Effectiveness of Neurofeedback Versus Medication in Treatment of ADHD

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Abstract

BACKGROUND:
Neurofeedback (NF) is an operant conditioning procedure that trains participants for self-regulation of brain activity. Previous studies have shown that NF is a promising treatment of ADHD. However, there have been only a few RCT studies comparing effectiveness of NF with medication with various NF protocol and results. The aim of this study was to evaluate the effectiveness of unipolar electrodeneurofeedback (NF) using theta/beta protocol compared with methylphenidate (MPH) in the treatment of ADHD.

METHODS:
Children with newly diagnosed ADHD were randomly organised into NF and MPH groups. Each of children in NF group received 30 sessions of NF. Children in MPH group were prescribed methylphenidate for 12 weeks. Vanderbilt ADHD rating scales were completed by parents and teachers to evaluate ADHD symptoms pre- and post-treatment. Student’s t-tests and Cohen’s d were used to compare symptoms between groups and evaluate effect size (ES) of each treatment respectively.

RESULTS:
Forty children participated in the study. No differences in ADHD baseline symptoms between groups were found. Post-treatment, teachers reported significantly lower ADHD symptoms in the MPH group (p = 0.01), but parents reported no differences between the groups (p = 0.55). MPH demonstrated large ES (Cohen’s d 1.30 - 1.69), while NF showed moderate ES (Cohen's d 0.49 - 0.68) for treatment of ADHD symptoms.

CONCLUSION:
This study supports NF as a promising alternative treatment for ADHD in children who do not respond or experience significant adverse effects to ADHD medications.