OCCIPITAL SOURCES OF RESTING STATE ALPHA RHYTHMS ARE ABNORMAL IN SUBJECTS WITH AMNESIC MILD COGNITIVE IMPAIRMENT AND ALZHEIMER'S DISEASE AS A FUNCTION OF LOCAL GREY MATTER DENSITY

Abstract:

Previous studies have shown that in patients with amnesic mild cognitive impairment (aMCI) and Alzheimer's disease (AD), occipital sources of resting state alpha rhythms are related to cognitive status and progression of the disease. Here we evaluated the hypothesis that the abnormality of these occipital sources is related to local neurodegeneration. Resting state eyes-closed EEG rhythms were recorded in 30 healthy elderly (Nold), 37 aMCI, and 30 AD subjects. Neurodegeneration of occipital lobe was indexed by weighed averaged gray matter density (GMD) as measured from volumetric magnetic resonance images. EEG rhythms of interest were alpha 1 (8-10.5 Hz) and alpha 2 (10.5-13 Hz). EEG cortical sources were estimated by low resolution brain electromagnetic tomography (LORETA). Correlation analysis was performed including Nold, aMCI and AD subjects as a whole group according to the hypothesis of a grey zone in the transition of the two clinical conditions. Results showed a positive correlation between the magnitude of alpha 1 sources and cognitive status as revealed by mini mental state evaluation score. Furthermore, there was a negative correlation between the magnitude of occipital alpha 1 sources and GMD in the occipital lobe. These results suggest that, occipital sources of resting state alpha rhythms in aMCI and AD subjects are abnormal as a function of both cognitive status and local neurodegeneration.