Postoperative desaturation and bradypnea after general anesthesia in non-ICU patients: a retrospective evaluation

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Abstract

Respiratory depression, presenting as desaturation and bradypnea, is common during the early postoperative period. However, it has not been evaluated by appropriate monitoring. The purpose of the present study was to identify the incidence and predictors of desaturation and bradypnea following general anesthesia, using a continuous and centralized monitoring system, in non-ICU patients who did not have serious complications and did not undergo major surgery. Patients were connected to a continuous and centralized monitoring system via a pulse oximeter and respiratory rate sensor for at least 8 h after extubation. We assessed the incidence and risk factors for desaturation (SpO_2 < 90% for > 10 s) and bradypnea (respiratory rate < 8 breaths/min for > 2 min) events. We retrospectively collected the clinical data of 1064 adult patients in the study. The incidences of desaturation and bradypnea were 12.1% and 5.1%, respectively. Most desaturation events occurred after the termination of oxygen administration. The greatest incidence of bradypnea was within the first hour after surgery, reducing over time. Analysis revealed that age (odds ratio [OR] 1.04, 95% confidence interval [CI] 1.03-1.06; $p < 0.001$), BMI (OR 1.12, 95% CI 1.06-1.18; $p < 0.001$) and current smoking (OR 1.91, 95% CI 1.12-3.42; $p = 0.023$) were significant risk factors for desaturation. Sleep apnea syndrome (OR 4.23, 95% CI 1.09-13.5; $p = 0.021$) and postoperative opioid administration (OR 2.76, 95% CI 1.44-5.20; $p = 0.002$) were significantly associated with bradypnea. Age (OR 1.04, 95% CI 1.01-1.07; $p = 0.010$) and postoperative opioid administration (OR 3.16, 95% CI 1.22-7.87; $p = 0.019$) showed a significant association with the occurrence of both desaturation and bradypnea. This study demonstrated the incidence and predictors of postoperative desaturation and bradypnea, and suggests the need for monitoring oxygen saturation and respiratory rate for at least 8 h after surgery in non-ICU patients. Use of monitoring systems might provide a safety net for postoperative patients.