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Chronic Obstructive Pulmonary Disease

DEFINITION

Chronic Obstructive Pulmonary Disease (COPD)

A group of lung diseases that block airflow and make it difficult to breathe. It is a condition of both Chronic bronchitis and Emphysema. COPD can't be reversed.

Chronic bronchitis: is the inflammation and irritation of the bronchial tubes which causes mucus to build up.

Emphysema: is a condition which causes damage to the air sacs in the alveoli of the lung. Mainly elastic tissues of the alveoli get damaged.

EPIDEMIOLOGY

About 330 million people are affected with the disease.

Men and women are equally affected with the disease.

ETIOLOGY

- Smoking
- Allergens
- Silica
- Alpha-1 anti-trypsin deficiency

PATHOPHYSIOLOGY

Chronic bronchitis

Increased mucus production

Hyperplasia and hypertrophy of mucus gland

Narrowing of airways

Ciliary dysfunction

- Hypertrophy and hyperplasia of goblet cells
- Increased mucus production
- Causes ciliary dysfunction

Air trapping:

Air trapping, also called gas trapping, is an abnormal retention of air in the lungs where it is difficult to exhale completely.

Hypoxemia

Obstruction of airway causes inadequate supply of oxygen to the lungs

Hypercapnia

Increased CO₂ level in the alveoli.

Pneumonia

There is increased risk of Pneumonia due to mucus plug that leads to Pneumonia infection

Destruction of alveoli with increased fluid and inflammatory cells in air sacs.

Emphysema

Emphysema is a structural issue of alveoli in the lungs

Cause of smoking release toxic substances which leads to destruction of elastic tissue in the alveoli responsible for gaseous exchange.

Entry of allergens is engulfed by macrophages present in the alveoli.

These macrophages release cytokines. Cytokines which bring more neutrophils and macrophages at the site.

Macrophages and neutrophils at the site release enzyme Elastase (protease) which breaks elastin in elastic tissue of alveoli.

Morphological changes

Hypoxemia and Hypercapnia

Centriacinar Emphysema

Centrilobular emphysema, or centriacinar emphysema, is a long-term, progressive lung disease.

Centrilobular emphysema primarily affects the upper lobes of the lungs.

It's characterized by damage to your respiratory passageways.

Panacinar Emphysema

Destruction of alveoli at distal part of the lungs.

Affect the lower lobes

Distal acinar Emphysema

It is also called Paraseptal Emphysema

Destruct the pleural cavity

Right heart failure

Hypoxemia

Vasoconstrictive of the bronchi

Pulmonary Hypertension

Leads to Right heart failure

SIGNS AND SYMPTOMS

Blue bloaters in Chronic bronchitis

Blue bloater is a generalized term referring to a person who is blue and overweight.

By blue, we mean the skin around their lips and fingertips.

Bluish coloration of skin

Shortness of breath

Wheezing

Chronic productive Cough

Pink Puffers in Emphysema

Pink coloration of skin

Pursed lips

Weight loss

Wheezing

DIAGNOSIS

Productive Cough for 3 months

Pulmonary function test

- FEV1
- FVC

Chest X-ray

Air trapping

Flat diaphragm