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Reduced Frontal Cortical Thickness in Generalized Anxiety Disorder

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Introduction

Little is known about the structural abnormalities underlying generalized anxiety disorder (GAD). However, there is evidence of larger volumes of dorsomedial prefrontal cortex (Schienle et al, 2011). Also, increased n-acetyl-aspartate in right dorsolateral prefrontal cortex (DLPFC) (Mathew et al, 2004), and hyperactivation in right middle frontal to negative stimuli have been shown in GAD (Blair et al, 2008).

Objectives

To investigate variations in cortical thickness (CT) in GAD patients versus healthy controls (HCs).

Aims

GAD patients and matched HCs underwent a 3T magnetic resonance imaging (MRI) session.

Methods

Structural MRI was acquired from 24 DSM-IV GAD patients (age=41±13.9) and 23 HCs (age=39±13.4). CT was estimated using Freesurfer5.3 (Fischl and Dale, 2000). Results were manually corrected if necessary. We considered 21 regions of interest (ROIs) per hemisphere (4 cingulate, 6 frontal, 3 parietal, 5 temporal, 1 occipital, entorhinal, insula), for each of which a mean CT value was calculated. A t-test was performed for each region, correcting results for multiple comparisons.

Results

The groups were statistically homogeneous in terms of age, gender, handedness, and IQ ($p > 0.05$). Though ROI volumes were preserved in GAD ($p > 0.05$; Bonferroni corrected), a significantly reduced CT was found in right caudal middle ($t(46)=3.621$, $p=0.015$) and right superior frontal ($t(46)=3.215$, $p=0.049$) regions.

Conclusions

The found decreased CT in GAD patients compared to HCs in superior frontal and caudal middle areas (right side) sustains prior neuroimaging findings showing abnormalities in prefrontal cortex. Reduced right frontal CT may be involved in cognitive dysfunction and symptomatology of the disorder.