Effect of Anodal and Cathodal Transcranial Direct Current Stimulation on DLPFC on Modulation of Inhibitory Control in ADHD

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Abstract

Objective:
The purpose of this study was to improve the inhibitory control functions through transcranial direct current stimulation (tDCS) in adolescents with ADHD symptoms.

Method:
Twenty high school students with ADHD symptoms participated in this single-blinded, crossover, sham-controlled study. All the participants were tested during the application of Stroop and Go/No-Go tasks that is used to measure inhibitory control, using 1.5 mA of tDCS for 15 min over the left dorsolateral prefrontal cortex (DLPFC).

Results:
Anodal stimulation on left DLPFC had no effect on interference inhibition during the Stroop task and increased the proportion of correct responses in the “Go stage” of the Go/No-Go test compared with sham condition. Cathodal stimulation on the left DLPFC increased the inhibition accuracy in the inhibition stage during Go/No-Go task in comparison with sham.

Conclusion:
tDCS over the left DLPFC of adolescents who suffer from ADHD symptoms can improve inhibitory control in prepotent response inhibition.