

HIPPOCAMPAL INVOLVEMENT IN PHYSIOLOGICAL DEJA VU: SUBFIELD VULNERABILITY RATHER THAN TEMPORAL LOBE EPILEPSY

Eva Peslova¹, R. Marecek^{2,4}, D. Shaw³, T. Kasperek^{3,5}, M. Pail⁴, M. Brazdil^{3,4}

¹*Faculty of Medicine, Masaryk University, Czech Republic*

²*Multi-modal and Functional Neuroimaging Research Group, CEITEC - Central European Institute of Technology, Masaryk University, Czech Republic*

³*Behavioral and Social Neuroscience Research Group, CEITEC - Central European Institute of Technology, Masaryk University, Czech Republic*

⁴*Brno Epilepsy Center, Department of Neurology, St. Anne's University Hospital and Medical Faculty of Masaryk University, Czech Republic*

⁵*Department of Psychiatry, Faculty Hospital Brno and Medical Faculty of Masaryk University, Czech Republic*

peslovaeva@gmail.com

Introduction: Brain morphological correlates of physiological déjà vu (DV) have been recently identified. Significantly reduced gray matter volume (GMV) in subjects experiencing DV mirrors the distribution of GMV reduction in mesial temporal lobe epilepsy (MTLE) patients. These patterns of GMV reduction vary in terms of the hippocampal region, however. Another condition associated with hippocampal GMV reduction is schizophrenia (SCH). Here we tested the hypothesis that hippocampal involvement in physiological DV resembles more closely the pattern of GMV decrease in MTLE compared with that in SCH.

Methods: We compared GMV within hippocampal subfields in healthy individuals that have (DV+; N=87) and have not experienced DV (DV-; N=26), and patients with MTLE (N=47) and SCH (N=29). We then evaluated the spatial distribution of GMV decrease to compare the DV+ and DV- groups, and their resemblance to the MTLE and SCH groups.

Results: Significant GMV decrease was found in all hippocampal subfields except CA1 for the DV+, MTLE and SCH groups relative to the DV- group. Concerning the spatial distribution, we found significant correlations both between DV+ and SCH, and DV+ and MTLE groups with higher correlations for SCH.

Conclusions: Our findings reveal structural features of hippocampal involvement in physiological DV, MTLE and SCH. The pattern of GMV reduction in the DV+ relative to the DV- group does not resemble the pattern observed in MTLE any more than that observed in SCH. Nevertheless, the highly similar patterns of the three groups suggest an increased vulnerability of certain subfields: CA4 DG, CA 2-3 and subiculum.