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Blood-based biomarkers of neuropsychiatric symptoms in Alzheimer's: Inflammation, vascular risks, gender and APOEε4 status

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Background: The presence of neuropsychiatric symptoms (NPS) in Alzheimer's disease (AD) is frequent, difficult to treat, the largest risk for nursing home placement and a primary source of caregiver stress. This research is directed toward identifying blood-based biomarkers that could be useful in identifying those individuals with Alzheimer's who are at greater risk for developing NPS.

Methods: Data were analyzed on 300 AD participants from the TARC cohort. Blood-based markers of cardiovascular risk, inflammation and microvascular pathology were assayed. NPS were assessed using NPI-Q and the Geriatric Depression Scale.

Results: Total cholesterol and homocysteine were positively related to NPS. Cholesterol was a positive marker for total NPS and symptoms of hyperactivity, psychosis, affective and apathy among men. IL-15 and IL-1ra were negatively associated with neuropsychiatric symptoms and homocysteine positively associated for females. Total cholesterol was related to NPS in males regardless of APOEε4 status. IL15 was found to be negatively and significantly related to NPS for female APOEε4 carriers only. High TC in males was related to number and type of NPS. Lower MIF was a strong predictor of depression and TNFα predicted apathy. For females MIF, ICAM and CRP and TNFα were significant.

Conclusions: Elevated cholesterol is a primary risk for NPS in males and inflammatory processes and oxidative stress primary for females. Findings indicate the biomarkers of NPS are related to both gender and APOE4 status and these variables need to be taken in account in the identification and treatment of AD patients at risk for NPS.

Biography

James Hall is a Professor of Psychiatry and Medicine in the Center for Alzheimer's and Neurodegenerative Disease at the University of North Texas Health Science Center. He had published over 100 peer reviewed articles and presents internationally at scientific meetings on Alzheimer's disease and biomarkers. He is Director of the Proteomics Laboratory and Director of the Memory Disorders Clinic at the University of North Texas Health Science Center.

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