Jimenez N: Trends in Pediatric Anesthesia Malpractice Claims Over the Last Three Decades. *ASA Newsletter* 69(6): 8-9, 12, 2005.

Full Text

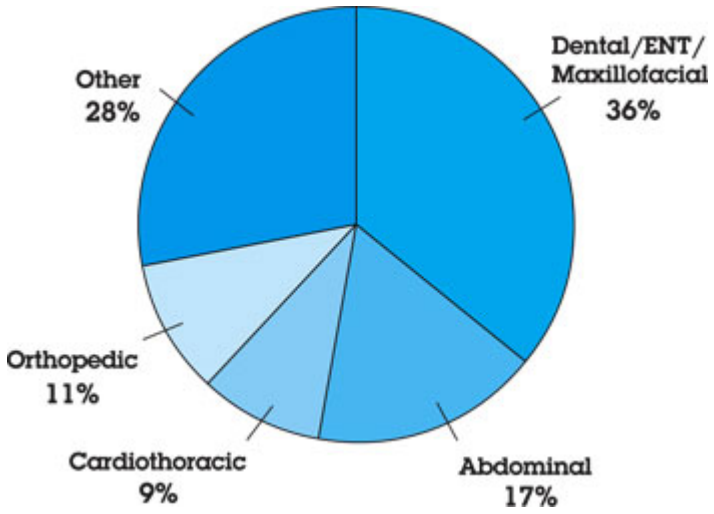
A previous review of closed pediatric anesthesia malpractice claims from the 1970s and 1980s showed a high proportion (43 percent) of pediatric injuries due to respiratory events. The majority of these claims involved inadequate oxygenation or ventilation (20 percent of total claims), and in 89 percent, the injury was thought to be preventable with better monitoring.[1] Due to the changes in monitoring standards in the 1990s as well as the introduction of new anesthetic agents and increasing pediatric anesthesia subspecialization, we examined trends in pediatric anesthesia liability using the ASA Closed Claims Project database. We predicted that the proportion of adverse events related to inadequate ventilation or oxygenation should decrease in the 1990s.

The ASA Closed Claims Project database currently contains 6,448 claims, from which 8 percent are in the pediatric age group (16 years and younger). We therefore analyzed 525 pediatric claims to identify patterns of injury, outcome and legal liability associated with pediatric anesthesia over time. We excluded neonates from obstetric anesthesia complications or neonatal resuscitation and patients with unknown year of event.

Patient Population

Approximately half of the claims involved patients three years and younger, with 60 percent being male and 40 percent female. Three-quarters of the pediatric patients were ASA Physical Status 1-2. There was a trend (not statistically significant) toward younger (<3 yrs) and sicker (ASA Physical Status 3-5) patients in the later time periods. Two major categories of surgical procedures were identified. One-third of claims were associated with dental, ear, nose and throat (ENT) and maxillofacial procedures followed by another 20 percent associated with abdominal surgeries [Figure 1]. These procedures may reflect the most common types of pediatric surgery. Because closed claims analysis does not provide denominator data (e.g., the number of procedures), however, we cannot rule out that the high proportion of claims involving dental/ENT/maxillofacial surgery may represent procedures of increased risk.

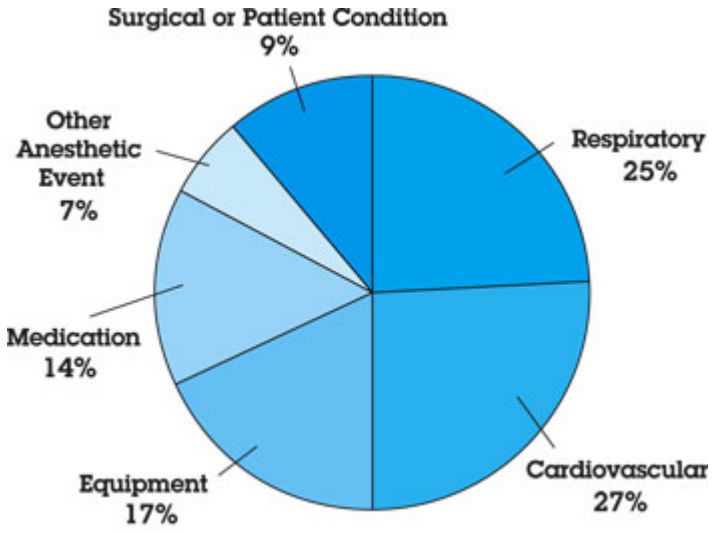
Figure 1: Surgical Procedures in Pediatric Claims 1990-2000



