Gray Matter Increase in Motor Cortex in Pediatric ADHD - A Voxel-Based Morphometry Study

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Abstract

Objective:
Several studies report that ADHD is associated with reduced gray matter (GM), whereas others report no differences in GM volume between ADHD patients and controls, and some even report more GM volume in individuals with ADHD. These conflicting findings suggest that reduced GM is not a universal finding in ADHD, and that more research is needed to delineate with greater accuracy the range of GM alterations.

Method:
The present study aimed to identify GM alterations in ADHD using pediatric templates. 19 drug-naïve ADHD patients and 18 controls, all aged 7 to 14 years, were scanned using magnetic resonance imaging.

Results:
Relative to the controls, the ADHD patients had more GM, predominantly in the precentral and supplementary motor areas. Moreover, there were positive correlations between GM volume in these areas and ADHD scale scores.

Conclusion:
The clinical and pathophysiological significance of increased GM in the motor areas remains to be elucidated by additional research.