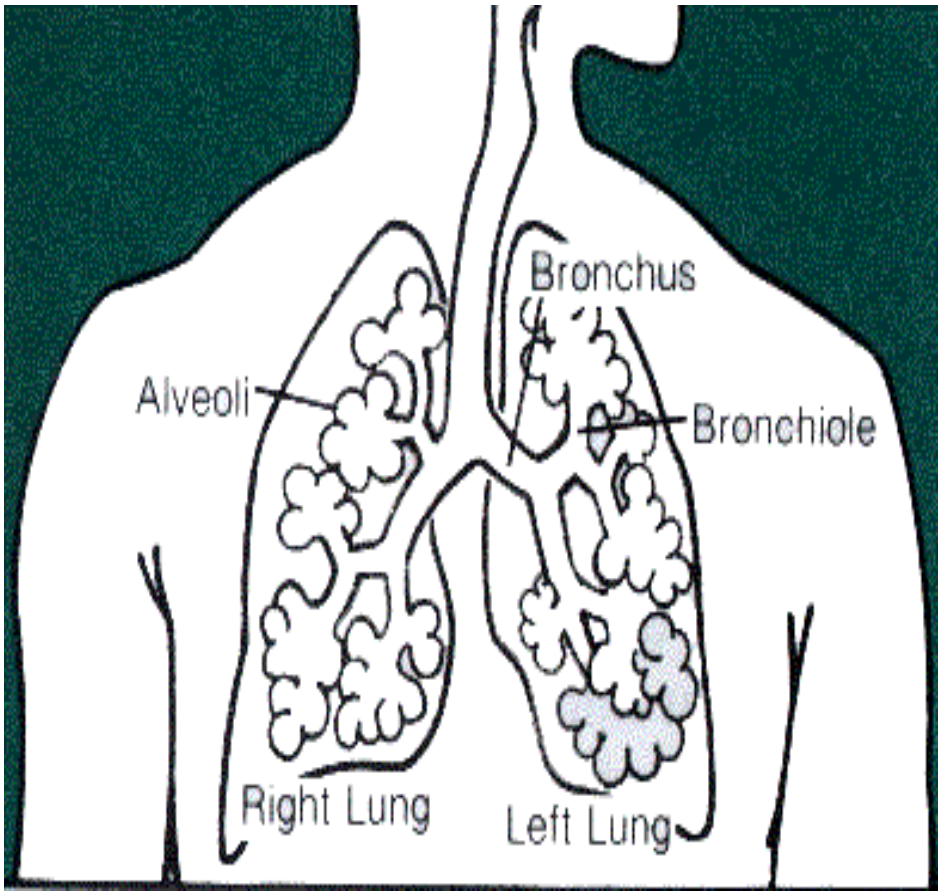
Patient Education

Radiation Medicine Department

Lung Cancer: Overview

Overview

The lungs, a pair of sponge-like, cone-shaped organs, are part of the respiratory system. The right lung has three sections, called lobes; it is a little larger than the left lung, which has two lobes. When we breathe in, the lungs take in oxygen, which our cells need to live and carry out their normal functions. When we breathe out, the lungs get rid of carbon dioxide, which is a waste product of the body's cells.



A thin membrane called the pleura surrounds the lungs. Two tubes called bronchi lead from the trachea (windpipe) to the right and left lungs. The bronchi are sometimes also involved in lung cancer. Tiny air sacs called alveoli and small tubes called bronchioles make up the inside of the lungs.

Types of Lung Cancer

Cancers that begin in the lungs are divided into two major types, non-small lung cancer and small cell lung cancer, depending on how the cells look under a microscope.

Each type of lung cancer grows and spreads in different ways and is treated differently.

Nonsmall cell lung cancer is more common than small cell lung cancer, and it generally grows and spreads more slowly.

