronger associations with cognitive function than waist circumference or body mass index. (2) Contrast the mediating effects of brain structure, inflammation, adipokines and vascular disease/risk factors in explaining relationships of adiposity to cognitive function/decline. We hypothesize that: Inflammation, adipokines and vascular contributors will explain 2.1) cross-sectional associations of adiposity to cognitive function and 2.2) associations of adiposity to cognitive decline, more so than brain structure. (3) Develop a clinical risk score to predict 3.1) cognitive dysfunction and 3.2) decline in AA. We hypothesize that an inflammation biomarker profile and adiposity measures will improve existing cardiovascular risk scores to predict 3.1) cognitive dysfunction and 3.2) cognitive decline. The proposed analyses will fill salient gaps in knowledge regarding prevalent and modifiable risk factors for cognitive impairment and will improve clinicians' ability to identify AA at high risk of cognitive dysfunction and decline for targeted interventions.

Lay Summary

PUBLIC HEALTH RELEVANCE: Rates of obesity and dementia are higher in African Americans than caucasians. Obesity is reported to be a modifiable risk factor of dementia, although we do not understand how obesity contributes to dementia. This study will examine the influence of inflammation and fat-derived hormones on the relationship of obesity to dementia in African Americans, and will develop a scoring system to help clinicians identify persons at risk for

dementia. Identifying persons at risk of dementia, but before problems begin, is necessary in order to develop interventions to prevent or delay its onset.

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