Pleural Effusion

What is it?

A pleural effusion is a collection of fluid around the lung, filling the space between the lung and the chest wall. Because the chest wall is rigid, and the lung is pliable, the lung becomes compressed by the fluid. As a result, the patient does not have full use of the affected lung, and may become short of breath.

In more advanced cases, the fluid may build up and put high pressure on the lung, the heart, and even the other lung.

The pleural effusion is not just made of water, but contains proteins. If the fluid coats the lung for more than a few weeks, then a sheet of protein begins to be deposited on the surface of the lung. This sheet of protein is called a pleural peel. The pleural peel acts as an eggshell, or papier-mâché material, permanently preventing the proper expansion of the lung. In order to return the underlying lung to normal function, surgery must be performed to remove the pleural peel.

What causes it?

The pleural space is the potential space between the lung and the chest wall. Normally, the lung is fully expanded inside the chest, and the pleural space consists of a thin layer of fluid between the lung and chest wall. This fluid lubricates the pleural space, and allows the expanding and deflating lung to slide along the inside of the chest wall. Approximately two liters of pleural fluid is formed per day, created and absorbed by the pleura.

A pleural effusion forms when there exists an imbalance between the production and absorption of pleural fluid. This imbalance can be due to a large number of conditions, including heart failure, kidney failure, viral infections, pneumonia, chest wall injury, pneumonia, or cancer. Depending upon the nature of what causes the pleural effusion, several different treatments may apply.

Treatment

The chief objectives of treatment of pleural effusion are to determine the cause of the fluid build-up, and to completely remove the fluid. The ultimate goal is to obtain “pleural apposition,” the elimination of fluid in the pleural space, and re-establishment of contact between the lung and chest wall.

Medical therapy

Sometimes, all that is required to obtain pleural apposition is medical therapy of heart failure or pneumonia. As the primary condition improves, the pleural effusion resolves.

Thoracentesis

When the fluid is still free-flowing and not infected, the pleural fluid can be usually be removed with a small needle or catheter inserted between the ribs. This procedure is called a thoracentesis. Thoracentesis is performed under local

anesthesia by a physician. Some of the fluid is removed and sent for analysis. This analysis can suggest whether or not the fluid is bland, infected, or cancerous. In some cases, the fluid is not completely removed. Additional procedures may be required.

Thoracoscopy

When it is decided by your physicians that the fluid must be completely removed, and a procedure must be performed to prevent the fluid from re-accumulating, then thoracoscopy or thoracotomy may be required. These procedures are used to look inside the chest, drain the fluid, remove the pleural peel, and assure that the fluid will not return.

Thoracoscopy is usually reserved for pleural effusions of limited duration and limited severity. Thoracoscopy is a minimally invasive procedure using small incisions through which a small camera and instruments are inserted. Please see the related article on Thoracoscopy.

Thoracotomy

More complex cases require thoracotomy. Thoracotomy is reserved for cases when dense adhesions are present in the chest, or when a pleural peel must be removed from the chest wall or surface of the lung. The procedure for removal of the pleural peel is called thoracotomy and decortication.

The earlier that decortication is performed, the less difficult the operation, and the quicker the recovery of the patient.