Relationship Between Aggravation of Seizures and Methylphenidate Treatment in Subjects with Attention-Deficit/Hyperactivity Disorder and Epilepsy

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Abstract

OBJECTIVES:
We aimed to investigate the effectiveness and safety of methylphenidate (MPH), and especially its influence on seizures, in subjects with attention-deficit/hyperactivity disorder (ADHD) and epilepsy through a retrospective chart review of subjects treated with MPH in a clinical setting. We also evaluated factors that could affect seizure aggravation during MPH treatment.

METHODS:
From April 2004 to July 2011, MPH was prescribed to 105 subjects with ADHD and epilepsy. The demographic characteristics, psychiatric and medical history, and electroencephalography (EEG) results were reviewed. Two pediatric neurologists reviewed seizure type, epilepsy diagnosis, changes in seizure frequency, and EEG parameters during MPH treatment. Pediatric neurologists and psychiatrists determined the temporal relationship between seizure aggravation and MPH treatment.

RESULTS:
The mean age of the subjects was 14.8 ± 3.4 years (range: 7-24 years). Sixty-five (61.9%) of the subjects were male. The mean duration of MPH treatment was 22 months (range: 2 weeks to 89 months) and the mean dose of MPH was 0.84 mg/kg/day. MPH was effective in controlling ADHD symptoms in both the seizure aggravation and nonaggravation groups. However, 21 (20%) subjects had aggravated seizures and 32 (32.3%) subjects had worsened EEG findings. Subjects with uncontrolled seizure or anxiety disorders at baseline were more likely to show aggravated seizures. Subjects who had epileptiform discharges, anxiety disorders, or were free of antiepileptic drug use at baseline experienced EEG worsening more frequently. The median duration of MPH treatment was significantly longer in subjects who did not show seizure aggravation than in those who did (p < 0.001).

CONCLUSIONS:
MPH treatment may be related to aggravation of seizures or significant worsening of EEG findings in subjects with ADHD and epilepsy. Thus, clinicians should closely monitor seizure aggravation after MPH administration, especially for high-risk subjects with uncontrolled seizures or anxiety disorders at baseline.