

BRAIN ACTIVATION IN PATIENTS WITH SCHIZOPHRENIA DURING PSYCHOLOGICAL STRESS

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Introduction: It is commonly accepted that in most patients with schizophrenia external factors act on genetic predisposition to produce active psychotic symptoms. It is known that patients with schizophrenia have an abnormal peripheral autonomic response to psychological stress. We sought to characterize the brain activity patterns of such response in these patients.

Methods: We studied the pattern of brain activation in response to a mental arithmetic stress paradigm in 14 patients and 14 healthy subjects aged 18 to 50 years, using 3T-fMRI. A period of 6 minutes of resting state acquisition were followed by a block design with three 1-minute CONTROL task (one digit sum), 1 minute STRESS task (two digit subtraction) and 1 minute rest after task. Data were analyzed with SPM and SPSS software.

Results: While controls showed bilateral activation of hippocampi, parahippocampi, insulae, amygdalae, anterior cinguli and basal ganglia during mental stress, patients displayed less left hemisphere activation, specifically in insula, orbitofrontal cortex and frontal cortex, along with activation of pons. Moreover, patients did not show activation of hippocampi, parahippocampi and amygdalae.

After stress healthy subjects recovered its basal pattern. However, patients showed sustained activation of right posterior cingulum and temporal pole, along with bilateral orbitofrontal cortex, frontal cortex, precuneus, cuneus and angular gyrus for the observation period.

Conclusions: Present results suggest that abnormal activation of limbic structures underlies extensively documented peripheral autonomic abnormalities in patients with schizophrenia. Abnormal fronto-temporal connectivity may be the pathophysiological link for these results.