BMJ Best Practice

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Pneumothorax

A pneumothorax happens when air gets into the space between your chest wall and one of your lungs. This can cause part or all of one lung to collapse. The condition can be dangerous but is usually treatable if you don't delay in getting help.

What is a pneumothorax?

The area between your lungs and your chest wall is called the **pleural space**.

If air gets into this space it can put pressure on one of your lungs, causing part or all of it to collapse (you sometimes hear of pneumothorax being called a **collapsed lung**). If this happens you can struggle to breathe properly and to get enough oxygen.

The danger of a pneumothorax depends on how much air gets into the pleural space. A small pneumothorax can sometimes heal by itself but most need treatment. Although it is a medical emergency, death from pneumothorax is rare.

Different types of pneumothorax

Pneumothorax can happen for several reasons, including what is called **spontaneous' pneumothorax**. This means that it happens without an obvious cause, in someone who has no history of lung problems.

Although we don't know for sure what causes spontaneous pneumothorax, it is much more common in **people who smoke**.

Smoking seems to weaken the walls of the lungs. This allows air from the lungs to escape into the pleural space and cause a pneumothorax.

Pneumothorax seems to be more common in men and boys who are tall and slim.

What's called a **secondary spontaneous pneumothorax** is slightly different. This happens suddenly in someone who has an existing lung disease, which weakens the wall of the lung, making it more likely to tear and leak air into the pleural space.

A **tension pneumothorax** is a rare type of pneumothorax. It means that the amount of air in the pleural space increases every time you take a breath, as if the hole in the lung is working like a one-way valve. This type of pneumothorax needs the most urgent treatment.

A common cause of pneumothorax is lung disease, especially **chronic obstructive pulmonary disease (COPD)**. COPD is a condition where the lungs become damaged, causing breathing problems. It is almost always caused by smoking.

Other causes of pneumothorax include:

- other conditions that affect the lungs, including pneumonia, tuberculosis, and cystic fibrosis
- a chest injury, such as a cracked rib that pierces a lung
- your genes. Some lung problems, including pneumothorax, seem to run in families.

What are the symptoms?

The main symptoms of pneumothorax are:

- chest pain, and
- shortness of breath.

If you have these symptoms together, seek urgent medical help. And always get medical help if you have severe chest pain.

Your doctor may not be able to diagnose a pneumothorax just by looking at you. So it's likely you'll have a chest x-ray. You may also need other tests or scans, such as a CT (computerised tomography) scan.

What treatments work?

The aims of treatment are to:

- remove the air from the pleural space, and
- prevent the problem happening again.

For most types of pneumothorax you will need to stay in hospital for at least a day or two, and sometimes a week or more.

A very small pneumothorax can often heal on its own. And if you are young and don't have any other health problems you may be able to go home after a few hours.

But if your pneumothorax is larger, or if you are older or have other health problems, your doctor will want to monitor you in hospital. And you will be given oxygen to breathe through a mask to help with shortness of breath.

For a larger pneumothorax you will probably need one or more of the following treatments.

Letting out the air through a needle

The technical name for this treatment is **needle aspiration**. It means that a small needle is inserted into the chest wall to let out the build-up of air - a bit like making a small hole in a bicycle tyre.

The needle can be connected to a syringe so that the doctor can draw out the air more easily.

Letting out the air with a chest tube

For a larger pneumothorax, or where your doctor thinks a needle is not going to work well enough, you may need to have a chest tube inserted through a small cut in your chest wall.

This procedure is called a **thoracostomy**. It works in a similar way to needle aspiration to let out the build-up of air.

If you have this treatment your doctor may insert a tiny camera through the cut in the chest wall to get a closer look at the problem. This procedure is called a **thoracoscopy**.

Securing the lung to the chest wall

If your doctor thinks there is a strong chance that you will have another pneumothorax (for example, if your lungs have been weakened by lung disease), or if this is not your first pneumothorax, he or she may suggest a procedure to attach the lung to the chest wall.

This is called **pleurodesis**. It involves injecting a drug into the pleural space that causes the lung and chest wall to stick to each other, almost as if they had been glued together.

If your doctor thinks this treatment might help you, he or she should discuss it in detail with you, including:

- how likely it is to work
- the possible benefits
- any possible risks, and
- the likelihood of having another pneumothorax if you choose not to have the procedure.

Your doctor can advise you, but the final choice about whether to have the procedure is yours.

What to expect in the future

Up to half of people who have a first spontaneous pneumothorax will have another pneumothorax at some point.

And people who have a secondary spontaneous pneumothorax have a greater chance of the problem happening again. So it’s important to be aware of the symptoms and get medical help if they happen again.

Having pleurodesis can help prevent another pneumothorax. But it doesn’t always solve the problem permanently.

Having another pneumothorax is more likely if you smoke.

Changes in environmental pressure can also cause another pneumothorax. This can happen either with:

- reduced air pressure at high altitude, or
- increased water pressure caused by underwater diving.

If you do any diving your doctor will probably advise you to stop unless you have had successful pleurodesis. And he or she will advise you to avoid air travel for a while after you have treatment for a pneumothorax.

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