Researchers identify potential gene that may increase risk of ad in African Americans

August 4 2014

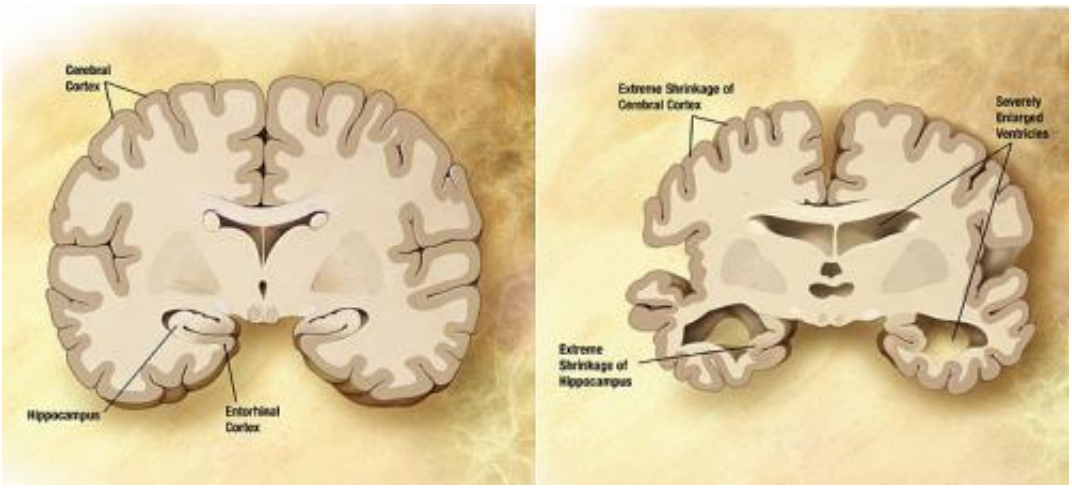

Diagram of the brain of a person with Alzheimer's Disease. Credit: Wikipedia/public domain.

Researchers from Boston University School of Medicine (BUSM) report that two rare variants in the AKAP9 gene significantly increase the risk of Alzheimer's disease (AD) in African-Americans.

This previously unknown association furthers the understanding of the role of genetic factors in the development of AD, according to the researchers, whose findings appear in *Alzheimer's & Dementia*.

AD is the most frequent age-related dementia affecting 5.4 million Americans including 13 percent of people age 65 and older and more

than 40 percent of people age 85 and older. Up to 75 percent of AD cases are thought to have a genetic basis; however the specific genes involved likely differ between ethnic populations. The most well-known AD risk gene, APOE4, does not play as strong a role in AD risk in African Americans as it does in Caucasians, despite the fact that a higher proportion of African Americans than Caucasians are afflicted with this disorder.

By analyzing the DNA sequence for all genes from participants of the Multi-Institutional Research on Alzheimer Genetic Epidemiology (MIRAGE) Study and Genetic and Environmental Risk Factors for Alzheimer's Disease among African Americans (GenerAAtions) Study, researchers identified two genetic variants in AKAP9 unique to African Americans that are enriched in individuals with AD. They then confirmed this association in several thousand other African American subjects in the Alzheimer Disease Genetics Consortium dataset. Carriers of either of these AKAP9 variants have a respective 2.8 and 3.6 times greater risk of developing AD.

According to the researchers AKAP9 encodes a protein with multiple forms, One of these, AKAP450, is expressed in the brain and responsible for microtubule anchoring and organization. Another protein, tau, which is responsible for microtubule functioning is well known to be the key constituent of neurofibrillary tangles that accumulate in AD brains. "While further work is needed to clarify the causal link between these AKAP9 variants and AD, "this study indicates a new potential disease mechanism in the quest for a better understanding of AD, particularly in African Americans," explained senior author Lindsay Farrer, PhD, Chief of Biomedical Genetics and professor of medicine, neurology, ophthalmology, epidemiology and biostatistics at BUSM. "Moreover, this is the first authentic example of rare genetic variants conferring a high risk of AD in African Americans," he added.

Provided by Boston University Medical Center