Obstructive Sleep Apnea (OSA)

Obstructive sleep apnea (OSA) is caused by narrowing or obstruction of the airway during sleep. A patient diagnosed with this disorder will experience five or more episodes of apnea per hour. When a patient becomes hypercapnic due to periods of apnea, they will experience a startle response, in the form of a snort or a gasp, which allows the tongue and soft palate to fall forward, thereby reopening the patient's airway. Loud, frequent snoring, daytime sleepiness, and headaches are also common clinical manifestations in those with OSA. Complications of untreated sleep apnea include hypertension, right-side heart failure from pulmonary hypertension, and cardiac dysrhythmias. Interventions to treat obstructive sleep apnea include: changing the patient's sleeping position, use of an oral appliance such as a mouth guard, CPAP, BiPAP, or surgical interventions. Patients with OSA should be encouraged to lose weight, as being overweight or obese worsens sleep apnea.



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Cause/Mechanism

Narrowed or Obstructed Air Passage
Narrowed and Obstructed Air Passage
During sleep, muscles in the airway relax, causing narrowing and/or obstruction of air passage. In addition, the tongue or soft palate may fall backward, causing partial or complete blockage of the pharynx.

Assessment

Apnea
Ape-needs-air
Apnea is described as a cessation in spontaneous breathing that lasts for greater than 10 seconds per episode. Pulmonary hypertension is not uncommon in patients with OSA, as recurrent nocturnal oxygen desaturations can lead to pulmonary vascular remodeling.

Loud Snoring
Loud Snore-ring
Snoring occurs when tissues in the throat relax and partially block the airway, causing the characteristic vibrating sound. In patients with OSA, loud and frequent snoring is common.

Startle Response
Startling Jack-in-the-box
A patient with OSA can become hypercapnic due to periods of apnea. When this occurs, a startle response is triggered, in the form of a snort or a gasp, which allows the tongue and soft palate to fall forward, thereby reopening the airway.

Daytime Drowsiness
Daytime Sleepy-guy
Patients with OSA may experience daytime sleepiness during to frequent interruptions in sleep. Patients may also complain of a headache in the morning, due to elevated CO2 levels or an increase in blood pressure.

Interventions

Positional Therapy
Positional-bed
Mild sleep apnea can be treated by changing the patient’s sleeping position. Sleeping on one’s side, or with the head of the bed elevated can help to reduce or eliminate episodes of apnea.

Oral Appliance
Oral Appliance
Use of an oral appliance, such as a mouth guard, may help to prevent obstruction of the patient’s airway by shifting the jaw and tongue forward.

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Continuous Positive Airway Pressure (CPAP)

CPAP

CPAP therapy is used in patients with severe OSA who experience 15 or more episodes of apnea in one hour. CPAP provides positive pressure upon both inspiration and expiration, to maintain an open airway. An alternative intervention called bilevel positive airway pressure (BiPAP) can also be used to treat OSA. This type of therapy may be better tolerated by patients due to a higher inspiratory pressure, and lower mean pressure during expiration.

Surgery

Surgeon

Surgery may be indicated to treat OSA if other non-surgical interventions are ineffective. A uvulopalatopharyngoplasty (UPPP) can be performed to remove tissues in the throat, such as the tonsils, uvula, and soft palate, that are causing airway obstruction. Another surgical intervention called a genioglossal advancement and hyoid myotomy (GAHM) involves moving the hyoid bone and muscular attachment of the tongue forward, to prevent the tongue from obstructing the airway during sleep. Patients should be educated about what to expect after surgery, including sore throat, halitosis (bad breath), and snoring.

Considerations

Weight Loss

Skinny with Baggy-pants

Patients with OSA should be encouraged to lose weight, as being overweight or obese worsens sleep apnea.

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