The Dangerous Wakeup Call of Sleep Apnea

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Abstract

The topic of this research paper is on the dangers of Obstructive Sleep Apnea. OSA is a medical condition that involves the tissue in an individual’s throat closing off the airway while asleep. OSA often goes undetected and undiagnosed, as the person is unaware of the snoring, frequent awakening, gasping for breath, choking, and constant tossing and turning. This obstruction in the airway deprives the body of oxygen and robs the individual of quality, restful, rejuvenating sleep. This lack of deep sleep results in excessive daytime fatigue and tiredness. Eventually, this sleepiness can prove to be dangerous by causing a machinery, vehicular, or other type of accident. Common symptoms of OSA are discussed, as well as a plethora of medical problems that are associated with this sleep disorder. Further, research unveiled the impact on endocrine and metabolic systems. OSA is commonly treated with Continuous Positive Airway Pressure (CPAP) machine; however, other medical options and surgical procedures are available. This device is worn by the individual while sleeping and provides constant air pressure to maintain a continual open airway, thus providing deep, restful, uninterrupted sleep. Sources for this research were obtained using the online library database at Patrick Henry Community College in Martinsville, VA.

Keywords: Obstructive Sleep Apnea (OSA), Sleep Deprivation, Sleep Disorders, Continuous Positive Airway Pressure (CPAP), Obstructive Diagnosis/Therapy, Excessive Daytime Sleepiness (hypersomnia), Sleep Specialist, Pulmonologist, Polysomnography (PSG)
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The Metro-North Railroad passenger train races at exceedingly high speed on the early morning hours of Sunday, December 1, 2013, near the Spuyten Duyvil station in the Bronx, New York. The train is traveling at an excessive speed of 82-mph in a 30-mph zone. Upon reaching a curve in the track, all 7 passenger cars and the locomotive derail, killing 4 passengers and injuring 59 others. (McKay, 2015) An investigation into the reason of the train crash by the National Transportation Safety Board revealed the probable cause was the engineer “had fallen asleep due to undiagnosed, severe, obstructive sleep apnea exacerbated by a recent circadian rhythm shift required by his work schedule.” (McKay, 2015) The engineer, along with 18 million other Americans was sleep deprived, as a result of having a condition called obstructive sleep apnea. Obstructive Sleep Apnea (OSA) is a sleep disorder that carries several health and safety risks; however, treatment options are available that can greatly enhance sufferers’ quality of life.

OSA is a condition where the individual stops breathing for more than 10 seconds during sleep, because tissue located in the throat close off the airway. (Robinson & Frey, 2013) The most common type of sleep apnea is obstructive sleep apnea, when the upper airway is obstructed, inhibiting proper oxygen to the lungs. Explanations for this obstruction may be due to the “relaxation of the soft tissue of the palate, tongue, and neck, as well as large tonsils and adenoids or abnormal anatomy of the bony structures surrounding the airway” (Wittmann-Price, Thompson, Sutton & Eskew, 2013). This sleep disorder is responsible for chronic daytime fatigue and sleepiness, loss of energy and productivity, and endocrine and metabolic issues. Like the train engineer, this condition often goes unrecognized and is a cause of daytime fatigue, thus decreasing the person’s overall quality of life. (Robinson & Frey, 2013). The diagnosis of OSA to the train engineer was a “wake-up” call to him, as he reported that he generally slept well.
(McKay, 2015) Sleep Apnea is thought to “be considerably underdiagnosed in the United States.” (Robinson & Frey, 2103) Oftentimes, this medical condition does not present itself until there is a vehicular or machinery accident. Most individuals are totally unaware that they have the condition, because the pause of breathing, choking or gasping for breath, constant tossing and turning, and loud snoring is done while they are asleep. Generally, these symptoms are detected by a spouse, family member, or sleep partner. Those oblivious to having sleep apnea, often ignore their excessive daytime fatigue, or think little of it. Consequently, making sleep apnea even more difficult to detect, and ultimately diagnose.

