

Cardiovascular Effects of Drugs Used to Treat Attention Deficit/Hyperactivity Disorder Part 1: Epidemiology, Pharmacology, and Impact on Hemodynamics and Ventricular Repolarization

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Cardiol Rev. 2018 Oct 25.

doi: 10.1097/CRD.0000000000000233.

Abstract

Attention-deficit/hyperactivity disorder (ADHD) is a clinical syndrome characterized by persistent inattention, impulsivity and hyperactivity. It is most commonly encountered in children and adolescents, but may persist into adulthood. A variety of psychostimulant and non-psychostimulant medications have proven to be successful in reducing inattention, impulsivity and hyperactivity in those with ADHD. Psychostimulants used to treat ADHD include methylphenidate and related drugs and various amphetamine preparations. Non-psychostimulant medications used to treat ADHD include atomoxetine and two alpha-2 adrenergic agonists; guanfacine extended-release and clonidine extended-release. The psychostimulants and atomoxetine have been shown, on average, to increase heart rate by 3-10 beats/min, systolic blood pressure by 3-8 mmHg, and diastolic blood pressure by 2-14 mmHg. These drugs may also delay ventricular repolarization. The alpha-2 adrenergic agonists may reduce heart rate and blood pressure. For these reasons, there is concern about the safety of psychostimulant and non-psychostimulant medications in patients with ADHD. In Part 1 of this 2 part review we discuss the epidemiology and natural history of ADHD, describe the pharmacology of drugs used to treat ADHD, and discuss in detail studies assessing the effects of ADHD drugs on blood pressure, heart or pulse rate and electrocardiographic indices of ventricular repolarization.