Emphysema

Emphysema is a type of chronic obstructive pulmonary disease (COPD). It is characterized by the patient’s air space being permanently enlarged due to not being able to expel all the air out of the alveoli. The disease slowly progresses into pulmonary insufficiency, pulmonary hypertension, and cor pulmonale.

PLAY PICMONIC

Mechanism

Hyperinflation and Loss of Elasticity
Hiker-inflating-lungs with Loose Elastic-waistband
Damage from irritants like smoking as well as things like AAT deficiency cause a loss of elasticity of the alveolar sacs and bronchioles. Loss of elastic activity causes hyperinflation of some alveoli while causing the collapse of many bronchioles. Overall this causes a decreased surface area for gas exchange, which requires an increase in respiratory rate for compensation.

Assessment

Pursed Lip Breathing
Purse with Lips
To make breathing easier patients will purse their lips and typically use accessory muscles to aid in breathing.

Barrel Chest
Barrel
Due to the lungs being chronically hyper-inflated from trapped air and prolonged expiration, patients with emphysema will develop a rounded and larger rib cage (increase in antero-posterior chest wall diameter).

Dyspnea on Exertion
Disc-P-lungs with Exertion
These patients are also known as “pink puffers” because of their pink complexion and dyspnea. As more air becomes trapped, the patient will be unable to take deeper breath, and move new air into the lungs. This leads to the patient feeling short of breath with activity.

Clubbing
Club causing Clubbing
Clubbing is characterized by interstitial edema at the fingertips, and the nail bed becoming more rounded. The exact mechanism is still unknown, but it can be seen in patients that are in the later stages of emphysema.

Depression and Anxiety
Depressed-emo with Anxiety-bag
As the patient becomes less active and their activities of daily living become impacted by the disease, patients will typically become depressed. Anxiety is the result of not being able to catch their breath. Lower oxygen levels have also shown to impair mental function. It is important to manage their depression and anxiety appropriately to improve their quality of life.

Thin Appearance
Thin Appearance-in-mirror
Even with adequate caloric intake, patients with emphysema will lose weight and have a thin appearance in combination with their barrel chest. This is due to the body working harder to breathe and burning more calories than normal individuals.

Nursing Considerations

CO2 Retention

CO2 Red-tent

As the disease progresses there is less gas exchange occurring due to the destruction of alveoli. This results in CO2 being retained, and oxygen levels in the blood decreasing.

Low Concentration of O2

Low O2-tank with nasal cannula

Patients with emphysema typically become well compensated as the disease progresses. However, patients that are receiving supplemental oxygen can end-up in respiratory acidosis. The increase of oxygen being delivered can actually decrease the respiratory drive, resulting in more CO2 retention. Monitor these patients closely.

High Fowler's Position

High Fowl lifting into High Fowler's Position

The posterior part of the lungs has the largest surface area. To decrease fluid shifting to the posterior part of the lungs and decreasing gas exchange it is important to place these patients in a high Fowler’s position. Patients feel most comfortable in this position, and typically sleep in a chair.

High Calorie, High Protein Diet

Pancakes and Mr. Protein

Good nutrition is vital for these patients; because of the increased work, the body requires to maintain adequate respiration. Maintaining a high calorie, high protein diet will also help in weight loss and fatigue.