Symptoms

Sleep apnea includes a plethora of physical, emotional, mental, and psychological symptoms. “Typical symptoms and signs of OSA are loud snoring, breathing pauses during sleep, as well as daytime sleepiness and fatigue.” (Bercea, Mihaescu, Cojocaru & Bjorvatn, 2015) Those with sleep apnea experience sleepiness and fatigue despite a full night of rest. The most common sign of this sleep disorder is snoring. To most, snoring seems a harmless nighttime happening, however, snoring with sleep apnea is excessive to be point to be heard through walls, and even disrupt other sleepers in other rooms. It is to be noted, that not all snoring denotes OSA. Another sleep disruption is tossing and turning all night. Some report arising from sleep with a headache. Explanation of these morning headaches have been thought to have been caused by the fragmentation of frequent episodes of apneas and arousals. Although there is a strong link between morning headaches and OSA, a definitive cause of these headaches are still unclear. (Boostani, Rezaeitalab, Pourmokhtari, & Ghahremani, 2016) Majority of those with OSA report daytime fatigue and exhaustion, along with achy joints and muscles. This daytime exhaustion may result in falling asleep at inappropriate times.
Further, there are certain psychological changes in an individual; such as, confusion, irritability, personality changes, poor judgment, mental fog, and depression. (Wittmann-Price, Thompson, Sutton & Eskew, 2013) The deprivation of sleep causes one to be mentally exhausted.

**Endocrine and Metabolic Effects**

OSA has an impact on the body’s endocrine and metabolic systems. The endocrine system has to do with the production and regulation of hormones in the body. The metabolic system has to do with the body’s ability to burn off calories. OSA has been linked to cardiovascular disease, Vitamin D deficiency, low testosterone in men, increase cholesterol, obesity, and type 2 diabetes. OSA is widely accepted as being a risk factor for cardiovascular disease. (Briancon-Marjollet, Weiszenstein, Henri, Thomas, Godin-Ribuot & Polak, 2015) The disruption in breathing and the obstruction of airflow is hard on the heart, and the rest of the body. There is increasing evidence that OSA is linked metabolic variations such as dyslipidemia (abnormal amount of lipids, or fats, in the blood stream), insulin resistance, glucose intolerance, and type 2 diabetes. (Briancon-Marjollet et al., 2015) Obesity is also related to OSA, sleep deprivation triggers the “hunger” hormones to increase, resulting in increased hunger and overeating. (Clemmitt, 2010). Plus, studies have shown the association of OSA and the reduction of the hormone Vitamin D in the body. (Piovezan, Hirotsu, Feres, Cintra, Andersen, Tufik & Poyares (2017) Bercea et al., (2015) concluded that fatigue associated with OSA was strongly related with serum testosterone.
Treatment

Those suspected of having OSA can be referred by their physician to a sleep specialist. After the sleep specialist performs an assessment and physical examination and the patient seems to be a possible candidate for OSA, they typically order a sleep study. The two standard sleep study tests are an overnight in-laboratory study, called a polysomnography (PSG), and a home-based study. (Dadig & Edwards, 2015). Dadig and Edwards (2015) state that “the in-laboratory PSG is the gold standard for the diagnosis of OSA.” There are several treatment options available for those diagnosed with OSA. The treatment of choice for OSA is Continuous Positive Airway Pressure (CPAP). The CPAP is a facial or nose mask that delivers a consistent airflow to keep the airway open during sleep. An alternative treatment for OSA is the use of oral appliances (OA). In extreme cases when CPAP and OA’s are not helpful, surgical procedures are available. (Dadig & Edwards, 2015).

Conclusion

In conclusion, OSA is a silent medical condition that is often goes undetected. Like the train conductor, many do not even realize they have the condition until it is too late. In fact, sleep deprivation is responsible for some vehicle accidents. “According to the National Highway Traffic Safety Commission (NHTSA), drowsy driving is responsible for at least 1,550 deaths and more than 40,000 highway injuries.” (Clemmitt, 2010) OSA has many short and long term effects on the body. Those dealing with chronic fatigue should talk to a medical professional to learn more about OSA. Diagnosis and treatment can greatly increase the person’s quality of life.
References


