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Obstructive sleep apnea and cardiovascular disease.

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Obstructive sleep apnea (OSA) is a common medical condition that occurs in approximately 5% to 15% of the population. The pathophysiology of OSA is characterized by repetitive occlusions of the posterior pharynx during sleep that obstruct the airway, followed by oxyhemoglobin desaturation, persistent inspiratory efforts against the occluded airway, and termination by arousal from sleep. Obstructive sleep apnea is associated with daytime sleepiness and fatigue, likely due to fragmented sleep from recurrent arousals. Substantial evidence shows that patients with OSA have an increased incidence of hypertension compared with individuals without OSA and that OSA is a risk factor for the development of hypertension. Recent studies show that OSA may be implicated in stroke and transient ischemic attacks. Obstructive sleep apnea appears to be associated with coronary heart disease, heart failure, and cardiac arrhythmias. Pulmonary hypertension may be associated with OSA, especially in patients with preexisting pulmonary disease. Although the exact cause that links OSA with cardiovascular disease is unknown, there is evidence that OSA is associated with a group of proinflammatory and prothrombotic factors that have been identified to be important in the development of atherosclerosis. Obstructive sleep apnea is associated with increased daytime and nocturnal sympathetic activity. Autonomic abnormalities seen in patients with OSA include increased resting heart rate, decreased R-R interval variability, and increased blood pressure variability. Both atherosclerosis and OSA are associated with endothelial dysfunction, increased C-reactive protein, interleukin 6, fibrinogen, and plasminogen activator inhibitor, and reduced fibrinolytic activity. Obstructive sleep apnea has been associated with enhanced platelet activity and aggregation. Leukocyte adhesion and accumulation on endothelial cells are common in both OSA and atherosclerosis. Clinicians should be aware that OSA may be a risk factor for the development of cardiovascular disease.

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