Altered anatomical asymmetry in children with attention deficit/hyperactivity disorder: a pilot optimized voxel-based morphometric study.


Abstract

OBJECTIVE: Mounting evidence suggests that attention deficit/hyperactivity disorder (ADHD) is related with abnormal anatomical asymmetry in some brain regions, such as basal ganglia. However, few cross-sectional studies have examined the abnormalities of anatomical asymmetry in whole brain of ADHD. Thus this cross-sectional study was to explore the anatomical asymmetry in whole brain of ADHD with optimized voxel-based morphometry (OVBM).

METHODS: Twenty-five boys with ADHD and 27 age and gender-matched controls were recruited. All participants were right-handed. The grey matter concentration of each voxel was calculated with OVBM. A statistical evaluation of grey matter asymmetry was then conducted on normalized grey matter images and their flipped counterparts.

RESULTS: One-sample t-test revealed that the whole-brain anatomical asymmetry pattern was similar in two groups. Through group comparisons, ADHD showed reversed left-greater-than-right asymmetry in superior and middle frontal gyri versus controls.

CONCLUSION: Anatomical asymmetry of prefrontal cortex is abnormal in children with ADHD. And abnormal anatomical asymmetry may play an important role in the pathophysiology of ADHD.