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Letter to the Editor

An absence seizure: methylphenidate, clonidine and photic stimulation

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Attention deficit hyperactivity disorder (ADHD) is a frequent condition characterized by hyperactivity, impulsivity, and attentional problems (1). Stimulants, the first line of pharmacotherapy, are sporadically associated with seizure induction (2). A 17 year old male, with a remote history of an absence seizure disorder, had been treated with long-acting methylphenidate (Concerta), 90 mg daily. After five years of stability, a single petitmal convulsion was witnessed during an ophthalmologic examination.

From age six months until he was five years old, this patient had been treated for absence seizures; a younger brother was also medicated for absence seizures. Beginning at age five, the patient had been diagnosed with ADHD due to being inattentive, restless, and disruptive at school.

For the last five years, he had been receiving methylphenidate, adjusted to a daily dose of 90 mg. For the past 30 months, he was stable on this dose, exhibiting no side-effects or seizures. The patient weighed 63 kilograms, yielding a methylphenidate dosage of 1.43 mg/kg. Both the patient and his family were informed that methylphenidate (Concerta), at 90 mg per day, was an off-label dosage, but they asked for no changes. Due to insomnia, clonidine 0.1 mg at night was added. Several weeks later, the patient experienced a single episode of a petitmal convulsion during an ocular assessment. It occurred during photic stimulation and that was considered a precipitant for this incident.

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Methylphenidate dose was reduced to 54 mg per day and atomoxetine added at 18 mg daily. Following patient complaints of depression, impulsivity, and attention deficit, clonidine and atomoxetine were discontinued, while the dose of methylphenidate increased to 72 mg a day. Symptoms then improved and there has been no further ictal activity. His electroencephalogram with photic stimulation evidenced no abnormalities.

The highest methylphenidate dosage approved for the treatment of ADHD is 72 mg daily. In children, however, the maximum dose is 2 mg/kg/day. Amounts up to 108 mg/day have been used in healthy adults without reported sequelae (3), but stimulants can induce seizures (2). There have been associations between clonidine and convulsions as well (4,5). The ictal threshold in this individual may have been lower than normal, based on his and his family's history of childhood absence seizures. The ocular examination, with light shining in the eyes, might have induced a photic ictal episode.

Methylphenidate was effective and without sequelae at 72 mg per day; however, a seizure occurred at the 90 mg dosing level while also prescribed clonidine. Medicine selection, dosing, and polypharmacy are important management concerns in stimulant-treated individuals with ADHD and ictal histories.

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