Hemodynamic profile and behavioural characteristics during induction of anaesthesia in paediatric patients with attention-deficit hyperactivity disorder.

Cartabuke RS, Tobias JD, Rice J, Tumin D.


Abstract

AIM:
There is no consensus regarding the administration of stimulant drugs preoperatively, particularly in paediatric patients diagnosed with ADHD. The primary objective of the current study was to assess differences in blood pressure and heart rate before and after induction of anaesthesia between patients on chronic amphetamine or methylphenidate therapy who receive their normal dose preoperatively compared to patients in whom the prescribed medication was withheld. Secondary objectives were to assess the anxiety level during the induction of anaesthesia and the effect of premedication with midazolam.

METHOD:
Patients, ranging in age from 2 through 18 years, were enrolled if they were diagnosed with ADHD, were taking amphetamines or methylphenidate at any time in the 6 months prior to admission, and were undergoing an outpatient surgical or diagnostic procedure. The study cohort was divided into those who took their ADHD medications prior to surgery and those who did not take their medications preoperatively. The primary objective was addressed by comparing heart rate, systolic and diastolic BP, and mean arterial pressure before and during anaesthetic induction between the two groups. Hypotension after anaesthetic induction was defined as systolic blood pressure and mean arterial pressure <5th percentile for age. To address the secondary objectives, modified Yale Preoperative Anxiety Scale (mYPAS) scores assessed prior to induction and during induction were compared between groups.

RESULTS:
Fifty patients were enrolled, 14 of whom took their ADHD medication and 34 of whom did not take ADHD medication preoperatively. Two patients with unknown ADHD medication status were excluded from the primary analysis (stratification by medication withholding), but all 50 patients were used for the secondary analysis (stratification by midazolam use). There was no intraoperative hypotension in either group. Despite weak evidence for a difference in heart rate between the group receiving medication and the group with no medication (96.8 ± 14.0 vs 88.0 ± 14.0 beats/min; difference of means = 8.8; 95% CI of difference: 0.2, 17.7; P = 0.055), there was no evidence for differences between the groups in systolic BP, diastolic BP, or mean arterial pressure. There were no differences between groups in mYPAS at the two time periods assessed.

CONCLUSION:
The evidence suggests that continuing preoperative stimulant medication is not associated with cardiovascular instability in the paediatric population. The evidence suggests that withholding or allowing stimulant medication preoperatively does not improve behaviour on anaesthetic induction or reduce the need for anxiolytic medication. Research efforts should focus on perioperative management strategies that will decrease the likelihood of long-term behavioural issues.