CORPUS CALLOSUM ATROPHY IN PATIENTS WITH MILD ALZHEIMER’S DISEASE


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Global cortical and medial temporal lobe atrophy is a predominant finding in Alzheimer’s disease (AD). However, evidence suggests concomitant involvement of white matter such as corpus callosum (CC). It remains unclear whether callosal atrophy is already present in early stages of AD, and to which extent it is related to functional outcome and structural brain changes such as age-related white matter changes (ARWMC).

Object: To assess the presence of CC atrophy in early AD, and examined whether CC atrophy is associated with progression of cognitive decline. Moreover, we examined effects of ARWMC on CC atrophy in early AD.

Twenty-eight patients with mild AD and 50 independent elderly subjects with ARWMC underwent magnetic resonance imaging. The mid-sagittal CC area was automatically segmented and divided into 5 subregions. ARWMC was rated according to the Fazekas scale. MMSE scores were acquired at time of scanning and at 1-year clinical follow-up.

Logistic regression analysis (covariates: age, gender, and ARWMC load) revealed significant atrophy of the splenium (p< 0.05; OR=0.81) in AD patients compared to controls. AD patients who scored lower on the MMSE at 1-year clinical follow-up were those having significant more atrophy at baseline in total CC (rs = -0.41), rostral body (rs= -0.61) and splenium (rs = -0.51). ARWMC load was not correlated with CC measures in either group.

Posterior CC atrophy may already be present in early AD and callosal atrophy may be associated with cognitive decline. Furthermore, ARWMC may not be contributing to callosal atrophy in early AD.