Most Common Causes of Claims

The proportion of claims involving respiratory events decreased over time ($p<0.001$). In the 1990s, both cardiovascular events (27 percent) and respiratory events (25 percent) were common causes of claims [Figure 2]. The combination of equipment and medication problems accounted for nearly one-third of pediatric anesthesia claims in the 1990s. Equipment-related claims included similar proportions of claims due to intravenous line placement, airway equipment and burns from warming devices or electrocautery. Medication-related claims included adverse drug reactions and malignant hyperthermia as well as wrong dose. The fact that a wrong dose was involved in half of the medication-related events (26 out of 49) suggests that techniques to improve attention to the appropriate doses in pediatrics may help improve patient safety.

Figure 2: Most Common Events in Pediatric Claims 1990-2000

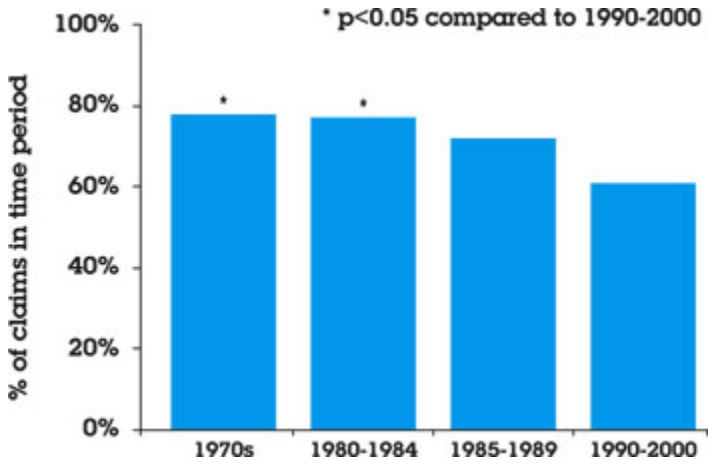


A closer look at respiratory events reveals interesting trends. Not only was there a significant decrease in the proportion of respiratory events, but this decrease was mainly associated with a reduction in the proportion of inadequate oxygenation or ventilation. At the same time, events that are not easily preventable with monitoring, such as airway obstruction (caused by laryngospasm, a mucous plug or upper airway obstruction, etc.) and aspiration of gastric contents, remained relatively constant or even increased over the years. Most of the claims for airway obstruction and aspiration occurred in children having ENT, maxillofacial or dental surgery. In the 1990s, half (n = 3) of the claims for aspiration involved the aspiration of blood following tonsillectomy or nasal surgery, and the remainder involved aspiration of a tooth, adenoid tissue or silent aspiration during induction. Two of the cases with aspiration of blood occurred at home following the tonsillectomy and resulted in death. These results suggest increased need for parental instruction for postoperative warning signs for bleeding after tonsillectomy.

Trends in Injury and Liability

Another important finding was the decrease in the severity of injury across the decades. The proportion of claims for death and permanent brain damage significantly decreased over time ($p = 0.03$) [Figure 3], with a corresponding increase in the proportion of claims resulting in temporary or nondisabling injuries. Trends in severity of injury would be expected to be reflected in payments for claims, and that seems to be the case in pediatric closed claims. Payments were smaller (after adjustment for inflation) in 1990-00 compared to the 1970s. Median payment in 1990-00 was $200,625 compared to $550,000 in the 1970s (all payments are stated in 1999 dollars). The proportion of claims that resulted in payment did not significantly change over time. On average 67 percent of claims resulted in payment.

Figure 3: Trends in Claims for Death and Permanent Brain Damage



Conclusions

We observed a decrease in respiratory-related damaging events related to inadequate oxygenation or ventilation in closed pediatric anesthesia malpractice claims in the ASA Closed Claims database over the past three decades. The decrease in severity of injury in the face of younger and sicker patients may be related to an increase in safety due to better monitoring, new drugs and, perhaps, pediatric subspecialization. Because of limitations in the closed claims analysis, however, we cannot rule out that this trend can be partly explained by an increase in the proportion of claims for minor injuries, changes in legal strategies and/or the longer statute of limitations in pediatric cases. Current safety efforts should be directed at finding ways to reduce drug errors with incorrect doses in pediatric patients and early detection of bleeding after tonsillectomy in outpatients.

References

1. Morray JP, Geiduschek JM, Ramamoorthy C, et al. Anesthesia-related cardiac arrest in children: Initial findings of the Pediatric Perioperative Cardiac Arrest (POCA) Registry. *Anesthesiology*. 2000; 93:6-14.

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