What is a pleural effusion?

A pleural effusion means that there is a build-up of fluid between a lung and the chest wall.

The pleura is a thin membrane that lines the inside of the chest wall and covers the lungs. There is normally a tiny amount of fluid between the two layers of pleura. This acts like lubricating oil between the lungs and the chest wall as they move when you breathe. A pleural effusion develops when this fluid builds up and separates the lung from the chest wall.

What are the causes of a pleural effusion?

A pleural effusion is a complication of various conditions. The following are some of the more common causes of a pleural effusion (but there are other rarer causes too):

- **Lung infection (pneumonia), tuberculosis**, and cancers may cause inflammation of the lung and pleura. This may cause fluid to build up into a pleural effusion.
- **Some arthritic conditions** may cause inflammation of the pleura in addition to joint inflammation. For example, pleural effusion is an uncommon complication of **rheumatoid arthritis** and **systemic lupus erythematosis (SLE)**.
Heart failure causes 'back pressure' in the veins (blood vessels) that take blood back to the heart. Some fluid may seep out of the blood vessels. Swelling of the legs with fluid is typical with heart failure, but a pleural effusion may also develop.

A low level of protein in the blood also tends to allow fluid to seep out of the blood vessels. For example, cirrhosis of the liver and some kidney diseases may cause a low level of blood protein which allows a pleural effusion to develop.

What are the symptoms?

You may feel some chest pain but a pleural effusion is often painless. The amount of fluid varies. As the effusion becomes larger, it presses on the lung, which cannot expand fully when you breathe. You may then become breathless.

You may also have symptoms of the condition that is causing the effusion. As a whole range of conditions can cause a pleural effusion, there is a large range of other symptoms that may occur, depending on the underlying cause. One example is you may have a cough and a high temperature (fever) if the cause is lung infection (pneumonia).

Are any tests needed?

A chest X-ray usually confirms a build-up of fluid between a lung and the chest wall (pleural effusion). If the cause of the effusion is known then no further tests may be needed. However, sometimes a pleural effusion is the first sign of an underlying condition. Further tests may then be advised to find the cause of the effusion. These may include lung tests, blood tests and taking a sample of the fluid and pleura to examine in the laboratory.

What is the treatment for a pleural effusion?

Treating the underlying cause

A major part of treatment is usually directed to the underlying cause of the build-up of fluid between the lung and the chest wall (pleural effusion). For example, medicines called antibiotics for lung infection (pneumonia), chemotherapy or radiotherapy for cancers, etc. Therefore, treatment can vary greatly, depending on the cause of the effusion. If the underlying cause can be successfully treated then there is a good chance that the pleural effusion will go away for good. If the underlying cause cannot be treated, or can only be partially treated, the effusion may return if it is cleared (drained).

Treating the effusion itself

Small effusions that cause no symptoms, or only mild symptoms, may just be left and 'observed'. Treatment is usually only needed if the effusion causes symptoms such as breathlessness.

A large pleural effusion that makes you breathless can be drained. This is called a pleural fluid aspiration or pleural tap. It is usually done by inserting a needle or tube through the chest wall. A local anaesthetic is injected into the skin and chest wall first to make the procedure painless. This may be a 'one-off' procedure to relieve symptoms.
However, in many cases, unless the underlying cause can be treated, an effusion is likely to return within a few weeks. Repeated draining of the fluid, when symptoms become troublesome, is one option.

Depending on the underlying cause, other treatment options that are sometimes considered include:

- **Pleurodesis.** In this procedure, a special chemical (a sclerosant) is injected into the pleural space. This causes inflammation of the pleural membranes and helps them to 'stick' together. This helps to prevent fluid building up again into an effusion. Sclerosing chemicals that are commonly used include tetracycline, sterile talc and bleomycin. Pleurodesis is most often used in the treatment of repeated (recurrent) effusions caused by cancer.
- **Leaving a permanent drain in place** so the fluid can drain out as and when it forms.
- **An operation to insert a shunt** (like an internal drain) to allow the fluid to drain out from the chest into the tummy (abdominal) cavity. This is called a 'pleuroperitoneal shunt'. It is only occasionally used.
- **Pleurectomy.** This is an operation to remove the pleura. It is sometimes used in people with effusions due to cancer when other treatment options have failed.

**Further reading & references**

- Pleural Disease Guidelines; British Thoracic Society (September 2010)

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