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FUNCTIONAL MRI ACTIVATION IN RESPONSE TO PANIC-SPECIFIC, NON-PANIC AVERSIVE, AND NEUTRAL IMAGERY IN PATIENTS WITH PANIC DISORDER AND HEALTHY CONTROLS

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Introduction: There is evidence that, besides limbic brain structures, prefrontal and insular cortical activations and deactivations are involved in the pathophysiology of panic disorder.

Objectives and aims: Using fMRI, this study investigated BOLD response patterns to stimulation with individually selected panic-specific pictures in patients with panic disorder with agoraphobia (PDA) and healthy controls. Structures of interest were the prefrontal, cingulate, and insular cortex, and the amygdalo-hippocampal complex.

Methods: 21 PDA subjects (12 female, 9 male) and 21 matched controls were investigated using a Siemens 3 T scanner. Before, PDA subjects gave ratings on 120 pictures showing characteristic panic/agoraphobia situations (PA). 20 pictures with the individually highest ratings were selected. 20 matching pictures showing aversive but not panic-specific stimuli (A) and 80 neutral pictures (N) from the International Affective Picture-System (IAPS) were chosen for each subject. Anxiety and depression ratings were recorded.

Results: Group comparisons revealed a significantly greater BOLD response in PDA subjects than in controls in the insular cortices, left inferior frontal gyrus, dmPFC, the left hippocampal formation, and left caudatum ($p < .005$), when PA and N responses were compared. Group comparisons for stimulation with A compared to PA showed activation of similar brain regions in both groups but with different peak coordinates.

Conclusions: Results indicate specific activation patterns to panic-specific picture stimulation in PDA patients. Distinct peak coordinates between PA and A differ between groups. This might implicate that the brain circuits underlying processing of aversive stimuli might differ in their function in PDA patients compared to healthy subjects.