

Abstract

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Differentiating attention-deficit/hyperactivity disorder inattentive and combined types: a (1)H-magnetic resonance spectroscopy study of fronto-striato-thalamic regions.

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OBJECTIVE: Despite the implication of fronto-striatal circuits in attention-deficit/hyperactivity disorder (ADHD), there is a lack of information on the role of these regions, especially the thalamus, in the heterogeneity of ADHD.

METHODS: We assessed the (1)H-magnetic resonance spectroscopy profile in ventromedial prefrontal cortex (VMPFC)-thalamic-striatal regions bilaterally in three groups of subjects (age range 18-24 years old): ADHD inattentive type (ADHD-I; n = 9), ADHD combined type (ADHD-C; n = 10) and non-ADHD controls (n = 12). The peaks of N-acetylaspartate, Choline (Cho), myo-inositol (ml), creatine (Cr) and glutamate-glutamine-GABA (Glx) to Cr were calculated.

RESULTS: Subjects with ADHD-C showed lower ml/Cr ratio in the right VMPFC than controls, higher Cho/Cr ratio in the left thalamus-pulvinar than the ADHD-I group and higher Glx/Cr ratio in left putamen than individuals with ADHD-I and controls.

CONCLUSIONS: This metabolic profile suggests a disruption of fronto-striato-thalamic structures in the ADHD-C as a result of lower neuronal energetic metabolism.

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