Sarcosine treatment for oppositional defiant disorder symptoms of attention deficit hyperactivity disorder children.

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Abstract

Methylphenidate, a stimulant that activates dopaminergic and noradrenergic function, is an important agent in the treatment of attention deficit hyperactivity disorder (ADHD). Sarcosine, a glycine transporter-1 inhibitor, may also play a role in treating ADHD by modulating the glutamatergic neurotransmission system through activating N-methyl-D-aspartate type glutamate receptors. This study aimed to assess the efficacy of sarcosine in treating children with ADHD. We conducted a six-week, randomized, double-blind, placebo-controlled clinical trial. The primary outcome measures were those on the Inattention, Hyperactivity/impulsivity, and oppositional defiant disorder (ODD) subscales of the Swanson, Nolan, and Pelham, version IV scale. Efficacy and safety were measured bi-weekly. A total of 116 children with ADHD were enrolled. Among them, 48 (83%) of the 58 sarcosine recipients and 44 (76%) of the 58 placebo recipients returned for the first post-treatment visit. The missing data values were imputed by the last observation carry forward method. From a multiple linear regression analysis, using the generalized estimating equation approach, and an intention to treat analysis, the efficacy of sarcosine marginally surpassed that of placebo at weeks 2, 4, and 6, with p-values=0.01, 0.026, and 0.012, respectively, although only for ODD symptoms. Treatment of ADHD by sarcosine (0.03 g/kg/day) was well tolerated. Sarcosine could possibly be a novel agent for managing ODD symptoms in the context of ADHD. However, future larger-scale studies are warranted to optimize its dosage.