

A LONGITUDINAL MRI STUDY OF HIPPOCAMPAL SUBFIELDS VOLUME ALTERATION IN POSTTRAUMATIC STRESS DISORDER FOLLOWING TRAFFIC ACCIDENTS

Z. Wang¹, Y. Zhou², S. Su¹, J. Xu², Z. Xiao¹

¹Shanghai Mental Health Center, Shanghai Jiao Tong University School of Medicine, ²Ren Ji Hosipital, Shanghai Jiao Tong University School of Medicine, Shanghai, China

The majority of neuroimaging studies reported smaller hippocampal volumes in patients with posttraumatic stress disorder (PTSD). Our previous study found that PTSD is associated with selective volume loss of the CA3/dentate gyrus subfields. However, the causality of smaller hippocampal volumes and PTSD cannot be determined in these studies because of the cross-sectional nature of them. The purpose of this longitudinal study was to determine if PTSD caused hippocampal subfields volume loss following traffic accidents. Volumes of hippocampal subfields in thirty seven traffic accident survivors were measured using 3T MRI in one week after accident, and twenty five of them completed one year follow-up MRI scan. Fourteen participants met the PTSD diagnosis in one year follow-up while other eleven did not met PTSD diagnosis criteria. PTSD was significantly associated with volumes reduction of CA3/dentate gyrus subfield ($\beta=0.244$ $p=0.017$) while other subfields were spared. It also shown volume loses of Entorhinal Cortex (ERC) of both side in one year follow-up for the whole sample (mean volume reduction: right 19.25mm³, left 22.04 mm³). But no association has been found between PTSD and ERC volume alteration. The findings indicate for the first time in humans that selective volume loss of the CA3/dentate gyrus subfields is the results but not the risk factor of PTSD. It also suggested that ERC may also be a stress sensitive region.