*The information in this column is not intended as a definitive treatment strategy but as a suggested approach for clinicians treating patients with similar histories. Individual cases may vary and should be evaluated carefully before treatment is provided. The patient described in this column is a composite with characteristics of several real patients.*

**Treatment of ADHD in patients unresponsive to methylphenidate**

R.B. is an 8-year-old boy with a history of attention-deficit/hyperactivity disorder (ADHD) that was first diagnosed at age 4 years. When he was referred at age 8, he was in grade 3 but failing most of his subjects. He was also found to have oppositional defiant disorder at home and at school and, despite normal intelligence, a substantial learning disability in expressive and receptive language.

R.B. first started stimulant medication at 5 years old: 5, 10 and finally 20 mg of methylphenidate taken in the morning and again at noon. The medication did not greatly alleviate symptoms; poor compliance (many doses at school were forgotten or missed) and poor coverage between doses were thought to be the reasons for the poor medication response.

The child then started long-lasting OROS methylphenidate. The hope was that the once-per-day formulation, reported to last 10–12 hours, would improve compliance since no medication needed to be taken at school and would provide better coverage. Since the child was already on 40 mg of methylphenidate per day, the OROS methylphenidate was started at 36 mg per day and then increased to 54 mg per day (a high dose for a 6-year-old). Despite the high dose in the morning, the child continued to have a short attention span with disruptive, impulsive and oppositional behaviour at school. In the late afternoon and early evening, he became very emotional, with frequent crying, marked irritability and many tantrums.

In light of the poor response and the side effects to high dosages of OROS methylphenidate in grade 1, the child was switched to atomoxetine (a nonstimulant) in grade 2. This medication was increased from 0.5 mg/kg to 0.8 mg/kg, 1.2 mg/kg and then 1.4 mg/kg. The emotional side effects of the OROS methylphenidate subsided, but the clinical effects of the atomoxetine in controlling ADHD symptoms were not great. To achieve better symptom control, small dosages of short-acting methylphenidate were added, initially at 10 mg, and quickly raised to 20 mg in the morning and at noon.

Despite maximum dosages of atomoxetine combined with a fairly high dosage of methylphenidate, R.B. continued to have attentional, behavioural and learning problems at school and at home. He was referred to a special day program at the beginning of grade 3 and was gradually taken off all medications. As part of the day program, a behavioural program combined with parent training was begun for his oppositional behaviour, and special tutoring and remediation in language arts was begun for his learning disabilities. He also started a long-acting mixed amphetamine salt product (Adderall XR), initially at 10 mg per day and increased to 15 and then 20 mg per day.

The combination of Adderall XR at 20 mg per day, academic remediation and behavioural therapy proved effective, and he was gradually reintegrated into his regular classroom where he continues to do well.

This case illustrates several important issues. First, children with ADHD often have other comorbid conditions (e.g., 40% may have oppositional defiant disorder and 20% may have specific learning disabilities) that need to be addressed and treated, as stimulant medication is not likely to correct everything. Second, although many individuals (45%) respond equally well to methylphenidate or amphetamine products, some (28%) respond preferentially to methylphenidate whereas others (17%) respond preferentially to amphetamines and about 10% respond to neither group of stimulants.[1] It is still unclear what predicts preferential response to one or the other stimulant. This preferential response should be kept in mind, so when children don't respond well to methylphenidate, the first change in medication should be to amphetamines.

Had R.B. been tried on amphetamines earlier and had other needed interventions (e.g., academic remediation in the language arts, parent training, behavioural program) been established earlier, his problems may have been improved in grade 1 rather than grade 3.

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**Competing interests:** Dr. Hechtman declares having sat on the advisory boards/been a consultant for Eli Lilly, GlaxoSmithKline, Ortho Janssen, Purdue Pharma and Shire Canada.

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**Reference**

1. Arnold LE. Methylphenidate vs. amphetamine: comparative review. *J Atten Disord* 2000;3:200-11.

*Psychopharmacology for the Clinician columns are usually based on a case report that illustrates a point of interest in clinical psychopharmacology. They are about 500–650 words long and do not include references. Columns can include a bibliography which will be available only on the journal website and can be accessed through a link at the bottom of the column.*
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