

Poster presentation

Differential activation of fusiform gyrus during fearful face processing in schizophrenia

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from International Society on Brain and Behaviour: 2nd International Congress on Brain and Behaviour
Thessaloniki, Greece. 17–20 November 2005

Published: 28 February 2006

Annals of General Psychiatry 2006, **5**(Suppl 1):S82 doi:10.1186/1744-859X-5-S1-S82

Background

The crucial role of the fusiform or occipitotemporal gyrus in face recognition has been supported by findings from neuropsychological, brain lesion as well as functional neuroimaging studies. These findings suggest a crucial role of this region in finely discriminating and processing invariant aspects of the human face information as well as the emotional facial expressions. Recent functional neuroimaging studies suggest a direct role of the fusiform gyrus in the processing of fearful facial expressions; it has been demonstrated that this region shows statistically significant greater activation during the processing of fearful compared with neutral faces. In addition, increasing activation of the fusiform gyrus with increasing intensity of facial fear has been demonstrated.

A growing body of evidence suggests that patients with schizophrenia have a deficit in recognition of facial affect and that recognition of fearful emotions may be differentially affected in patients with schizophrenia. We hypothesized that patients with schizophrenia would demonstrate attenuated activation of the fusiform gyrus during the processing of fearful compared with neutral faces and that this would differ from activation seen in a matched group of healthy volunteers.

Materials and methods

fMRI data was acquired on a GE signa 1.5 T system in eleven stable patients with a DSM-IV diagnosis of schizophrenia and nine age and gender matched healthy comparison subjects. All subjects were required to perform a gender discrimination task while viewing fearful, sad or neutral faces, presented in an event-related design. Data

were analysed using the standard software of the Institute of Psychiatry.

Results

Healthy subjects demonstrated significantly greater activation of the right fusiform gyrus during the processing of fearful compared to neutral faces. Interestingly, patients with schizophrenia did not show this difference. In the between group comparison, patients with a diagnosis of schizophrenia when compared with the healthy subjects had significantly less activation within the fusiform gyrus during the processing of fearful faces.

Discussion

Our data indicate that the fusiform gyrus displays a differential pattern of activation during the processing of fearful faces in schizophrenic patients compared to healthy controls. This may underlie the difficulties of the patients in social interaction and play a role in the evaluation of persecutory beliefs.