Methylphenidate, cognition, and epilepsy - A double-blind, placebo-controlled, single-dose study

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ABSTRACT

Objective:
To evaluate the potential efficacy of immediate-release methylphenidate (MPH) for treating cognitive deficits in epilepsy.

Methods:
This was a double-blind, randomized, single-dose, 3-period crossover study in patients with epilepsy and chronic cognitive complaints comparing the effects of placebo and MPH 10 and 20 mg given 1 week apart. Cognitive outcome was evaluated on the basis of an omnibus z score calculated from performance on the Conners Continuous Performance Test 3 (ability to discriminate between target and nontarget stimuli [d'] and hit reaction time standard deviation), Symbol-Digit Modalities Test, and Medical College of Georgia Paragraph Memory Test. Adverse events and seizure frequency were monitored. An open-label follow-up is reported elsewhere.

Results:
Thirty-five adult patients with epilepsy participated, of whom 31 finished. Demographics included the following: mean age = 35.3 years (range 20–62 years), 13 men and 18 women, and baseline seizure frequency of 2.8 per month. Epilepsy types were focal (n = 24), generalized (n = 6), or unclassified (n = 1). Mean epilepsy duration was 12.5 years. A statistically significant performance benefit was present at both 10-mg (p = 0.030) and 20-mg (p = 0.034) MPH doses. No seizures were associated with either MPH dose. Adverse effects leading to withdrawal included cognitive “fogginess” (n = 1 on 20 mg), anxiety/agitation (n = 1 on 10 mg), and tachycardia (n = 1). One participant was lost to follow-up after one 20-mg dose without side effect.

Conclusions:
This single-dose study suggests that MPH may be effective in ameliorating some cognitive deficits in patients with epilepsy. Additional studies are required.

ClinicalTrials.gov identifier: NCT02178995.

Classification of evidence: This study provides Class II evidence that single doses of MPH improve cognitive performance on some measures of attention and processing speed in patients with epilepsy and cognitive complaints.