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Using ASL technology to observe the regulating effect of CBF on memory in APOE genotype: the Alzheimer's disease neuroimaging initiative (ADNI)

Background & Aims: The aim of the study was to use cerebral blood flow (CBF) measurements with the arterial spin labeling (ASL) technique to assess difference between APOE-ε4 gene carriers and non-carriers and to observe the regulating effect of CBF on memory functions.

Method: A total of 62 healthy elderly subjects without subjective memory impairment and with normal score of mini–mental state examination (MMSE) were drawn from the Alzheimer's Disease Neuroimaging Initiative (ADNI) database; of whom 23 were APOE-ε4 gene carriers and 39 were non-carriers. The following three regions of interest (ROI) were selected for CBF measurements: medial temporal lobe (hippocampus, parahippocampal gyrus and uncus), inferior parietal lobe (supramarginal gyrus, inferior parietal lobule and angular gyrus), and frontal cortex (anterior cingulate gyrus, middle frontal gyrus and medial frontal gyrus). At the same time, the Rey Auditory Verbal Learning Test (RAVLT) was performed on all subjects to test their verbal memory function, and the results were correlated with the CBF.
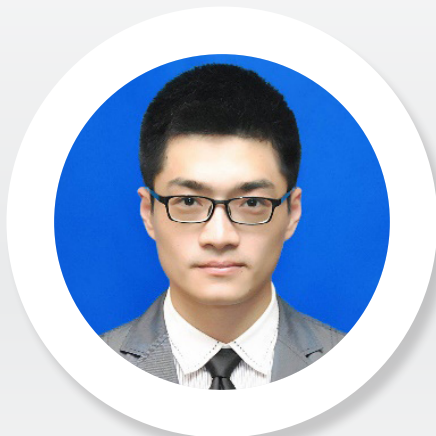
Results: The CBF in the ROIs was positively correlated with verbal memory function in the non-carriers. By contrast, in APOE-ε4 carriers the CBF value from the ROIs was negatively correlated to verbal memory function.

Conclusion: For APOE-ε4 carriers, an increased CBF does not compensate for memory function loss. That is to say, the regulating effect of CBF is affected in APOE-ε4 carriers.

Biography

Junyang Wang has completed his graduation from Wenzhou Medical University in 2015 and is currently a MD student majoring in Neurology at Zhejiang University School of Medicine, P R China. His research interests focus on exploring the novel biomarkers for AD patients using multimodality MRI.

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