Abstract

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Differences in brain chemistry in children and adolescents with attention deficit hyperactivity disorder with and without comorbid bipolar disorder: a proton magnetic resonance spectroscopy study.

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OBJECTIVE: The authors' goal was to investigate phosphatidylinositol and glutamatergic metabolism in the anterior cingulate cortex of children and adolescents with attention deficit hyperactivity disorder (ADHD) alone, children with ADHD plus bipolar disorder, and children with no axis I diagnosis.

METHOD: Proton spectra were acquired from a 4.8-ml voxel placed in the anterior cingulate cortex of 30 subjects who were 6 to 13 years old. Fifteen subjects had ADHD and no comorbid disorder, eight had ADHD plus bipolar disorder, and seven were healthy comparison subjects.

RESULTS: Children with ADHD had a significantly higher ratio of glutamate plus glutamine to myo-inositol-containing compounds than children with ADHD plus bipolar disorder and healthy children.

CONCLUSIONS: myo-Inositol-containing compounds may provide information on the action of antimanic treatments such as lithium, valproate, and carbamazepine. Glutamate and glutamine are measures of glutamatergic neurotransmission and thus may also reflect changes in serotonin and dopamine pathways.

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