Modafinil for the treatment of Attention-deficit/hyperactivity disorder: a meta-analysis

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Abstract

Attention-deficit/hyperactivity disorder (ADHD) is one of the most common and a debilitating neuro-behavior disorder in the pediatric population. Although numerous effective psychostimulants are available, more than 30% of patients still do not show adequate treatment response rendering diverse pharmacological options. We aimed at assessing the efficacy and safety of modafinil in the treatment of children and adolescents with ADHD by conducting a meta-analysis. An extensive search of databases and clinical trial registries resulted in five published short-term randomized, double-blind, placebo-controlled trials. Primary efficacy measures were mean change in ADHD Rating Scale-IV Home (ADHD-RS-IV Home) and School Version (ADHD-RS-IV School) from baseline to study end point. The results showed that modafinil more significantly improved ADHD-RS-IV Home (SMD, −0.77 [95%CI, −1.11 to −0.44]) and School (SMD, −0.71 [95%CI, −0.96 to −0.47]) than placebo. Dropout rate due to adverse event did not significantly differ between two groups. In terms of commonly observed side effects, modafinil showed significantly higher incidence of decreased appetite (RR= 5.02, 95% CIs, 2.55 to 9.89, P < 0.00001) and insomnia (RR= 6.16, 95% CIs, 3.40 to 11.17, P < 0.00001). Modafinil did not cause a clinically significant increase of heart rate, systolic blood pressure, and diastolic blood pressure. Although we found that modafinil may be another treatment option in children and adolescents with ADHD, the results should be interpreted and translated into clinical practice with caution, as the meta-analysis was based on a limited number of clinical trials.