Obstructive Sleep Apnea and It's Relationship to Cardiovascular Disease

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Obstructive Sleep Apnea and its Relationship to Cardiovascular Disease

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As the medical community continues to enrich its understanding of obstructive sleep apnea (OSA), it also expands its knowledge in OSA’s tight connection to cardiovascular disease. OSA is a respiratory disorder recognized by repetitive closure of the upper airway during sleep and, consequently, causes a recurrent cycle of sleep disturbances and intermittent hypoxia (Satike, 2014). OSA has demonstrated its capability of increasing risk for cardiovascular diseases including: hypertension, ischemia heart disease, cerebral vascular accidents, arrhythmias, and congestive heart failure (Marin, Carnzo, Vicente, & Agusti, 2005). Signs and symptoms of this disease can be overlooked and the long term cardiovascular effects can be detrimental. It is important for advanced practitioners to recognize the severity of OSA and understand its relationship with cardiovascular disease. The purpose of this presentation is to educate current and future practitioners on the key components of OSA and its links to cardiac disorders. The pathophysiology of the disease, related signs and symptoms, and the implications for nursing care will be discussed.

Signs & Symptoms
OSA occurs during sleep, when the upper airway becomes blocked repeatedly or completely closes off air. As a result, the following signs and symptoms are often detected.

- Throat or chest pain
- Frequent loud snoring
- Gasping for air during sleep

- Frequent episodes of sleepworthiness
- Throat or chest pain

- Increased nighttime sweating and fatigue
- Decrease attention, motor skills, agitation
- Dry mouth or headaches especially when waking
- Fatigue in the morning that is not relieved by rest

Due to the frequent absences of breathing, the patients experience intermittent hypoxia that causes the heart to work harder even during times that it should be at rest which can lead to heart failure. The increase in heart rate, inotropy, and vasoconstriction leading to tachycardia and hypertension. The heart continues to work hard even during times that it should be at rest which can lead to heart failure. The increase in heart rate and volume pressure are reduced due to intrinsic effects of OSA and trigger carotid sinus baroreceptors to activate the SNS. Finally, frequent arousals from OSA stimulate the SNS and also decrease the normal vagal (PNS) activity which accounts for post synchronized periods.

- Effects on the Cardiovascular System and Clinical Outcomes

The over stimulation of the sympathetic nervous system ties into a number of cardiovascular issues. The release of catecholamines by the SNS including epinephrine and norepinephrine cause an increase in heart rate, blood pressure, and heart rate variability which are risk factors for cardiovascular disease. The over stimulation of the sympathetic nervous system ties into a number of cardiovascular issues. The release of catecholamines by the SNS including epinephrine and norepinephrine cause an increase in heart rate, blood pressure, and heart rate variability which are risk factors for cardiovascular disease.

References


Implications for Nursing Care

- Nurses can positively impact the outcomes of patients with OSA by first educating the importance of modifying their risk factors of OSA: losing weight, limiting alcohol and tobacco, and sleeping in a comfortable position. Nurses need to advocate for surgical treatment such as implantation of a phrenic nerve stimulator. Nurses should also investigate CPAP compliance for nightly use. Nurses need to be aware that CPAP is an effective tool, however, it is uncomfortable and patient adherence is suboptimal. Nurses need to truly investigate CPAP compliance for nightly use. Nurses need to be aware of the frequent and severe cardiovascular complications that these patients have and trend their progress overtime. Cardiovascular complications of OSA may affect the plan of care and needs to be monitored carefully.

- Nurses should help to reduce the complications associated with OSA. It is the responsibility however, of the patient to follow up with their primary care physician to ensure that they are meeting their goals.

- Nurses alone have many responsibilities that can positively impact outcomes associated with OSA. It is the responsibility however, of the patient to follow up with their primary care physician to ensure that they are meeting their goals.