

## Early morphological brain abnormalities in patients with amnesic mild cognitive impairment

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**Objective:** Individuals with amnesic mild cognitive impairment (aMCI) have increased risk for progressing into Alzheimer's Disease (AD). Therefore, identifying the radiological markers for this condition is of great diagnostic and clinical importance.

**Methods:** We calculated gray matter volume changes with structural magnetic resonance imaging (sMRI) and spontaneous low frequency fluctuations (LFF) with resting-state functional MRI (rs-fMRI) in 11 aMCI and 22 normal controls. Gray matter volume and low-frequency fluctuation maps were calculated and between-group comparisons were conducted with multiple regression analyses.

**Results:** Compared to normal controls, aMCI patients showed significant gray matter volume reductions in the inferior frontal gyrus, inferior parietal lobule, anterior cingulate cortex, insula and superior temporal gyrus. Significant decreases in the amplitude of low-frequency fluctuations (ALFF) were identified in the posterior cingulate cortex, precuneus, temporal gyrus and inferior parietal lobule in aMCI. The ALFF in aMCI was significantly increased in several other brain regions, including the occipital lobe and cerebellum. These group differences in ALFF remained after adjusting for structural differences between the two groups.

**Conclusion:** This pilot study in Chinese subjects confirms previous findings that aMCI is associated with structural and functional abnormalities in multiple brain regions. The pathophysiologic basis of these findings needs to be further explored in future studies.

**Key words:** Amnesic mild cognitive impairment; resting-state functional MRI; low-frequency fluctuation; voxel-based morphometry

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