

Citation

Adeogba SA, Posner KL, Stephens LS, Domino KB. Central Venous Catheter Complications: Closed Claims Update. *Anesthesiology*, A1075, 2012.

Abstract

Background

We previously reported that malpractice claims for central venous catheter (CVC) injuries had high proportions of severe injury and death.¹ In light of the introduction of ultrasound technology and the recent ASA Practice Guidelines², we reviewed the most recent closed malpractice claims related to CVC access and use in the ASA Closed Claims Project database.

Methods

After IRB approval, we compared closed malpractice claims for CVC injuries to all other claims (excluding acute and chronic pain claims) from a database of 9,536 claims. CVC injuries that occurred between 1995 and 2009 (n=92) were compared to those that occurred between 1970 and 1994 (n=96). All payments were CPI-adjusted to 2011 dollars. Findings were assessed using Kolmogorov-Smirnov and Fisher's exact test using $p < 0.05$ for statistical significance.

Results

The majority (59%) of CVC claims from 1995-2009 resulted in death or permanent brain damage (death/BD, $p < 0.001$ compared to 39% of non-CVC claims). Death/BD for 1995-2009 CVC claims was not different from CVC claims that occurred in 1970-94 ($p = 0.4$). Most CVC claims from 1995-2009 demonstrated complications related to access rather than use of CVCs. Complications related to access increased to 87% of 1995-2009 CVC claims compared to 63% in 1970-94 ($p < 0.001$). The most common complication, carotid cannulation/puncture, increased to 24% in 1995-2009 compared to 14% in earlier CVC claims ($p = 0.05$). Other common complications (hemothorax 17%, catheter/wire embolus 11%, pneumothorax 10%, and cardiac tamponade 9%) remained comparable over time (Figure). During the later time period, 50% of CVC claims were assessed as preventable by ultrasound and 41% by pressure wave form monitoring compared to 25% and 21% respectively in the earlier time period ($p < 0.01$). Greater than half (57%) of recent CVC claims were possibly preventable by one or both modalities. Most CVC claims (61%) resulted in payment, with no significant differences between time periods in payment rates or amounts. Median payment in CVC claims from 1995-2009 was \$226,400 (range \$1,250-\$9,039,000).

Discussion

Malpractice claims for central venous catheter complications still have a higher rate of death and brain damage than other anesthesia malpractice claims. Carotid cannulation or puncture increased significantly in recent claims. A significant proportion of poor outcomes could have been preventable by the use of ultrasound or pressure wave monitoring, consistent with recommendations from the recent ASA central venous access guidelines.²

References:

1. Domino et al. Anesthesiology 2004; 100:1411-8.
2. Anesthesiology 2012; 116:539-73.

Figure 1

Most Common Central Line Complications

