

Ondine's Curse Revisited

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When Ondine cursed Palemon that the latter would stop breathing the moment he fell asleep, the curse was directed only at him, but as it seems now, Ondine's curse^[1] has revisited the entire humanity in several forms.

"Sleep apnea syndromes" are in fact more common than we ever thought of. They land the anesthetist in great predicament when unexpected. Among the other causes, it is this unanticipated sleep apnea syndrome which postoperatively jeopardizes recovery. It is strongly emphasized to evaluate preoperatively the predisposing factors for sleep apnea.

Sleep apnea could be due to central causes cerebro vascular accident (CVA), brainstem injury, congenital? or peripheral cause [upper airway obstruction – obstructive sleep apnea (OSA)].

OBSTRUCTIVE SLEEP APNEA

OSA is repetitive partial/complete obstruction of upper airway causing episodes of cessation of breathing during sleep, lasting for more than 10 s. Minimal accepted clinical diagnosing criteria for OSA are Apnea Hypopnea Index (AHI) of 10 + and excessive daytime sleepiness.^[2] OSA incidence is as common as 38% in males and 28% in females.^[3] Risk factors for OSA are smoking, obesity, body mass index (BMI) >35 kg/m², hypertension, old Cerebro vascular accident(CVA)/ Congestive cardiac failure(CCF), diabetes, age >50 years, and male gender.^[4] However, many patients without known risk factors and having apparently normal profile do have some form of OSA.

The mechanism of OSA is that the lumen of laryngopharynx is compromised by surrounding soft tissues leading to greater increase in resistance to breathing in the upper airway which results in obstructive events.

Polysomnogram is a reliable diagnostic tool in sleep studies, but is expensive and time consuming. A simple preoperative questionnaire "STOP-BANG" is useful as preoperative screen.

STOP-BANG^[5]

S - Snoring
T - Tiredness (day time)
O - Stops breathing during sleep
P - High BP with/without treatment
B - BMI > 35
A - Age > 50 years
N - Neck circumference > 40 cm
G - Male gender
Sensitivity of STOP-BANG is high when the score is >3

Suspect OSA if there is daytime drowsiness or high BP with or without treatment.

What are the anesthetic implications^[6] of OSA at surgery? The most serious problem is loss of airway after induction of general anesthesia (GA). Similarly, there may be difficulty in extubation; respiratory arrest may follow administration of opioids/sedatives. They are very sensitive to sedatives like benzodiazepines, opioids, and Propofol. Added co-morbidities enhance the risk. For example, obesity poses problems such as difficult/failed intubation, difficult IV access, difficulty in regional techniques, and increased risk of aspiration. In diabetics, peri-operative management of blood sugar is important. Pulmonary and systemic hypertension with right ventricular hypertrophy/failure could be co-existent or a sequel to OSA and has to be optimized preoperatively. If a patient with long-standing OSA develops breathlessness, it usually indicates pulmonary hypertension.

In view of the above problems, whenever feasible, regional anesthesia is the technique of choice – if GA is mandated, use short-acting drugs. One must keep in mind that termination of agents like Midazolam, Fentanyl, Propofol, and Sevo or Desflurane is based on redistribution rather than metabolism; hence, these agents must be used in lowest necessary doses and repetitions or infusions are avoided.

Postoperative back-up for ventilation should be available. Non-opioids and Dexmedetomidine are useful for postoperative pain relief.^[7] Availability of continuous positive airway pressure(CPAP) and Bi level positive airway pressure (BiPAP) preoperatively and postoperatively has decreased the occurrence

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of several complications of OSA.^[8] Further, intraoperative use of non-invasive ventilation concurrent with regional anesthetic techniques is highly promising and rewarding.

CONCLUSION

A high index of suspicion for OSA during preoperative evaluation, peri-operative management with suitable drugs, and timely deployment of CPAP/BiPAP will prevent revisitation of modern "Ondine's curse"!

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