

Emphysema explained

Emphysema is a type of lung disease characterised by shortness of breath. Many people with emphysema also have chronic bronchitis (characterised by a chronic and productive cough). A combination of the two lung diseases is commonly called chronic obstructive pulmonary disease (COPD).

The exchange of oxygen and carbon dioxide takes place in the small air sacs of the lungs (alveoli). In a person with emphysema, the alveoli are damaged. The main tubes leading into the lungs (the bronchi) are also damaged and narrowed.

Emphysema is generally caused by cigarette smoking or long-term exposure to certain industrial pollutants or dust. A small percentage of cases are caused by the inherited disorder alpha-1-antitrypsin deficiency. The damaged airways don't regenerate and there is no cure, however COPD is preventable and treatable.

Symptoms

The symptoms of emphysema include:

- Breathlessness upon exertion, eventually breathlessness all the time
- Susceptibility to chest infections
- Sputum produced with chronic bronchitis
- Coughing
- Fatigue
- Expansion of the ribcage, due to expansion of the lungs
- Cyanosis, or a blue tinge to the skin due to lack of oxygen.

The structure of the lungs

The lungs are spongy lobes inside the chest, protected by the ribcage. Inhaled air is directed down the trachea (windpipe) into two tubes, called bronchi, that each distribute air to one lung. The bronchi divide into smaller tubes called bronchioles, and further still into tiny air sacs called alveoli. Each alveolus has a fine mesh of capillaries through which the exchange of oxygen and carbon dioxide takes place.

Oxygen molecules dissolve and migrate across a thin film of moisture from the air sac to the bloodstream. Oxygenated blood is sent to the heart, and then pumped around the body. At the same time, carbon dioxide in the blood crosses from the capillaries to the air sacs, using the same film of moisture. The carbon dioxide is then breathed out.

Damaged airways

The airways of the lungs are elastic. After repeated exposure to chemical irritants, such as cigarette smoke, the alveoli and bronchioles lose their elasticity. The movement of oxygen from the air to the blood becomes more difficult.

If chronic bronchitis is also present, the vast amounts of mucus stress and clog the air sacs, further reducing lung capacity. The number of capillaries servicing the damaged alveoli gradually reduces. The person has to breathe in a more exaggerated fashion to get sufficient amounts of oxygen.

Complications

Complications of untreated emphysema can include:

- **Pneumonia** – an infection of the alveoli and bronchioles. A person with emphysema is prone to repeated bouts of pneumonia.
- **Collapsed lung** – some lungs develop large air pockets (bullae), which can burst during a coughing fit. The lung may deflate if the air escapes into the chest cavity.
- **Heart problems** – the damaged alveoli and reduced number of capillaries mean that the heart has to pump hard to move blood through the lungs. Over time, this can place considerable strain on the heart.

Diagnosis

Emphysema is diagnosed with a number of different tests, including:

- Lung function test, called spirometry
- Chest x-rays
- Blood tests.

Treatment options

There is no cure for emphysema, however it is treatable. Appropriate management has been shown to improve quality of life and help people stay out of hospital.

- Stop smoking immediately – there are many successful programs to help people quit.
- Medications such as anti-inflammatory drugs, corticosteroids and decongestants.
- Medications to widen the airways (bronchodilators) – in puffer or tablet form.
- Antibiotics to clear up bronchitis infection, if present.
- Respiratory (pulmonary) rehabilitation programs.
- Stress management techniques.
- Gentle, regular exercise to improve overall fitness.
- Avoidance of air pollutants.
- Yearly vaccination against influenza to protect against respiratory infection.
- Oxygen treatment, in severe cases.

Respiratory (pulmonary) rehabilitation programs

A person with emphysema can take part in a respiratory rehabilitation program. These programs:

- Provide information and education on this lung disease
- Introduce patients to an exercise program proven to improve symptoms of COPD
- Improve lung function through specific breathing exercises
- Teach stress management techniques
- Offer advice on adapting to life with emphysema
- Provide emotional support through shared experiences.

To find out about a program nearest you, call The Australian Lung Foundation on 1800 654 301.

Oxygen treatment

If a person with emphysema is found to have exceptionally low levels of oxygen in their blood, they will be given oxygen to use at home. The oxygen is usually breathed through the nose via nasal prongs (cannulae). The person will need to use the oxygen treatment for at least 15 hours every day.

Where to get help

- Your doctor
- The Australian Lung Foundation, tel. 1800 654 301 – can provide a range of educational information and put you in touch with your nearest support group.

Things to remember

- Emphysema is a type of lung disease that is characterised by shortness of breath.
- Emphysema is usually caused by cigarette smoking.
- There is no cure, but the condition can be managed using medications and adjustments to lifestyle.
- If you or someone near to you has shortness of breath or a long-term productive cough, see your doctor for a lung function test or visit www.lungfoundation.com.au to take The Australian Lung Foundation Lung Health Checklist.
- Call the Lung Foundation on 1800 654 301 for further information.

This page has been produced in consultation with, and approved by:

Australian Lung Foundation

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