Results: We found different patterns of activation in the two groups. Group 1 (simple emotional tone discrimination) showed greater BOLD signal changes than group 2 (self attribution) in temporal areas (BA22–39–41), in frontal regions (BA9–11) and in limbic lobe (BA31). Conversely to group 2 that showed greater BOLD signal changes than group 1 in parietal areas (BA 2–40–43), in temporal lobe (BA22–38) and in frontal lobe (BA9).

Conclusions: Self description mechanisms and moral stimuli recognition seem to activate different brain areas in depressed bipolar patients. Self referred emotional signals might also influence brain systems known to be critically implicated in the control of spatial attention, such as the frontal and parietal cortex. Cortical network in the prefrontal cortex (PFC) and temporal regions contributes to the detection of behaviorally relevant or salient stimuli and limbic areas are involved in the emotional tone detection. Self-judgement selectively activated distinct subregions that are involved in self-focused attention as opposed to detection process involved in recognition emotional valence.

References

[1] Pourtois G., Schwartz S., Seghier M.L., Lazeyras F., Vuilleumier P., 2006, Neural systems for orienting attention to the location of threat signals: An event-related fMRI study, Neuroimage, Epub ahead of print.
[2] Ochsner K.N., Knierim K., Ludlow D.H., Hanelin J., Ramachandran T., Glover G., Mackey S.C., 2004, Reflecting upon feelings: An fMRI study of neural systems supporting the attribution of emotion to self and other, J Cogn Neurosci, 16, 1746–1772.

P.1.e.022 Effects of attention and emotion on face processing in depression: a functional MRI study

M.J. Desseilles[1]*, S. Schwartz[2], T.T. Dang-Vu[1], V. Sterpenich[1], A. Darsaud[1], G. Albouy[1], G. Vandewalle[1], S. Gais[1], M. Schabus[1], G. Rauchs[1], C. Degueldre[1], A. Luxen[1], M. Ansseau[3], P. Maquet[1]. *[1]University of Liège, Cyclotron Research Centre, Liège, Belgium; [2]University Medical Centre, Laboratory for Neurology and Imaging of Cognition, Geneva, Switzerland; [3]University of Liège, Department of Psychiatry, Liège, Belgium*

Background: Although depression is a frequent and disabling psychiatric condition characterized by severe emotional and cognitive dysfunction, it remains unclear whether depression affects neural responses to emotional stimuli. Mood congruent processing bias is an intriguing feature of major depression in which ambiguous or positive events tend to be perceived as negative. Moreover, depressed patients show a diminished ability to discern affective facial expression. Such impairment in emotional perception might contribute to inadequate social adaptation classically observed in depression. The processing of facial expressions involves a large network of specialized brain areas, including the fusiform face area (FFA; response to faces), the superior temporal sulcus (STS; response to mouth and eye movements involved in facial expressions), and the amygdala (response to emotions such as fear). Enhancement of fMRI signal by emotional expression can occur in both the FFA and the amygdala, even in conditions of reduced attention to the face stimuli (Vuilleumier et al., 2001). In addition, a recent study found greater response to negative visual stimuli in the left fusiform gyrus for depressed patients (Davidson et al., 2003). However, it remains unknown to what extend such changes in neural activity during the processing of emotional stimuli in depression depends on top-down attentional influences. Purpose: To investigate the modulation of brain response to task-irrelevant emotional faces by attentional load in both depressive and healthy populations.

Methods: Subjects with major depressive disorder (n = 5; drug-free) and without any psychiatric or organic history (n = 15) were scanned on a 3 Tesla MR scanner (Allegra, Siemens, Erlangen) using a gradient echo EPI sequence (32 transverse slices, TR: 2130 ms). During the main fMRI experiment, subjects were presented with a continuous rapid stream of colored letters at fixation (one letter every 750 ms) that were shown either alone or together with peripheral emotional faces (anger and fear) in both hemifields. In an ABBA block design, subjects had to detect either any red letter (easy, low load condition), or upright yellow/inverted blue Ts (hard, high load), while the central letter stream and peripheral stimuli were the same in each condition. Data were analysed using SPM2 (http://www.fil.ion.ucl.ac.uk). Comparisons between the two populations were performed in regions of interest showing increased activity during emotional face presentation.

Results: Our preliminary data reveal increased activity in FFA during face presentation irrespective of load condition in the healthy population, but only during the low load condition in depressed patients. Finally, as compared to depressive patients, healthy subjects show activations in IPS and frontoparietal regions during the high load task with emotional face perception and in prefrontal cortex during the low load task.

Conclusions: Our results suggest that depression interferes with the modulation of neural response in ventral visual pathway by attention. By showing abnormal interaction between attentional and visual processing during the perception of face expression, our study provides new insights into the physiopathology of depression and associated impairments in the perception of socially-relevant stimuli.

References

[1] R.J. Davidson, W. Irwin, M.J. Anderle, N.H. Kalin, 2003, The neural substrates of affective processing in depressed patients treated with venlafaxine, Am J Psychiatry, 160, 64–75.
[2] P. Vuilleumier, J.L. Armony, J. Driver, R.J. Dolan, 2001, Effects of attention and emotion on face processing in the human brain: An event-related fMRI study, Neuron 30, 829–41.

P.1.e.023 Functional MRI investigation using visual and emotional memory induction paradigms in chronic depression

A.V. Ravindran[1]*, A. Smith[2], C. Cameron[3], R. Bhatla[3], I. Cameron[2]. *[1]University of Toronto, Department of Psychiatry, Toronto, Canada; [2]University of Ottawa, Ottawa Hospital Research Institute, Ottawa, Canada; [3]University of Ottawa, Department of Psychiatry, Ottawa, Canada*

Scientific Background: Dysthymia (low-grade chronic depression) is a common mood disorder with significant morbidity and functional impairment. Biological studies have confirmed the etiological overlap and treatment response of dysthymia with major depression and other subtypes of depressive disorders. The development of functional magnetic resonance imaging (fMRI) has provided an effective tool for examining the neural correlates of cognitive processing. fMRI is non-invasive, requires no injection of a contrast material, does not expose subjects to ionizing radiation and can be used for repeated sessions with the same subject. There are no previous published studies examining