Functional MRI study of memory-related brain regions in patients with depressive disorder.

BACKGROUND: Structural imaging studies of patients suffering from depressive disorder have revealed reduced hippocampal volume in the majority of cases. The present study aimed specifically at investigating the hippocampal function in unipolar depression using functional magnetic resonance imaging (fMRI).

METHODS: Eleven unipolar depressed patients and eleven healthy control participants matched for age, gender and years of education underwent an associative learning paradigm during fMRI scanning. In the encoding condition of the paradigm, participants had to learn face-profession pairs. These pairs had to be remembered in the retrieval condition. RESULTS: Hippocampal activity did not differ between depressive patients and control participants during encoding or retrieval. However, during encoding, depressive patients showed increased activity in the left parahippocampal gyrus and decreased activity in frontal and parietal regions. Retrieval of the associative pairs also yielded decreased activation patterns in depressive patients in frontal and parietal areas. LIMITATIONS: The present findings may be limited by the small sample size of participants. Additionally the comparatively young age of the depressive sample could indicate a comparatively shorter duration of illness, and thereby less salient measurable hippocampal abnormalities. CONCLUSION: The
current study suggests that depression is associated with modified memory-related brain function. In particular the parahippocampal gyrus, the prefrontal cortex and parietal regions show functional alterations during associative learning. These structures as well as their interrelationships may play an important role in the pathogenesis of depressive disorder.

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