



TEAR ALONG PERFORATION



MEDICAL ILLUSTRATION: KRISTEN WEINANDT MARZEJON 2011

Bronchitis

Normal bronchiole

COPD

Emphysema

Normal alveoli

COPD

COPD

Chronic Bronchitis or Emphysema

Chronic obstructive pulmonary disease, or COPD, is a progressive lung disease that involves bronchitis, emphysema, or both. Most people with COPD have a combination of bronchitis and emphysema, with one condition more prominent than the other. Bronchitis is a result of inflammation of the bronchial tubes, which leads to chronic mucus production and a wet cough. Emphysema is the destruction of the tiny air sacs at the base of the lungs where oxygenated air is absorbed into the bloodstream and carbon dioxide leaves the lungs during exhalation. Both of these conditions cause problems with normal air exchange and lead to similar symptoms, such as shortness of breath, cough, and exercise intolerance.

Cigarette smoking is the primary cause of COPD, regardless of which type of disease is present. COPD may also be caused by chronic inhalation of other types of lung irritants, such as toxic fumes or fine particles.

COPD has no cure; it is a progressive disease that worsens with time. Treatment is aimed at slowing down the progression of lung damage and improving or maintaining the ability to function independently. Smoking cessation is critical to treatment success and to stopping the progression of symptoms. There are several medications that can improve breathing in people with COPD, including inhaled bronchodilators, which open airways, and inhaled steroids, which decrease inflammation. Supplemental oxygen therapy is sometimes needed to improve the function of the lungs. Patients with COPD are at higher risk for bronchial infections and pneumonia, so antibiotics are an important part of therapy when bacterial respiratory tract infections occur.

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Cigarette Smoking Is the Primary Cause

Chronic obstructive pulmonary disease (COPD) causes breathing problems because the flow of air in and out of the lungs is affected, making it hard to get oxygen to the tissues and organs in the body. COPD is the result of the destruction of the walls of the air sacs, the inflammation of the walls of the airways, and the mucus produced by this inflammation. The lung tissue becomes stiff, losing some of the elastic quality that makes breathing easy. All of these changes make it difficult for air exchange to occur with each breath.

The primary risk factor for developing COPD is a history of smoking cigarettes; less often it is caused by a history of exposure over a period of time to lung pollutants such as smoke, chemicals, or tiny particles. There is a genetic link to the development of COPD, which can run in families if there is a history of cigarette smoking.

Disease Progression

COPD usually does not appear until after years of smoking or inhaling toxic substances, so the diagnosis is usually made in later life. Symptoms of COPD are typically cough—usually producing sputum (mucus)—and a tight feeling in the chest. Wheezing may be heard as the air makes noise as it flows past the mucus in the lungs. Activity may be difficult, and rest periods might be necessary due to shortness of breath after simple exercises such as climbing stairs. As COPD progresses, symptoms worsen and daily activities become increasingly difficult. With advanced COPD, symptoms can include a bluish tinge to the lips and fingernail beds, swelling in the feet or ankles, difficulty getting a good breath or talking, and rapid heart beat.

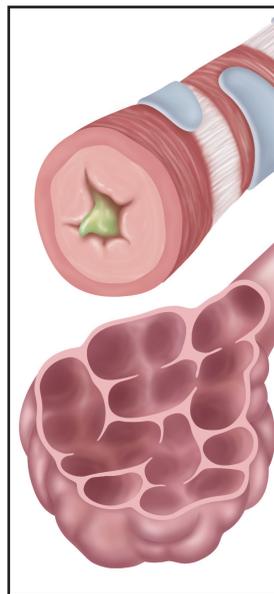
Diagnosis of COPD is made using a patient's history of symptoms, family history, and history of smoking or toxic fume exposure. A physical examination with chest x-ray or CT scan can determine whether significant mucus or airway destruction is present in the lungs. The amount of oxygen in the blood can also be measured if shortness of breath is a symptom.

Spirometry, a test that measures how well the lungs are working, involves breathing into a tube as hard and fast as possible after taking a deep breath. Sometimes an inhaled medicine is given that may open airways, and the test is repeated to measure how well the breathing can be improved after administration. This test also helps the doctor decide whether drugs can improve a patient's COPD symptoms.

Therapeutic Goals

The goals of COPD therapy are to slow disease progression, improve symptoms, maintain an independent and active lifestyle, and prevent complications such as pneumonia. Symptom improvement can be accomplished by using inhaled bronchodilators to keep airways open and inhaled steroids to improve inflammation. Patients with COPD are at higher risk for lung infections and should be aware of any worsening of symptoms, such as a change in the color or amount of sputum coughed up, or a fever or increased shortness of breath. Antibiotics should be taken promptly at the first sign of bacterial respiratory infection. Oxygen therapy may be appropriate, for either part of the day or continuous administration, depending on the severity of the condition. In serious cases, surgery to remove damaged lung tissue that no longer exchanges air may help relieve debilitating symptoms.

It is important for people with COPD to have an annual flu shot owing to the increased risk of serious complications from respiratory influenza. Patients should also talk to their doctor about a pneumococcal vaccination to lower the risk of this type of pneumonia and its complications. Besides stopping smoking, it is important to avoid any lung irritants that can aggravate COPD. Many health care centers also offer pulmonary rehabilitation programs for people with chronic lung diseases that include all aspects of maintaining good health.



COPD affects the large bronchial tubes at the top of the lungs, as well as the tiny sacs, or alveoli, at the bottom.