

Sleep Apnea

Effects of Breathing Changes during Sleep:

Breathing is such an automatic function that we often take it for granted. In fact, our breathing pattern changes frequently throughout the day and night, including during sleep, according to our body's needs. These natural changes can become disrupted in some individuals, causing them to breathe abnormally during sleep. This can, in turn, alter the body's functions, and disturb the normal stages of sleep, resulting in the patient awakening tired and being sleepy during the day. Several kinds of breathing disorders during sleep have been identified.

Sleep Apnea:

The word "apnea" means the absence of breathing. During sleep, breathing changes with the stage and depth of sleep.

Some individuals stop breathing for brief intervals, as often as several times per hour. This can be normal. However, when these episodes of apnea become more frequent and last longer, they can cause the body's oxygen level to decrease and can also disrupt sleep. The patient may not fully awaken, but is aroused from the deep restful stages of sleep and feels tired the next day.

As sleep is disrupted night after night, the patient can develop progressive daytime sleepiness that leads to irritability, memory lapses, inattention and personality changes. These changes can sometimes result in poor performance at work or school. Everyone has experienced the sluggish feeling the day following a night of poor sleep. It is easy to understand how many nights of inadequate amounts of restful sleep can affect daytime performance.

In addition to causing daytime problems, episodes of apnea during sleep can cause various organ systems to function abnormally. For example, the decrease in oxygen that is associated with each episode of apnea can alter the function of the heart.

It can increase the work the heart has to do. Some scientists feel that it may also contribute to high blood pressure and the risk of stroke. In severe cases, it can even be life threatening by causing severe disturbances in the heart rhythm.

Obstructive Sleep Apnea:

There are two main types of sleep apnea. The most common type is called obstructive sleep apnea, during which breathing is blocked by a temporary obstruction of the main airway, usually in the back of the throat. This often occurs because the tongue and throat muscles relax, causing the main airway to close. The muscles of the chest and diaphragm continue to make breathing efforts, but the obstruction prevents any airflow. After a short interval lasting seconds to minutes, the oxygen level drops, causing breathing efforts to become more vigorous, which eventually opens the obstruction and allows airflow to resume. This often occurs with a loud snort and jerking of the body, causing the patient to rouse from sleep. After a few breaths, the oxygen level returns to normal, the patient falls back to sleep, the muscles of the main airway relax, and the obstruction occurs again. This cycle is then repeated over and over during certain stages of sleep.

Most people with obstructive sleep apnea are snorers, suggesting that their main airway is already partly obstructed during sleep, but not all snorers have obstructive sleep apnea. A characteristic sequence of sleep apnea occurs when the patient stops snoring briefly during sleep and then resumes snoring with a loud snort and/or jerking of the arms, legs, or whole body.

Obstructive sleep apnea also occurs in children, usually associated with enlarged tonsils and adenoids. Daytime sleepiness is difficult to discern in children, but they may show personality changes or learning disorders. They usually snore while sleeping. Surgical removal of tonsils and/or adenoids can be helpful, but should only be considered after obstructive sleep apnea has been well documented.

Central Sleep Apnea:

A less common form of sleep apnea is central sleep apnea, so named because the central control of breathing is abnormal. This control center lies in the brain, and its function can be disrupted by a variety of factors. There is no obstruction to airflow. The patient with central

sleep apnea stops breathing because the brain suddenly fails to signal the muscles of the chest and diaphragm to keep breathing. These patients do not resume breathing with a snort and body jerk, but merely start and stop breathing at various intervals. Although the mechanism is different than obstructive sleep apnea, sleep is still disturbed by the periodic decreases in oxygen, and the patient suffers from the same daytime symptoms. Some patients may experience a combination of the two forms of apnea, a disorder which is called mixed-sleep apnea.

Diagnosis:

Sleep apnea should be suspected in individuals who have excessive daytime sleepiness and other symptoms described above, especially if they snore and have a restless sleep. These patients may have been loud snorers for many years, more often are male and overweight, and find that the daytime sleepiness has become a progressive problem over many months. This might first be noted by their falling asleep when not being actively stimulated, such as when watching TV, attending a lecture, movie, the theatre, or reading. As the daytime sleepiness progresses, the patient may have trouble staying awake while driving a car, or may fall asleep at important meetings or at unusual times such as during eating or in the middle of a conversation. Less commonly, patients may be bothered by bed-wetting or impotence. If sleep apnea is suspected, the patient's breathing pattern during sleep can be evaluated at a sleep disorders center. The patient sleeps in a bedroom laboratory while attached to various skin sensors that monitor many physiological variables. These might include brain electrical activity, nose/mouth airflow, breathing patterns, heart rhythms, oxygen level and muscle activity. A trained technologist monitors these measurements and the patient's sleep habits continuously. This procedure is called a polysomnogram. The results are then evaluated by a physician specially trained in sleep disorders. Home screening devices to aid in diagnosis are also being evaluated.

Treatment:

The treatment of sleep apnea depends upon the cause and severity revealed by the all-night sleep study. In mild sleep apnea, breathing during sleep can sometimes be improved by developing better sleep habits and avoiding alcohol and sedatives near bedtime. Weight loss can be helpful in obese individuals, and changing body position during sleep helps others. Medications also can be used to alter the stages of sleep, suppressing that sleep stage during which the abnormal breathing occurs. Correcting abnormalities of the nose and upper airways, e.g., septal deviation, may also be helpful.

In more severe cases of obstructive sleep apnea, the obstruction sometimes can be prevented by blowing air into the back of the throat during sleep. The patient wears a mask over the nose. The mask is attached to a special fan or blower. This creates continuous air pressure in the throat which prevents the obstruction from occurring. This procedure is called Continuous Positive Airway Pressure (CPAP)

In certain individuals, the airway obstruction is caused by tonsils or other structures in the throat, and can be treated by corrective surgery. In severe cases, surgical treatment is used to bypass the throat obstruction by creating an opening in the main windpipe (trachea) in the neck. The tube is closed during the day to allow the patient to breathe normally, but then is opened during sleep to bypass the obstruction. This is used only rarely for the most severe forms of the disease. Other treatments, such as the use of special dental appliances, are being tested. The success of each treatment depends upon the cause and severity of the sleep apnea, and requires careful study in a sleep disorders center.

Breathing:

Breathing disorders during sleep can be a serious problem leading to impaired sleep and many daytime problems. Careful evaluation often can result in satisfying relief.

Make an appointment with Dr. Rheuark at (310) 373-8777.