Title: Arrhythmias during general anesthesia in children

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Introduction: Although uncommon, intraoperative dysrhythmias in anesthetized children may occur. During halothane anesthesia, the most common rhythm disturbance is the appearance of PVCs. We sought to redefine the incidence and type of arrhythmias in children in the post-halothane era.

Methods: Using an electronic anesthetic record database, we performed a retrospective chart review of anesthetics administered at The Children’s Hospital of Philadelphia from July 1998 through July 2004. Children with potential intraoperative dysrhythmias were identified by flagging charts that included the administration of anti-arrhythmic drugs, significant variation in heart rate or pulse rate, and identification of certain keywords known to be associated with the development of an arrhythmia. Excluded were patients with known arrhythmias or pro-arrhythmic conditions, patients with congenital heart disease and patients undergoing cardiac surgery or cardiac catheterization. Anesthetic records were reviewed by three investigators (JHH, RSL and SDM) with the intent of including only cases that met predefined criteria for presence of a rhythm disturbance.

Results: 114,209 Anesthetic records were screened to identify 1,526 records which met one or more of the programmed criteria. These were reviewed to identify the 220 records of interest. There were 103 instances of bradycardia, the majority were the result of surgical manipulation in ocular, neurosurgical or intraabdominal procedures. There were 41 cases where a transient junctional rhythm was noted. PVCs were frequent enough to be recorded in 38 cases, none noted to be hemodynamically significant and none with the use of halothane. There were 27 cases of tachycardia including one case of atrial fibrillation, 12 cases of SVT and the remainder being sinus tachycardia, all in patients with no previous history of arrhythmia. There were 8 cases of ventricular fibrillation or cardiac arrest, and single instances noted of AV block, elongation of the QT segment, and right bundle branch block.

Discussion: Since 1995 when the FDA approved sevoflurane for use in the USA, there has been no published account of the current incidence and types of arrhythmias in pediatric anesthesia. The serious ventricular arrhythmias which were associated with halothane administration are less common with newer agents, and the distribution of the types of arrhythmias may be changing. In our study the incidence of all reported arrhythmias is 19 per 10,000 anesthetics, with a shifting predominance away from ventricular extrasystoles and toward supraventricular origins.

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