

Abstract

J Child Adolesc Psychopharmacol. 2007 Feb;17(1):11-7.

Striatal creatine and glutamate/glutamine in attention-deficit/hyperactivity disorder.

Carrey NJ, MacMaster FP, Gaudet L, Schmidt MH.

Department of Psychiatry, Dalhousie University, Halifax, Nova Scotia, Canada.

OBJECTIVE: The glutamatergic prefrontal-striatal pathway has been implicated previously in the neurobiology of attention-deficit/hyperactivity disorder (ADHD). We used short echo proton magnetic resonance spectroscopy (1H-MRS) to examine glutamate in the prefrontal cortex, left striatum, and, as a control area, the occipital lobe.

METHOD: Thirteen treatment-naïve ADHD children and 10 healthy comparison subjects participated. All were males between the ages of 6 to 11 years of age. Twelve ADHD subjects were scanned after 8 weeks of treatment.

RESULTS: Striatal glutamate, glutamate/glutamine (Glx) and creatine concentrations were greater in the ADHD subjects at baseline as compared to controls. Only striatal creatine, not glutamate or Glx, was reduced after stimulant treatment in the ADHD patients. No significant differences between groups were noted in the remainder of the striatal metabolites or any of the occipital lobe or prefrontal cortex metabolites.

CONCLUSIONS: These findings provide initial evidence of a striatal creatine/glutamatergic dysregulation in ADHD.

PMID: 17343550

