Q: Obstructive sleep apnea: What to do in the surgical patient?

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A: Adverse surgical outcomes appear to be more frequent in patients with known obstructive sleep apnea syndrome (OSAS). Anesthetic, sedative, and analgesic drugs should be used with extreme caution in patients with known or suspected OSAS, and close perioperative monitoring of high-risk patients is recommended.

Epidemiology

In Western countries, the prevalence of OSAS is about 5%.[1] The estimated prevalence in surgical patients is 1% to 9%, though it may be even more common in certain populations.[2]

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Disruption of sleep architecture

Sleep studies in patients who undergo major abdominal or cardiac surgery have demonstrated suppression of rapid eye movement (REM) sleep and slow-wave sleep after surgery. The REM sleep returns or rebounds in the late postoperative period (when oxygen may have been discontinued). This return of REM sleep was linked to significant respiratory abnormalities in a group of elderly patients who underwent abdominal vascular surgery.[3] In REM sleep, the neural drive to the pharyngeal muscles is at a minimum, and the atonia of antigravity muscles predisposes to airway instability, causing episodic hypoxemias. Reductions in REM and slow-wave sleep

and the lack of inherent rhythmicity are more pronounced after major surgery than after minor surgery and laparoscopic surgery.

Sedatives, analgesics, and the residual effects of anesthetic agents may worsen OSAS by decreasing pharyngeal tone, thereby increasing upper airway resistance and attenuating the ventilatory and arousal responses to hypoxia, hypercarbia, and obstruction.

In a study of patients who underwent hip and knee replacement, up to one third with OSAS developed substantial respiratory or cardiac complications, including arrhythmias, myocardial ischemia, unplanned transfers to the intensive care unit (ICU), and reintubation.[4] In another small prospective study evaluating the incidence of arrhythmias in patients with OSAS who underwent coronary artery bypass graft surgery, those with an oxygen desaturation index of 5 or greater (defined as the number of desaturations > 4% per hour) had a relative risk of 2.8 for the development of atrial fibrillation postoperatively.[5]

Preoperative assessment

Physical examination may reveal characteristic stigmata of OSAS, which include:

- A short, thick neck
- Nasal obstruction
- Tonsillar hypertrophy
- A narrow oropharynx that precludes visualization of the soft palate
- Retrognathia
- Obesity.

In patients with these characteristics and a history of daytime somnolence, snoring, or observed apneas, a presumptive diagnosis of OSAS can be made in the absence of a sleep study. Because the severity of these historical items correlates with the severity of sleep study-proven OSAS, use of a simple screening questionnaire for OSAS appears reasonable. None, however, have been validated for use in the preoperative setting.

Clinical suspicion for sleep apnea may first arise intraoperatively. The degree of difficulty in visualizing the faucial pillars, the soft palate, and the base of the uvula predicts difficulty with intubation and should increase the suspicion of OSAS.[6] Airway obstruction out of proportion to the apparent degree of sedation, and a pronounced tendency for upper airway obstruction during or upon recovery from anesthesia, can suggest undiagnosed sleep apnea as well.

Perioperative monitoring and interventions

Continued inpatient monitoring is advised for the following types of patients with OSAS: those having abdominal or other major surgery, those with significant expected pain or opioid requirements, those with severe OSAS (requiring continuous positive airway pressure [CPAP] at home) at baseline, and those with observed obstruction or episodic desaturations in the recovery room.[7]

Routine ICU admission after surgery may not be necessary except in patients with coexisting cardiopulmonary disease or a difficult airway. Patients at increased perioperative risk from OSAS should be extubated while awake and after full reversal of neuromuscular blockade is verified.

Benzodiazepines should be avoided altogether and narcotic use should be limited. Alternative forms of analgesia, such as nonsteroidal anti-inflammatory drugs, nerve blocks, or local analgesics, should be considered. If narcotics are required for pain control, patients should be in a monitored setting. Patient-controlled analgesia with no basal rate may help limit dosing.

General anesthesia with a secure airway is preferable to deep sedation without a secure airway, particularly for procedures that may compromise the airway mechanically. Respiratory arrest has been reported in patients with OSAS receiving epidural opioids at 2 to 3 days postoperatively.[8] If neuraxial analgesia is planned, local anesthetics alone should be preferred over opioids in combination. Case series and limited data suggest that the use of CPAP in the perioperative setting for known cases of OSAS may help reduce postoperative complications.

Until additional information is available to guide decision making, screening for OSAS should be incorporated as part of the preoperative assessment of patients undergoing surgery.

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