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SIGMA FLUCTUATIONS IN POLICE OFFICERS AND COMBAT VETERANS WITH PTSD

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Introduction: Post Traumatic Stress Disorder (PTSD) is a significant health problem with as key symptoms aversive memory intrusions and overgeneralization of the traumatic event, as well as sleep disturbances. Interestingly, sleep has an important role in memory consolidation. In particular, sleep spindles in different cortical areas reflect reprocessing and consolidation of specific memory traces. Given their strong relationship with memory reprocessing during sleep and reported memory and sleep alterations in PTSD, sleep spindles may play a role in the aetiology of PTSD. The current study assesses sigma fluctuations in PTSD patients.

Methods: Several parameters of sigma fluctuations were analysed and compared between traumatized police officers and combat veterans with (N=13) and without (N=14) PTSD. An automated detection method, free of a-priori assumptions regarding spindle characteristic, was used to obtain an unbiased representation of all sigma fluctuations. The standard deviation of the filtered sleep EEG (11-16 Hz) was computed (moving window: 0.2s), and all waxing/waning couplets with an amplitude over 5 microvolt were detected. For each detected sigma fluctuation, several variables were computed (e.g. duration, amplitude etc).

Results: Increased spindling activity was found in PTSD patients compared to trauma controls. This despite SSRI use in a small subsample of patients, which decreased spindling. The assumption free analyses revealed details regarding spindle abnormalities in PTSD that would have been missed by analysing only heuristically detected spindles.

Conclusion: The spindle abnormalities in PTSD may reflect excessive reprocessing and consolidation of trauma-related memories and may in this way contribute to the emotional memory problems.

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