Central Sleep Apnea due to High Altitude Breathing

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**Introduction:**

Sleep Apnea is a sleeping disorder in which during sleep, a person's breathing is disturbed; it shows interruptions. People with these disorders sometimes suffer from breathing interruptions one hundred times in one night. This might be of the reasons that body is not getting enough oxygen.

 There are two types of these disorders:

 Central Sleep Apnea: It is the diminished or the absence of the efforts to sleep, after 10 or 30 seconds intermittently.

 Obstructive Sleep Apnea: It is the most common type which occurs globally. This is caused by the complete or the partial obstruction in the breathing passages.

**Pathophysiological Effects:**

There is known that the deviation of the sensitivity of the chemicals from their normal behavior can be the cause of various forms of Central Sleep Apnea. Hypoxia is a disease in which there is a reduction in the transport of oxygen to the tissues of the body. The depressive effects of this disease are known to promote the severity of this disease. The variation in the CSA can cause further variation in the severity and magnitude of the situation.

The upper airway dilator muscles such as the genioglossus muscles are involved in the receiving of the neural inputs and data from the central neurons. For an individual with a narrow UA, the individual is reliant on those neural as compared to those with a larger UA, who are less reliant. Treating the patients of narrow UA can lead to a condition known as the apparent treatment-emergent Central Apnea (Eckert, 2007).

**Signs and Symptoms:**

The most common signs and symptoms of the Central Apnea are

* + Difficulties in sleeping (Insomnia)
	+ Interval awakenings characterized by the shortness of breath
	+ Abnormal patterns in breathing or stopped breathing patterns
	+ Difficulties in concentrating
	+ Mood swings
	+ Hypersomnia: Excessive sleeping in the daytime
	+ Breath shortness which is relieved by sitting
	+ Pain in the Chest

**Epidemiology:**

Central Sleep Apnea is very common, although, less prevalent in the population than Obstructive Sleep apnea. A study concluded that among 5804 adults of aged 40 years and older, the overall prevalence of the Central Sleep Apnea was 0.9 percent. 0.4 percent of the cases were known to be associated with the disease of Cheyne-Strokes breathing. The age of the patients was 69 years. The disease was more common in patients who were already suffering from heart failure (4.8 percent). Central Sleep Apnea is more common in men as compared with women (Donovan LM, 2016).

**Treatment:**

 Following are the most common methods used for the treatment of CSA.

1. CPAP-Continuous Positive Airway Pressure: To help the patients that are suffering from CSA, a CPAP device is used, especially for those individuals who are recovering from heart failure or heart procedure (surgery). Drung this treatment, the patient wears a mask, which delivers a continuous amount of air pressure to the lungs, thus, making a space for any kind of condition for which the body stops breathing.
2. BPAP: It is Bilevel Positive Airway Pressure, another reader which can be used to treat the Central Sleep Apnea effectively. A BPAP device controls the amount of air that is being ingested into the patient depending upon the condition whether the patient is inhaling or exhaling.
3. ASV: It is the Adaptive Servo-ventilation, it abruptly adjusts to the breathing needs of the patient at the moment. It ensures that the correct amount of oxygen is delivered to the patient.

Another effective method that is used is the Pharaonic nerve stimulation, caused through an implantable device in the chest just like a pacemaker.

**Clinical Presentation:**

This disease is known to occur in 30-50% of the patients with a reduced left ventricular problem. The disease is also more common in males who are suffering from Heart failure, thin and having more than 65 years of age.

**References:**

# Donovan LM, K. V. (2016). Prevalence and Characteristics of Central Compared to Obstructive Sleep Apnea: Analyses from the Sleep Heart Health Study Cohort. *Sleep*.

Eckert, D. J. (2007). Central sleep apnea: Pathophysiology and treatment. *Chest*, 595-607.