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PUTATIVE CEREBRAL CORRELATES OF ABBERANT PAIN PROCESSING IN DEPRESSION

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The complex sensory experience of pain involves cognitive, behavioural and emotional aspects which are closely interrelated. While patients suffering from major depressive disorder (MDD) mainly exhibit increased thresholds towards experimentally induced thermal pain applied to the skin, the induction of sad mood increases pain perception in healthy controls.

Neurobiological underpinnings of the discrepancy of pain perception in depression and after sad mood induction in healthy volunteers will help to understand aberrant pain perception in the disease. Patients and controls were rated on mood scales and results were correlated to brain activity assessed in fMRI sessions. Similarly, autonomic modulation in respect to pain perception was assessed in patients.

We found a highly significant reduction in heat pain threshold on the left hand after sad mood induction in patients and controls. Subjects were scanned twice, one group before and after sad-mood induction and another group before and after neutral-mood induction, respectively. Our main finding was a significant group \times mood induction interaction bilaterally in the ventrolateral nucleus of the thalamus indicating a BOLD signal increase after sad-mood induction and a BOLD signal decrease in the control group.

We present evidence that induced sad affect leads to reduced heat pain thresholds in healthy subjects and depressed patients. This is probably due to altered lateral thalamic activity, which is potentially associated with changed attentional processes. Furthermore we present evidence for similar changes in depressed patients after sad mood induction. Autonomic modulation is less likely to interfere with pain perception in the disease.