Once a day Concerta methylphenidate was equivalent to 3 times daily methylphenidate in children with ADHD


QUESTION: In children with attention deficit hyperactivity disorder (ADHD), is once daily extended release methylphenidate (MPH) as effective as 3 times daily dosing?

Design
Randomised (unclear allocation concealment8), blinded (patients/parents and outcome assessors), placebo controlled crossover trial with 7 days of follow up for each treatment condition.

Setting
State University of New York at Buffalo, Buffalo, New York, USA.

Patients
70 children between 6 and 12 years of age (mean age 9 y, 89% boys) with ADHD receiving a stable dose of MPH and having reached menarche. 2 children were discontinued from the study.

Intervention
Crossover comparison of placebo, immediate release (IR) MPH 3 times a day (tid), and Concerta, a once daily MPH formulation taken in the morning. Each child’s dose concentration was based on that child’s MPH dosing before the study. 3 dosing concentrations of medication were used: 5 mg IR MPH tid/18 mg Concerta once a day; 10 mg IR MPH tid/36 mg Concerta once a day; and 15 mg IR MPH tid/54 mg Concerta once a day. Children received each medication condition for 7 days. Parents received behavioural parent training and teachers were taught to establish a school home daily report card.

Main outcome measures
Change in ADHD symptoms, social behaviour and academic performance in both naturalistic (home and school) and laboratory environments (on Saturday); and side effects.

Main results
On all measures in all settings, both drug conditions were statistically different from placebo (p < 0.001 for all measures) with little difference between drug conditions. In the natural setting, effect sizes (magnitude of the drug effects relative to placebo) on ADHD symptoms were 2.0, on oppositional defiant disorder symptoms 1.5, and on peer relations problems 1.4. Both medications improved behaviour as measured by teacher ratings and individualised target behaviours. These effects continued on into the evening as measured by parent ratings. In the laboratory setting Concerta was equivalent to IR MPH and both were statistically different from placebo. Effect sizes for both active drugs ranged from 0.4 to 0.8 on measures of rule violation frequency, negative behaviour frequency, observed disruptive behaviours, and individualised target behaviours. Side effects on children’s sleep and appetite were similar for the 2 drug conditions.

Conclusion
Once a day Concerta methylphenidate was equivalent to 3 times daily methylphenidate in children with attention deficit hyperactivity disorder.

*See glossary.