IMPACT OF WHITE MATTER LESIONS ON THE VALIDITY OF IRON DEPOSIT MEASUREMENT IN EARLY ALZHEIMER´S DISEASE.

M. Defrancesco[1], J. Marksteiner[2], E. Deisenhammer[1], M. Schocke[3]

[1]General and social psychiatry, University Hospital, Innsbruck, Austria ; [2]Psychiatry, Psychiatry Hall, Hall, Austria ; [3]Radiology, University Hospital Innsbruck, Innsbruck, Austria

Introduction: Mild cognitive impairment (MCI) confers a particularly high annual risk of 10-15% of conversion to Alzheimer´s disease (AD). Recent findings suggest that regional brain iron concentration measured by quantitative MR relaxation rate R2' may be useful as a biomarker to evaluate the progression of AD.

Objectives: In this study, we examined the impact of white matter lesion (WML) pathology measured by visual ratings on the validity of iron concentration in converting and stable MCI patients.

Methods: Retrospective magnetic resonance imaging data were collected for 65 MCI patients. All patients underwent 1.5 Tesla MRI: WML were visually rated on T2 images using the Fazekas and the Scheltens scales, iron concentrations of subcortical regions of interest (ROI) were measured on T2* maps by calculating the transverse relaxation rate R2'. Further, volumes of gray matter (GM), withe matter (WM) and cerebrospinal fluid (CSF) were calculated.

Results: Of 65 subjects, 25 converted to AD during a follow-up of 19.2±7.4 months and 40 remained stable. Converters had significantly more WML in periventricular regions and the temporal lobe as well as lower volume of WM and a higher volume of CSF. In contrast, ROI analysis of iron deposits showed higher iron concentration in the globus pallidus, the insula, the hippocampus and the substantia nigra in non-converters compared to converters.

Conclusion: Our results suggest that the validity of the measurement of iron deposits as a biomarker for the imminent conversion from MCI to AD may be limited by the presents of WML pathology.