There are three main types of non-small cell lung cancer. They are named for the type of cells in which the cancer develops:

- Squamous cell carcinoma: Cancer that begins in squamous cells, which are thin, flat cells that look like fish scales. This is also called epidermoid carcinoma.
- Adenocarcinoma: Cancer that begins in cells that have glandular (secretory) properties.
- Large cell carcinoma: Cancer in which the cells are large and look abnormal when viewed under a microscope.

Small cell lung cancer, sometimes called oat cell cancer, is less common than non-small cell lung cancer.

- This type of lung cancer grows more quickly and is more likely to spread to other organs in the body.

Symptoms

Common signs and symptoms of lung cancer include:

- A cough that doesn't go away and gets worse over time
- Constant chest pain
- Coughing up blood
- Shortness of breath, wheezing, or hoarseness
- Repeated problems with pneumonia or bronchitis
- Swelling of the neck and face
- Loss of appetite or weight loss
- Fatigue

These symptoms may be caused by lung cancer or by other conditions. It is important to check with a doctor.

Staging

After lung cancer has been diagnosed, tests are done to find out if cancer cells have spread within the lungs or to other parts of the body, this is called staging. It is important to know the stage in order to plan treatment. Some testing may include:

- CT (or CAT) Scan. A series of detailed pictures of areas inside the body, taken from different angles.
- MRI. A powerful magnet linked to a computer are used to create detailed pictures of areas inside the body.
- Radionuclide Scanning. A test that produces pictures (scans) of internal parts of the body. The person is given an injection or swallows a small amount of radioactive material; the scanner then measures the radioactivity in certain organs.
- Mediastinoscopy/Mediastinotomy*.* A mediastinoscopy can help show whether the cancer has spread to the lymph nodes in the chest. Using a lighted viewing instrument, called a scope, the doctor examines the center of the chest (mediastinum) and nearby lymph nodes.

The Stages of Nonsmall Cell Lung Cancer

Nonsmall Cell Lung Cancer

Occult (hidden) stage – the cancer cells are found in sputum (mucus coughed up from the lungs), but no tumor can be found in the lung by imaging or bronchoscopy, or the primary tumor is too small to be assessed.

Stage 0 (carcinoma in situ) – the cancer is limited to the lung and is found in a few layers of cells only. It has not grown through the top lining of the lung.

Stage I - the cancer is in the lung only, with normal tissue around the tumor. Stage I is divided into stages IA and IB, based on the size of the tumor.

Stage II – the cancer has spread to nearby lymph nodes or to the chest wall (the ribs and muscles that make up the area of the body between the neck and the abdomen), the diaphragm (the thin muscle below the lungs and heart that separates the chest from the abdomen), the mediastinal pleura (the thin membrane that covers the outside of the lungs in the area near the heart), or the parietal pericardium (the outer layer of tissue that surrounds the heart). Stage II is divided into stage IIA and stage IIB, based on the size of the tumor and whether it has spread to the lymph nodes.

Stage III – the cancer has either:

- spread to the lymph nodes in the mediastinum (the middle area between the lungs that contains the heart, major blood vessels, and other structures); or
- spread to the lymph nodes on the opposite side of the chest or in the lower neck.

Stage III is divided into stage IIIA (which is sometimes treated with surgery) and stage IIIB (which is rarely treated with surgery).

Stage IV – the cancer has spread to other parts of the body or to another lobe of the lungs.

Recurrent non-small cell lung cancer is cancer that has recurred (come back) after it has been treated. The cancer may come back in the brain, lung, or other parts of the body.

The Stages of Small Cell Lung Cancer

Small Cell Lung Cancer

The following stages are used for small cell lung cancer:

Limited Stage - cancer is found in one lung, the tissues between the lungs, and nearby lymph nodes only. Lymph nodes are small, bean-shaped structures found throughout the body. They filter substances in a fluid called lymph and help fight infection and disease.

Extensive Stage - cancer has spread outside of the lung where it began or to other parts of the body.