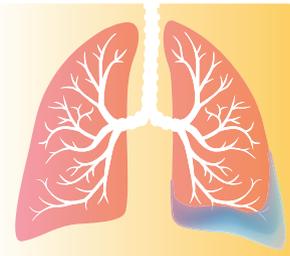


Malignant Pleural Effusions

A malignant pleural effusion (MPE) is the build up of fluid and cancer cells that collects between the chest wall and the lung. This can cause you to have chest discomfort as well as feel short of breath. It is a fairly common complication in a number of different cancers.



What is the pleural space?

Both the lungs and the chest wall are lined with thin membranes called 'pleura'. The lung is typically fully expanded in the chest and comes right up to the chest wall. As such, the normal 'pleural space' (the area in between the lung and the chest wall) only contains a small amount of fluid (approximately 1 teaspoon).

What is a pleural effusion?

A pleural effusion is an abnormal build-up of fluid in the pleural space.

What causes a pleural effusion?

A pleural effusion can be caused by many diseases. It can be seen in infections and other diseases in addition to various cancers. In general, fluid builds up in the pleural space if there is an overproduction of fluid, decreased absorption of the fluid, or both. If the cause of the effusion is due to cancer cells in the fluid, the effusion is called a "malignant pleural effusion" or MPE.

What causes a malignant pleural effusion (MPE) to form?

An MPE forms when cells from either a lung cancer or another type of cancer spread to the pleural space. These cancer cells increase the production of pleural fluid and cause decreased absorption of the fluid.

Who can get a malignant pleural effusion?

People with lung cancer, breast cancer, and lymphoma (a cancer of lymphatic tissue) are most likely to get a MPE. Mesothelioma (a rare cancer of the pleura itself) is another common cause of MPE. Other causes of MPE include cancer that has spread from the stomach, kidney, ovaries, and colon.

What are the symptoms of a malignant pleural effusion?

The symptoms of a MPE can be extremely variable and range from having no symptoms in some people to being very bothersome in others. Below is a list of

common symptoms:

- Shortness of breath at rest or with activity
- Chest pain or pressure
- Cough
- Pain when taking a deep breath, or the feeling of not being able to take a deep, satisfying breath
- Fever
- Fatigue

How do you know if you have a MPE?

Your healthcare provider may first suspect that you have a MPE on physical examination by noting reduced breath sounds and dullness to percussion of your chest. To see if you have a MPE and estimate how much fluid is present, you will have one or more of the imaging tests:

- Chest X-Ray: A picture showing a view of the chest, including the heart and lungs.
- CT Scan of the Chest: Multiple pictures of the chest (think of it as a set of bread-loaf slices through the chest) that gives a lot more detail and information than a chest X-ray.
- Ultrasound of the Chest: One of the best methods of imaging the pleural space. Ultrasound does not involve any radiation and can also be used to help guide procedures to sample or drain pleural fluid.

When a pleural effusion is suspected or confirmed, your healthcare provider will need to take a sample of the fluid to see what is causing the effusion. This can be done in one of two ways.

- *Thoracentesis*: This is a simple and safe procedure that is often done in an outpatient setting. Usually you will be sitting up and leaning over a table. The procedure is done using local anesthesia medicine to reduce any discomfort or pain. Ultrasound is often used to identify a safe place to insert a catheter. The fluid is drained over

several minutes and the catheter is removed. At the end of the procedure, a bandage is placed over the wound which then closes on its own without the need for stitches. The fluid is tested to determine the cause of the effusion and look for cancer cells. (For more information see the ATS Patient Information Series “Thoracentesis” fact sheet at www.thoracic.org/patients.)

- **Thoracoscopy with biopsy:** This is a slightly more invasive procedure that is generally done for one of several reasons:
 - if a thoracentesis does not tell your healthcare provider the cause of the effusion.
 - if more tissue is needed to look for ‘molecular markers’. This will help your oncologist select the best medications to treat the cancer.
 - to do a ‘pleurodesis’ (a procedure used to get the lung to stick up to the chest wall—see below).

Thoracoscopy (often referred to as VATS—video assisted thoroscopic surgery or ‘medical pleuroscopy’) is done under moderate sedation or general anesthesia. Your physician will make a small incision on your side between the ribs, the fluid is drained out of the space and a camera is inserted into the chest cavity to visually examine the pleura and take biopsies to send for analysis under a microscope. In certain cases, this can be performed as an outpatient procedure, however your healthcare provider may want to have you stay in the hospital for at least one day observation.

How are malignant pleural effusions treated?

Medical oncologists and radiation oncologists may treat the underlying cancer with chemotherapy and/or radiation to prevent the fluid from accumulating. Your lung doctor (pulmonologist) or thoracic surgeon will work with your oncology team to discuss several other treatments currently available to remove the fluid and/or prevent it from re-accumulating (building back up) with the goal of keeping you breathing well. Your doctors will work together to both treat the cancer and treat your symptoms.

Thoracentesis: The same procedure described above can be used to drain the fluid completely. The advantages of a therapeutic thoracentesis include that it is a relatively easy, painless, outpatient procedure that can help you feel less short of breath. The main disadvantage is that it does not prevent the fluid from building back up and you may need to come back for repeated drainage.

Pleurodesis: This is a procedure where a chemical is instilled into the chest cavity after the pleural fluid has been drained to help get the lung to stick up to the chest wall and reduce the risk of new build-up of fluid. This procedure can be done either by placing a small catheter

between the ribs into the fluid and instilling a chemical through the tube or by thoracoscopy (as described above) and spraying the chemical onto the chest wall. Both require admission to the hospital and a tube in place for a few days. The advantages of this approach is to hopefully prevent future fluid build-up thus avoiding the need for repeated procedures. The main disadvantages are that you typically need to be in the hospital for a few days and there may be a temporary drop in your oxygen level.

Indwelling pleural catheter (IPC): This device is a small catheter that is placed under your skin and into the pleural fluid, which allows repeated drainage at home (without any more needle sticks) to relieve symptoms. These catheters are placed using local anesthesia as an outpatient procedure. The catheter is safe, easy to use and may help allow the lung to eventually expand fully up to the chest wall. Once the fluid build-up resolves, the catheter can be removed in many patients after 2-3 months. The main disadvantage of the IPC is the need to care for the catheter (which is not that difficult).

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Rx Action Steps

- ✓ Malignant pleural effusions are a common complication in some forms of cancer and can cause shortness of breath, chest discomfort, and cough.
- ✓ If you develop any of the symptoms described, talk to your health care provider to see you have developed a MPE and refer you to the appropriate specialist to help you manage your symptoms.
- ✓ There are several safe, minimally invasive, and effective therapies to treat the symptoms of MPE and decrease the chance of recurrence.

Healthcare Provider’s Contact Number:

Additional Resources:

Cancer.Net (American Society of Clinical Oncology)

<http://www.cancer.net/navigating-cancer-care/side-effects/fluid-around-lungs-or-malignant-pleural-effusion>

National Cancer Institute

http://www.cancer.gov/about-cancer/treatment/side-effects/cardiopulmonary-pdq#link_210

Canadian Cancer Society

<http://www.cancer.ca/en/cancer-information/diagnosis-and-treatment/managing-side-effects/pleural-effusion/?region=bc>

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