Understanding COPD Hypoxia

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COPD Hypoxia

COPD is one of the leading causes of death in the United States, affecting at least 16 million Americans. It is expected that at least several million Americans have COPD and are undiagnosed. In 2015, 3.2 million people died from COPD, which was an uptick of 11.6 % compared to 1990.

COPD is primarily caused by smoking. However, not everyone who smokes goes on to develop COPD. In fact, only one in five smokers will go on to develop COPD. Other factors, such as environmental irritants and genetics can cause COPD.

COPD is characterized by the presence of chronic bronchitis and emphysema. Together these conditions cause a restriction in airflow. Unmanaged or frequent exposure to irritants can increase the risk for developing hypoxia.

What Is COPD Hypoxia?

Hypoxia is "…a condition where not enough oxygen makes it to the cells and tissues in the body." When there is not enough oxygen in the body, normal bodily functions cannot occur. This can become confusing because it can develop even when oxygen levels are normal.

In contrast, hypoxemia is "…a condition or state where there is a low arterial oxygen supply."

These terms are not the same, although they sound very similar.

Causes

COPD causes permanent damage to the lungs. As damage occurs, the body begins to develop ways to cope with lower oxygen supply. This lower oxygen, as we discussed, is hypoxia.

Eventually, hypoxemia occurs. Both occur concurrently when COPD has damaged the alveoli (air sacs), and the body can no longer cope with the lower oxygen supply.

Occasionally hypoxia is acute, such as during a flare of COPD. This may occur during an illness, such as pneumonia.

Symptoms of COPD Hypoxia

Symptoms of hypoxia are caused by a reduction of oxygen in the tissues and the lungs, typically due to inflammation and restriction of the airways.

Symptoms include:

- Shortness of breath at rest
- Extreme shortness of breath during and after physical activity
- A reduced tolerance to physical activity
- Waking up out of breath
- Worsening wheezing
- Worsening coughing
- Feeling of choking
- (bluish tint to the skin)

Although some of these symptoms may be experienced on a lesser degree due to the nature of COPD, worsening symptoms should be reported to a healthcare provider, or you should present yourself to the emergency department.

Untreated hypoxia can lead to a lack of oxygen in the lungs, which will eventually lead to the body being unable to carry out any functions, progressing to heart and brain death.

Hypercapnia can also develop; hypercapnia is caused by the retention of carbon dioxide. An imbalance of carbon dioxide and oxygen in the body can also be dangerous.

How to Treat COPD Hypoxia

Often when a person with COPD develops hypoxia, oxygen therapy is prescribed. Oxygen therapy involves the use of supplemental oxygen directly into the lungs.

- **Oxygen tanks** use compressed air. They deliver the oxygen through nasal cannulas, oxygen masks, or tubes inserted into the throat. The oxygen tank delivers a specific amount of oxygen based on a meter on the tank.
- **Oxygen concentrators** allow oxygen to be removed from the environment. The concentrator filters the oxygen and stores it for future use. This type of supplemental oxygen is helpful for people who always require oxygen. However, they also require electricity to operate.
- **Liquid oxygen** turns into gas when it leaves the tank. This makes it more portable as it takes up less space. However, it can also evaporate so it may not last as long as other forms.

It is also important to take prescribed inhaled and oral medications:

- **Bronchodilators** are inhaled and help reduce spasms and the tightening of the airways of the lungs. This allows oxygen to flow through the lungs more freely.
- **Inhaled corticosteroids** reduce inflammation of the airways, which also allows oxygen to flow through the lungs more freely.
- **Oral corticosteroids** may be prescribed during a COPD flare, or long-term for those with severe or end-stage COPD. These medications also help reduce inflammation of the airways.

It is also important to quit smoking; doing so can reduce symptoms, improve efficacy of treatment and improve the immune system.

The Bottom Line

COPD is an irreversible lung condition that affects millions of Americans and will continue to affect millions before a cure can be found. At this time, the best treatment option that we have is to treat the symptoms and prevent damage from occurring, thus preventing hypoxia from developing.