A SENSITIVITY/SPECIFICITY COMPARISON BETWEEN MEDIAL TEMPORAL LOBE VISUAL RATINGS AND MULTIVARIATE CLASSIFICATION IN ALZHEIMER'S DISEASE

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Background: Visual assessment of medial temporal lobe atrophy has been used of late by neuroradiologists in clinical practice to aid the diagnosis of Alzheimer's disease (AD). Recently multivariate classification methods for MRI have been suggested as alternative tools for the early detection of AD.

Aim: To compare the ability of medial temporal lobe atrophy determined by visual assessment and a multivariate MRI classification method to distinguish between subjects with AD and healthy elderly controls.

Methods: High resolution sagital 3D T1w MP-RAGE datasets were acquired from 78 AD patients and 82 CTL subjects from the multi-centre European AddNeuroMed study. The Fischl and Dale method was used to generate regional volume and regional cortical thickness measures, providing 57 measures for multivariate analysis (orthogonal partial least squares to latent structures). Visual assessment of the medial temporal lobe atrophy was performed on T1 w coronal images, using a single MR plane perpendicular to the AC-PC line and posterior to the amygdala and mamillary bodies at the position of the cerebral peduncles according to the approach of Scheltens et al 1995.

Results: Using seven-fold-cross-validation we found a prediction accuracy of 85% using multivariate classification while the visual ratings yielded an accuracy of 83% when distinguishing between AD and CTL.

Conclusion: Visual ratings of medial temporal lobe accuracy gave similar prediction accuracy as multivariate classification, which suggests a potential future role for computerized methods as a complement to clinical practice.