Stimulants and Pediatric Cardiovascular Risk: A Review

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ABSTRACT

Objective:
Concerns about serious cardiovascular (CV) events among stimulant-treated youth have led to clinical and policy debates. Accordingly, several population-based empirical studies have assessed the risk of CV events in children and adolescents treated with stimulants. The main objective of this review was to summarize findings and to evaluate the strengths and weaknesses of these population-based studies. In addition, we discuss the CV monitoring and policy implications for a clinically focused audience.

Methods:
A computerized literature search of Medline and PsycINFO was conducted for the calendar years 1990–2015 to identify population-based studies assessing stimulant treatment-emergent CV events in youth. Additional reports, peer-reviewed or gray literature, for example, government reports, were also included.

Results:
Nine population-based studies (one case–control and eight retrospective cohort designs) were included in this review. The case–control study compared sudden unexplained death cases to age-matched controls (motor vehicle passenger deaths) with respect to prior stimulant use and found a significant association (odds ratio = 7.4 [95% CI: 1.4–74.9]). By contrast, most retrospective cohort studies assessed the risk of serious CV events (i.e., sudden death, myocardial infarction, and stroke) and did not find an association with current stimulant exposure. The absolute rate for these serious events was low, but other data support risk. For example, cardiac-related emergency department visits showed a 20% increased risk for current stimulant users compared with nonusers in one study, and another study showed a 64% and 90% increased risk for concurrent use of stimulants with antidepressants and antipsychotics, respectively. Similarly, in another study, compared with nonusers, stimulant users had twofold greater odds of CV-related inpatient or outpatient services.

Conclusion:
In the face of mixed results from population-based safety studies, this review supports the inclusion of baseline and ongoing monitoring of cardiac status to assure a favorable benefit risk profile for stimulant users, particularly in concomitant regimens with antipsychotics and antidepressants.