COMPARISON OF HIPPOCAMPAL AND TEMPORAL HORN AREAS ON BRAIN MRI AS INDICATOR OF ALZHEIMER DISEASE

A. Bartos¹,², P. Zach³, J. Tintera⁴, D. Ripova¹

¹AD Center, Prague Psychiatric Centre, ²Department of Neurology, ³Institute of Anatomy, Charles University in Prague, Third Faculty of Medicine, University Hospital Kralovské Vinohrady, ⁴Institute of Clinical and Experimental Medicine, Prague, Czech Republic

Introduction: Mediotemporal atrophy is an early and most prominent brain change in Alzheimer disease (AD). The hippocampus (hipp) contrasts with the surrounding cerebrospinal fluid space in the temporal horn of ventricles (horn) on brain MRI.

Aims: To quantify hipp and horn areas and their relationships on MRI in AD and controls.

Patients and methods: We manually traced hipp and horn areas of both sides on one coronal T1-weighted image in 21 AD patients (medians: age 75 years, MMSE 20 points) and in 23 non-demented elderly subjects (68 years, MMSE 29). We calculated a percentage of the hipp area related to the combined area of hipp+horn.

Results: Compared to controls, the AD patients had a significantly smaller hipp area and a larger horn area on either side (all p < 0.001). The same results apply for all measures normalized to the brain area in commissura anterior. The hipp area occupies a significantly smaller proportion of the combined hipp+horn areas in the AD patients (dx 64 %, sin 62 %) than that in the controls (dx 83 %, sin 82 %) (p< 0.00001).

Conclusions: The hipp area is reduced and the horn area increased on brain MRI in AD patients compared to the controls. The hipp-horn proportion could be potential indicator of AD on brain MRI.

Supported by MSMT 1M0517, IGA MH CR NS 10369-3 and MZ0PCP2005.