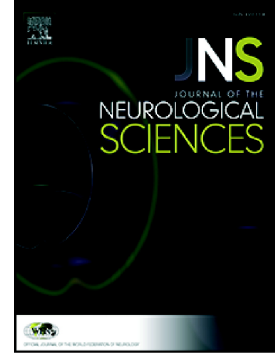


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The correlation between cerebral arterial pulsatility and cognitive dysfunction in Alzheimer's disease patients

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Abstract

Background

Potential role of vascular dysfunction has been suggested in the pathogenesis of Alzheimer's disease (AD). Previous cross-sectional studies have demonstrated relations between abnormal transcranial Doppler (TCD) parameters and cognitive impairment. We aimed to investigate the associations between longitudinal changes of TCD parameters and cognitive decline in patients with AD.

Methods: We have enrolled patients with mild to moderate AD who aged 60 to 79 years. Mean flow velocity and pulsatility index (PI) of anterior (ACA), middle (MCA), and posterior (PCA) cerebral arteries were evaluated. Cognitive functions were assessed using Mini-Mental State Examination (MMSE), Clinical Dementia Rating sum of boxes (SOB), and Alzheimer's Disease Assessment Scale (ADAS-cog), which was further categorized as praxis, language, and memory subscores. TCD and cognitive assessments were followed up 1 year later, and the longitudinal changes (Δ) between the baseline and follow-up measurements were evaluated.

Results: A total of 51 patients completed the follow-up evaluations (baseline age 71.5 years, MMSE 21.2). In the baseline evaluations, high PI values of ACA and MCA were associated with poor MMSE score, ADAS-cog total, memory, and praxis subscores. After 1 year, the increases of ACA and MCA PI were correlated with the aggravation of ADAS language subscore, and Δ ACA PI was also correlated with Δ SOB. The decrease in mean flow velocity of ACA was associated with aggravation of ADAS-cog praxis score.

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