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Chronic microvascular ischemia is associated with cerebral amyloid burden in patients with cognitive impairment

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Background & Purpose: White Matter Lesions (WML), detected as hyperintensities on T2-weighted magnetic resonance imaging, represent chronic microvascular ischemia in the brain and are considered potential risk factors for memory and cognitive impairment in the elderly. The purpose of this study is to evaluate the association between WML and the cerebral β-Amyloid (Aβ) burden in patients with cognitive impairment.

Method: 19, 30 and 34 patients with subjective cognitive impairment, mild cognitive impairment and alzheimer's disease, respectively, who underwent brain MRI and F-18 florbetaben PET, were included. The Fazekas scale was used to quantify WML on brain T2-weighted images. The cerebral Aβ burden was quantitatively estimated using volume-of-interest analysis. The difference in Fazekas scale was evaluated between the Aβ positive and negative groups. The relationship between the Fazekas scale and the cerebral Aβ burden was evaluated using linear regression analysis after adjustment for age and sex.

Result: There were no differences in age and sex among the patients with subjective cognitive impairment, mild cognitive impairment and alzheimer's disease. In the overall cohort and mild cognitive impairment group, Aβ positive patients exhibited significantly higher Fazekas scale compared with Aβ negative patients (0.8 vs. 1.3; P=0.024 and 0.5 vs. 1.4; P=0.022). In addition, the cerebral Aβ burden was positively correlated with the Fazekas scale (β=0.299; P=0.006 and β=0.517; P=0.003).

Conclusion: WML are associated with the cerebral Aβ burden in patients with cognitive impairment. This suggests that chronic microvascular ischemia contributes to the development of alzheimer's disease.

Biography

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