

Empyema

What is it?

An empyema is infection in the pleural space. The pleural space is the potential space between the lung and the chest wall. The development of an empyema results from fluid within the pleural space which becomes infected, and the deposition of infected protein material onto the surface of the lung and the chest wall. The infected material deposited onto the lung is called a pleural peel.

The pleural space normally has a moist surface, allowing the expanding and contracting lung to slide smoothly over the inside of the chest wall. Under normal circumstances, there is no significant amount of fluid, and there is no air, in the pleural space. The lung is normally completely expanded inside the chest. When an empyema is present, the lung is compressed by the fluid in the pleural space, and the lung becomes "trapped" within the material, unable to fully inflate. The patient may be very short of breath, and typically has a high fever and feels very sick.

What causes it?

Most empyemas begin as a pneumonia. Some patients with pneumonia develop a pleural effusion. (Please see the related article on pleural effusion.) In most patients, the pleural effusion resolves when the pneumonia is treated. For unknown reasons, in some patients, the effusion does not go away, but becomes infected. An infected pleural effusion is called an empyema. The empyema has two components: the fluid in the space, and the pleural peel deposited onto the lung and chest wall. The vast majority of empyemas will not respond to antibiotics, nor will they resolve on their own. The vast majority require surgical exploration and drainage.

The remaining causes of empyema are secondary infections of a bland pleural effusion. For example, a patient with heart failure may develop a pleural effusion. The same patient may develop a urinary tract infection. Bacteria from the urinary tract infection enter the blood, and then infect the pleural effusion, resulting in an empyema.

A relatively rare cause of empyema in the United States is tuberculosis. Tuberculous empyemas are associated with pulmonary tuberculosis.

How is it treated?

In the presence of pneumonia, the foundation of the treatment of empyema is antibiotic therapy of the pneumonia. In concert with the antibiotics, the infected fluid must be drained, and the pleural peel must be removed from the lung and chest wall.

If the process is discovered early, then a minimally invasive thoracoscopy (VATS) procedure may be used. (Please see the related article on Thoracoscopy elsewhere in this site.) Through tiny incisions, under endoscopic guidance, the fluid is drained and the pleural peel is removed from the surface of the lung and chest wall. Two or three drains called chest tubes are left in the pleural space. They are usually removed 4 to 7 days after surgery.

If the process is discovered later, and the amount and density of the pleural peel exceeds the ability of thoracoscopy to remove it, then a thoracotomy is required. (Please see the related article on Thoracotomy elsewhere in this site.) At the time of thoracotomy, a five or six inch incision is made on the chest wall, and the chest is entered. The infected fluid is removed and is sent for analysis. The pleural peel is carefully removed from the lung and from the chest wall. The lung is fully re-expanded. Several drains are placed, and remain in place for 4 to 7 days.