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Association of Memory Impairment with Concomitant Tau Pathology in Patients with Cerebral Amyloid Angiopathy

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Abstract

Objective: Relying on tau-PET imaging, this cross-sectional study explored whether memory impairment is linked to the presence of concomitant tau pathology in subjects with Cerebral Amyloid Angiopathy (CAA).

Methods: *Forty-six subjects with probable CAA underwent a neuropsychological examination and an MRI for quantification of structural markers of cerebral small vessel disease. A subset of these subjects also completed a [^{11}C]-PiB (n=39) and [^{18}F]-*flortaucipir *(n=40) PET for in-vivo estimation of amyloid and tau burden, respectively. Subjects were classified as amnestic or non-amnestic based on neuropsychological performance. Statistical analyses were performed to examine differences in cognition, structural markers of cerebral small vessel disease, and amyloid- and tau-PET retention between amnestic and non-amnestic CAA subjects.*

Results: Probable CAA subjects with an amnestic presentation displayed a globally more severe profile of cognitive impairment, smaller hippocampal volume ($p<0.001$), and increased tau-PET binding in regions susceptible to Alzheimer's Disease neurodegeneration ($p=0.003$), as opposed to their non-amnestic counterparts. Amnestic and non-amnestic subjects did not differ on any other MRI markers, nor on amyloid-PET binding. In a generalized linear model including all evaluated neuroimaging markers, tau-PET retention (ß=-.85, $p=0.001$) and hippocampal volume (ß=.64 $p=0.01$) were the only significant predictors of memory performance. The cognitive profile of CAA subjects with an elevated tau-PET retention was distinctly characterized by a significantly lower performance on the Memory domain ($p=0.004$).

Conclusions: These results suggest that the presence of objective memory impairment in subjects with probable CAA could serve as a marker for underlying tau pathology.

Classification of Evidence: This study provides Class II evidence that tau-PET retention is related to the presence of objective memory impairment in subjects with CAA.

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