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BIOMARKERS

POSTER PRESENTATION

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BIOMARKERS (NON-NEUROIMAGING)

ABCA7 high-risk genotype predicts working memory decline among older cognitively healthy African Americans

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Abstract

Background: Alzheimer's disease (AD) is a neurodegenerative disease characterized by progressive cognitive decline[1]. APOE-ε4 has been identified as the most prevalent genetic risk factor for the early onset of AD, while ABCA7-80 (rs115550680) has been shown to have a stronger effect size than the APOE-ε4 allele and is associated with the development of late-onset of AD among African Americans[2,3]. Although the efficiency of executive functions declines with age, some basic attentional functions and preserved knowledge may help mitigate the effects of aging on working memory[4]. Nevertheless, the impact of APOE ε4 and ABCA7-80 genotypes on attention and executive function in preclinical AD remains unclear[5]. This study investigated the influence of APOE ε4 and ABCA7-80 genotypes on working memory among cognitively unimpaired older African Americans.

Method: Participants were drawn from the ongoing longitudinal study, Pathways to Healthy Aging in African Americans conducted at Rutgers University–Newark. 838 participants (ages ≥ 60) completed saliva collection for genotyping and neuropsychological battery for cognitive assessment with a fraction repeating each assessment multiple times as part of returning visits. Simple linear mixed models were applied for longitudinal statistical analysis.

Result: ABCA7-80 high-risk genotype was found to be a risk factor for decreased cognitive performance, as assessed by Trail Making Test Part A (ß = 5.819, p = 0.030) and Part B (ß = 39.964, p < 0.001), Digit Span Total (ß = -2.092, p= 0.045), Controlled Oral Word Association (ß = -4.708, p = 0.019), as well as a significant association with increased depression.

Conclusion: The ABCA7-80 high-risk genotype may indicate early working memory declines in preclinical AD and may serve as a predictive biomarker among cognitively impaired older African Americans.