

Evaluation of the Incidence and Risk Factors of Respiratory Depression after General Anesthesia

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Background

Respiratory depression (RD) is common after general anesthesia, due to residual anesthetic agents, narcotic analgesics for pain management and pre-existing obstructive sleep apnea syndrome. It is important to monitor respiratory rate and oxygen saturation (SpO₂) continuously during the early postoperative period. In our institution, we monitor the respiratory rate and SpO₂ values after general anesthesia using acoustic respiratory rate (Masimo RRa™). This study was conducted to evaluate the incidence and risk factors of respiratory depression after general anesthesia.

Method

After approval by the institutional review board, we collected the data of six hundreds and fifty-eight surgical patients who underwent abdominal, brain, otorhinolaryngological and oral surgery. Eighty-nine patients were excluded from the analysis, because their monitor data were incomplete. So we analyzed the collected data of 569 patients who had complete data. We assessed the incidence of RD (<8 breath/ min; the accumulated time is more than 10 minutes for 8 hours) and the incidence of desaturation (SpO₂<90%; for 8 hours) after extubation. Univariate and multivariate logistic regression analysis were performed to evaluate the factors associated with RD, including age, sex, body mass index, duration of anesthesia, intraoperative amount of fentanyl and postoperative pain management.

Result

The incidence of RD was 14.4%, and the incidence of desaturation was 28% for 8 hours after extubation. RD occurred 5% from 0 to 1 hour, 4.4% from 1 to 2 hour, 3.7% from 2 to 3 hour, 2.6% from 3 to 4 hour and 7.6% from 4 to 8 hour after extubation. Univariate logistic regression analysis revealed that epidural anesthesia (odds ratio 0.52, 95% confidence interval [CI] 0.32-0.86; p=0.01), intravenous patient-controlled analgesia (odds ratio 1.86, 95% CI 1.13-3.09; p=0.02) and intraoperative total amount of fentanyl (odds ratio 1.45, 95% CI 1.08-1.95; p=0.01) were significant determinants associated with postoperative RD. These associations were lost on multivariate analysis.

Conclusion

The results in this study indicated that the incidence of RD and desaturation after general anesthesia is relatively high on ward. Further subgroup analysis would be required to identify the risk factors of RD after general anesthesia.