What happens in the brain after failure vs. successful CBT treatment? A multicenter fMRI study on panic disorder with agoraphobia

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**Background**

- Panic disorder with agoraphobia (PD/AG) is a common and debilitating anxiety disorder characterized by recurrent and sudden attacks of intense anxiety and concerns about their potential implications.
- Exposure-based cognitive behavioral therapy (CBT) is an effective treatment of PD/AG. Still, not all patients benefit from this treatment.
- Fear conditioning and extinction may represent a pathogenetic pathway for the development and treatment of PD/AG.

**Methods**

**Sample**

- Within the national research network PANIC-NET\(^a\), \(n = 89\) patients participated in the fMRI study. Quality-controlled pre-post data sets from \(n = 42\) patients (R: \(n = 24\); NR: \(n = 18\)) were used for the present analysis (Table 1).

**Treatment response:** >50% reduction in HAM-A scores baseline to post assessment. R and NR groups were comparable in clinical baseline characteristics (Table 1).

**Task**

Differential conditioning task, reinforcement rate: 50% (Figure 1).

**Data acquisition:** 3 T scanners, 30 axial slices, TR=2sec, TE=30ms, voxel size 3.6x3.6x3.8mm, inter-leaved acquisition.

**Data analysis:** SPM5, flexible factorial design (whole brain analysis). Target contrast: Interaction effect group \(\times\) time (Monte-Carlo simulation with a minimum cluster size of 142 voxels to correct for multiple comparisons with \(p < 0.05\) corr.).

**Results**

**Discussion**

- Present results indicate differential neuroplastic changes as a function of treatment response in PD/AG.

- Treatment response was associated with enhanced hippocampal activity, a brain region well known to be involved in learning and memory.

- In contrast, neuroplastic changes in non-responders were characterized by decreased prefrontal activity, possibly indicating less cognitive appraisal of emotional-associative contingencies.

- The predictive value of neurofunctional response markers needs however to be evaluated in a second, independent sample to predict treatment response a priori.

- If replicated, these findings could contribute to the improvement of patient allocation strategies and treatment response rates.

**Recommended Literature**


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