

Citation

Lee LA, Stephens LS, Caplan RC, Posner KL, Domino KD. Postoperative Respiratory Depression: A Closed Claims Analysis. *Anesthesiology*, A305, 2012.

Abstract

Introduction

Postoperative respiratory depression (RD) from opioids remains a significant cause of death and brain damage for patients. Numerous risk factors have been cited including obesity, obstructive sleep apnea, advanced age, organ system dysfunction, preoperative opioid tolerance, and co-administration of sedating medications, though many patients have no identifiable risk factors. We analyzed claims from the ASA Closed Claims Database to determine factors associated with postoperative RD.

Methods

After IRB approval, we identified 341 acute pain claims occurring between 1990 and 2009 from a database of 9536 claims. Information provided in the narrative was analyzed by three anesthesiologists to evaluate whether RD was present, and to assess patient, physician, and nursing factors associated with RD. Inter-rater reliability was assessed by kappa. RD claims were compared to other acute pain claims by chi square analysis with $p < 0.05$ deemed significant.

Results

Of the 341 acute pain claims, 86 (25%) were assessed as having RD (kappa=0.69) and these had a significantly higher proportion of patients in the 18-49 y age group, with obesity, and undergoing lower extremity surgery compared to claims without RD (Fig. 1, $p < 0.05$). Death or severe brain damage occurred in 77% of RD claims compared to 22% of non-RD claims ($p < 0.001$, Fig. 1). The primary mode of pain control was neuraxial (42%) or PCA (42%), with multiple modes of pain control used in 51% of RD claims. Of the 86 RD claims, 60% had no evidence of sleep apnea noted, and a third had co-existing cardiac disease. Oxygen use was noted in 14% of the RD claims, somnolence was observed in 60%, and snoring in 16%. One third of claims (34%) had >1 physician prescribing opioid or sedating medications postoperatively, and 36% had non-opioid sedating medications administered in addition to opioids. Timing of RD was most often on the day or night of surgery (87%). RD occurred within one hour of a nursing check in 31% of claims, and 31% of claims had inadequate nursing checks (either quality or frequency). Reviewers thought that better monitoring may have prevented the complication in 97% of the RD claims (kappa=0.49).

Conclusion

One quarter of acute pain claims were associated with respiratory depression primarily involving neuraxial and / or PCA use, and one-half involved multiple modes of pain therapy. Three quarters of these claims resulted in death or severe brain damage. Better monitoring during the first 24 hrs after surgery, more frequent bedside assessment, better management of somnolence,

and better coordination of multiple modes of pain therapy may be useful interventions for reducing this high severity complication.

Figure 1

Postoperative Respiratory Depression

