TITLE: INCIDENCE OF ANESTHETIC CARDIAC ARREST IN INFANTS: EFFECT OF PEDIATRIC ANESTHESIOLOGISTS

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Because the anesthetic cardiac arrest rate in infants in our institution is higher than in adults, we questioned whether pediatric anesthesiologists have a lower rate compared to those without pediatric training.

Methods: Computerized data at a large university hospital were retrospectively reviewed from July 1, 1983 through March 31, 1990. Records of all reviewed patients aged 365 days or less were retrieved, which iuncluded Age, ASA physical status, body weight, presence or absence of an intraoperative cardiac arrest due to anesthesia, and identity of the atttending anesthesiologist. Pediatric anesthesiologists were identified from departmental records as those with pediatric fellowship training or equivalent.

Results: 4343 anesthetics were given to infants. 2310 were attended by pediatric anesthesiologists, and had no anesthetic cardiac arrests. The other 2033 were attended by non-pediatric anesthesiologists, and had 4 anesthetic cardiac arrests. Mean age and weight, and distribution of physical status were not different between the two provider groups.

	Ped. Anes	Nonped. Anes	Total
Arrest	0	4	4
No Arrest	2310	2029	4339
Total	2310	2033	4343

This difference between provider groups is significant (Fisher's Exact Probability test, P = 0.048). The incidence of anesthetic, cardiac arrest for infants in the hands of non-pediatric anesthesiologists was 19/10,000 anesthetics, and zero for pediatric anesthesiologists.

We conclude that the use of pediatric anesthesiologists significantly decreases anesthetic morbidity in infants.

A1046

TITLE: AN IN VITRO EVALUATION OF RELATIVE PERFORATION POTENTIALS OF SIX EPIDURAL CATHETERS

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A complication of epidural catheter placement is acute or delayed perforation of the dura mater with migration of the epidural catheter tip into the subarachnoid space. To study the relative potential of epidural catheter tips to perforate a simulated tissue membrane, we designed an in vitro test to evaluate the relative perforating potential of six commonly used epidural catheters (Table).

A catheter testing system consisting of two 37° C water chambers (a large rectangular chamber and a smaller cylindrical chamber) were used.[1] The two chambers were seperated internally by a 12.7 micron polyethylene (PE) membrane. Externally a latex membrane covered the cylindrical chamber. Each test catheter was held in a 16g blunt tipped needle with 1 cm of the catheter extending from the tip. The catheters were then mounted at a 70° angle of incidence to within 1 mm of the resting PE membrane. Once the system was activated, a piston striking against the external latex membrane produced hydraulic pressure causing the membrane to pulse 3 mm into the catheter tip. Number of pulsations to perforation of the test membrane was recorded. Five of each type of catheter were run 5 times. An arbitrary endpoint of 9600 pulsations was used. Results were analyzed by ANOVA and Tukey tests (Table).

Epidural catheters differ significantly in their relative perforating potential. These data provide another characteristic to consider when choosing an epidural catheter, particularly when it is to be used for a prolonged period.

Table. Pulsations to perforation.

Catheter	Tip	Pulsations (n)	Tukey
19-gauge			
Nylon			
Pharmaseal	B	5046 ± 4008	B
Teflon			
Deseret	O	2592 ± 3509	C
Dual durometer polyurethane			
Arrow	O	8783 ± 1728	A
20-gauge			
Nylon			
Kendall	O	4364 ± 3412	BC†
Burron	B	>9600*	A
Kendall	B	8597 ± 2774	A

Values are means ± SD. B = Bullet tip; O = Open tip. *Burron 20g, never perforated within 9600 pulsations. †Overlapping Tukey groups. Tukey groups with same letters are not different ($p < 0.05$).

Reference.
1. Anesthesiology 71:A984, 1989