Alzheimer's disease clinical features

The clinical presentation of Alzheimer's disease (AD) varies widely across individuals but the neurobiological mechanisms underlying this heterogeneity are largely unknown.

Specific patterns of brain atrophy may be helpful in the diagnosis of Alzheimer's disease (AD). In the present study, we set out to evaluate the utility of grey-matter volume in the classification of AD and amnestic mild cognitive impairment (aMCI) compared to normal control (NC) individuals. Voxel-based morphometric analyses were performed on structural MRIs from 35 AD patients, 27 aMCI patients, and 27 NC participants. A two-sample two-tailed t-test was computed between the NC and AD groups to create a map of abnormal grey matter in AD. The brain areas with significant differences were extracted as regions of interest (ROIs), and the grey-matter volumes in the ROIs of the aMCI patients were included to evaluate the patterns of change across different disease severities. Next, correlation analyses between the grey-matter volumes in the ROIs and all clinical variables were performed in aMCI and AD patients to determine whether they varied with disease progression. The results revealed significantly decreased grey matter in the bilateral hippocampus/parahippocampus, the bilateral superior/middle temporal gyri, and the right precuneus in AD patients. The grey-matter volumes were positively correlated with clinical variables. Finally, we performed exploratory linear discriminative analyses to assess the classifying capacity of grey-matter volumes in the bilateral hippocampus and parahippocampus among AD, aMCI, and NC. Leave-one-out cross-validation analyses demonstrated that grey-matter volumes in hippocampus and parahippocampus accurately distinguished AD from NC. These findings indicate that grey-matter volumes are useful in the classification of AD [1].

Alzheimer's disease dementia

Alzheimer's disease dementia

[1]

Guo Y, Zhang Z, Zhou B, Wang P, Yao H, Yuan M, An N, Dai H, Wang L, Zhang X, Liu Y. Grey-matter volume as a potential feature for the classification of Alzheimer's disease and mild cognitive impairment: an exploratory study. Neurosci Bull. 2014 Jun;30(3):477-89. doi: 10.1007/s12264-013-1432-x. Epub 2014 Apr 23. PMID: 24760581; PMCID: PMC5562611.