

Citation

Bhananker SM, Ramamoorthy R, Posner, KL, Domino KB, Morray JP: Changing Profile of Anesthesia-Related Cardiac Arrests in Children: Update from Pediatric Peri-Operative Cardiac Arrest (POCA) Registry. *Anesthesiology* 103: A1310, 2005.

Abstract

Introduction

The Pediatric Perioperative Cardiac Arrest (POCA) Registry was formed in 1994 to investigate clinical factors and outcomes associated with perioperative cardiac arrest in children. Data from the first 4 years of the POCA registry showed that over half of the arrests occurred in infants. Medication-related causes, in particular halothane induced cardiovascular depression, was the most common cause of arrest.¹ We hypothesized that there would be fewer medication-related cardiac arrests with declining use of halothane in clinical practice.

Methods

North American institutions that provide anesthesia for children voluntarily enrolled in the POCA Registry. A representative from each institution submitted a standardized data collection form for every perioperative cardiac arrest (defined as the need for chest compressions or as death) in children 18 years of age or younger. We analyzed the causes and outcomes of anesthesia-related arrests. The data for the time period 1998-2003 was compared to data from 1994-97 using the Z test.

Results

Of the 339 cardiac arrest reports submitted to the POCA registry in the 1998-2003 period, 163 were anesthesia-related, with the remainder related to surgical procedure or patient condition. The proportion of infants suffering anesthesia-related cardiac arrest was lower in the later period compared to 1994-97 ($p < 0.05$, Table). Patients of ASA PS I-II accounted for 27 % of the 1998-2003 cases (comparable to 1994-97, Table). The proportion of medication-related arrests in the 1998-2003 period was lower (20%) than the 1994-97 period ($p < 0.05$, Figure). The most common causes of arrest were cardiovascular (37%, Figure). The severity of injury was not significantly different between the two time periods, with nearly a quarter of the arrests resulting in death (Table). [table1] Conclusions: We observed a reduction in the proportion of medication-related cardiac arrests in the last 6 years of the POCA registry. This may possibly be due to the declining use of halothane in favor of sevoflurane in pediatric anesthetic practice. There was a decrease in the proportion of infants and increase in the proportion of older children suffering perioperative cardiac arrest. The reason for this was unclear.

Table: Patient Characteristics and Outcomes for Anesthesia-Related Cardiac Arrests

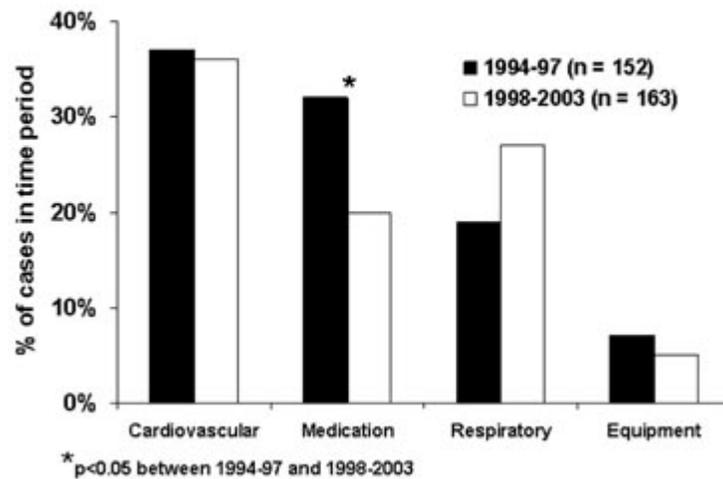
	1994-1997	1998-2003
	n=152	n=163
Age Group	<1 year	84 (55%) 58 (36%)*

	1-5 years	47 (31%)	55 (34%)
	6-18 years	21 (14%)	48 (30%)*
ASA Physical Status	ASA 1-2	50 (33%)	43 (27%)
Emergency Surgery	Emergency	33 (22%)	36 (22%)
Inpatient vs Outpatient	Inpatient	112 (74%)	126 (79%)
Severity of Injury	Death	40 (26%)	45 (28%)
	Permanent & Disabling	8 (5%)	8 (5%)
	Temporary/Nondisabling	104 (68%)	110 (67%)

Missing data excluded; * $p < 0.05$ compared to 1994-97 (Z test).

Figure

Primary Cause of Arrest



References

1. Anesthesiology 2000; 93:6-14.

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