

cortical inhibition deficits in recent onset PTSD after a single prolonged trauma exposure

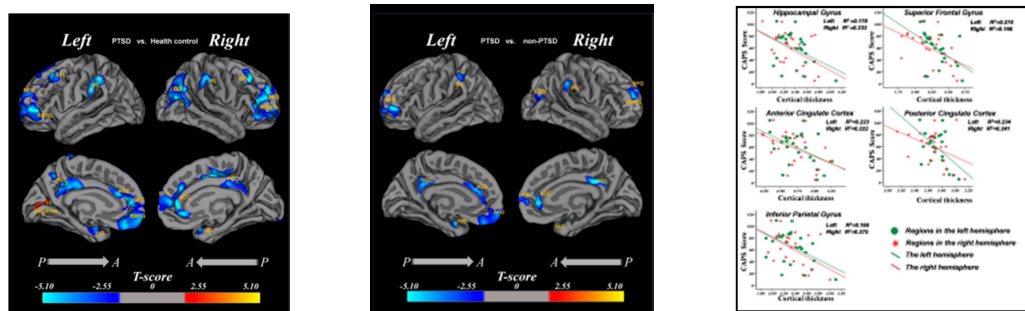
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PURPOSE: A variety of structural abnormalities have been described in post traumatic stress disorder (PTSD), but only a few studies have focused on cortical thickness alterations in recent onset PTSD.

METHODS: On July 29, 2007, a severe coalmine-flood disaster occurred at Zhijian Coalmine in Shanxian County in Henan Province. Sixty-nine male miners were rescued after a 75 hour ordeal in the darkness. Three months after the disaster, we attempted to contact all the 69 miners rescued. Forty-eight of them (69.6%) were successfully found and were willing to participate in the study. we adopted surface-based morphometry (SBM), which enables an exploration of global structural changes throughout the brain, in order to compare cortical thickness alterations in recent onset PTSD patients, trauma-exposed subjects but without PTSD, and normal controls. Moreover, we used region of interest (ROI) partial correlation analysis to evaluate the correlation among PTSD symptom severity and significant changes of cortical thickness.

RESULTS: The widespread cortical thickness reduction relative to the normal controls were found in bilateral inferior and superior parietal lobes, frontal lobes, hippocampus, cingulate cortex, and right lateral occipital lobes in trauma survivors, whereas cortical thickness was only increased in left calcarine cortex in PTSD group. The average cortical thickness of hippocampus and cingulate cortex decreased by 10.75% and 9.09% in PTSD, 3.48% and 2.86% in non PTSD. We further demonstrated that the cortical thickness of bilateral ACC and PCC, superior frontal lobes, and hippocampus are negatively correlated with CAPS scores in all trauma survivors.



DISCUSSION: The current study provides evidence that recent onset PTSD has a distinct pattern of cortical thinning in the limbic system, the frontal and parietal regions, and that may associate with pathophysiology of recent onset PTSD caused by a single prolonged trauma exposure. Hippocampus and cingulate thickness in PTSD decreased 3 times than non PTSD. The altered regions in PTSD group are negatively correlated with CAPS scores.