

Abstract

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Increased NAA and reduced choline levels in the anterior cingulum following chronic methylphenidate. A spectroscopic test-retest study in adult ADHD.

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OBJECTIVE: The anterior cingulate cortex (ACC) is crucially involved in executive control of attention.

METHODS: Here, seven medication-naïve adult patients suffering from attention deficit/hyperactivity disorder (ADHD) were studied with 2D (1)H-magnetic resonance spectroscopic imaging (MRSI) of the ACC [Brodmann areas 24b'-c' and 32'] twice, once before initiation of stimulant treatment and once after 5-6 weeks of methylphenidate.

RESULTS: Upon retest, all patients demonstrated marked clinical improvement. Analysis of regional brain spectra revealed a significantly decreased signal of choline containing compounds as well as increased N-acetyl-aspartate (NAA) levels following treatment with methylphenidate whereas total creatine remained unchanged.

CONCLUSIONS: Our results add to a growing body of evidence implicating the ACC in the pathophysiology of ADHD and suggest that subtle structural changes might be associated with aspects of clinical improvement under stimulant treatment.

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