

biomarker testing to indicate whether the therapy will be effective. Next-generation sequencing (NGS) based assay is used to determine actionable drivers. A tissue sample from the tumour biopsy is studied for the patients' DNA. The DNA sequence of a patient's cancer is compared with normal DNA to determine the characteristics that are unique to the cancer.

TREATING NON SMALL CELL LUNG CANCER

The choice of treatment of patients with NSCLC depends mainly on the extent of the disease. Surgery is the most common way to treat this type of lung cancer at the localized stage. Radiation therapy, chemotherapy and targeted therapies may also be used to slow the progress of the disease and to manage symptoms.

TREATING SMALL CELL LUNG CANCER

Small cell lung cancer spreads quickly. In many cases, cancer cells have already spread in other parts of the body when the disease is diagnosed. In order to reach cancer cells throughout the body, doctors almost always use chemotherapy. Treatment may also include radiation therapy aimed at the tumor in the lung or tumors in other parts of the body (such as in the brain). Some patients have radiation therapy to the brain even though no cancer is found there. This treatment, called prophylactic cranial irradiation (PCI), is given to prevent tumours from forming in the brain. Surgery is part of the treatment plan for a small number of patients with small cell lung cancer.

THE IMPORTANCE OF FOLLOW-UP CARE

Follow-up care after treatment for lung cancer is very important. Regular checkups ensure that changes are quickly noticed, and if the cancer returns or a new cancer develops, it can be treated as soon as possible. Checkups may include physical exams, chest X-rays or lab tests.

CURE OF LUNG CANCER

Cure rates are dependent upon the stage at diagnosis, compliance of patients with treatment, and the tolerance to treatment. – stage I has nearly 70% cures, stage II about 40-50% cures and stage III –about 15-30% cures. In advanced stage IV, there may be no longterm cures but the general condition of the patient can definitely be improved with treatment, especially targeted therapies.

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In loving memory of
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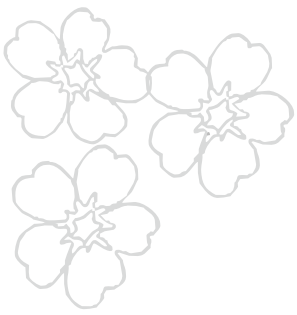


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LUNG CANCER

World over, about 1.8 million people are diagnosed with lung cancer every year and 1.6 million die of this deadly disease. Lung cancer is the most common cancer among males in the Indian subcontinent. In 2020 close to 1 lakh new cases of lung cancer were diagnosed with a majority presenting with distant metastasis. Most cases can be attributed to tobacco use and air pollution. The prevalence of smoking in patients with lung cancer is nearly 80%.

WHAT IS LUNG CANCER?

The lung is the most crucial part of the respiratory system, helping us to breathe. The lungs are a pair of sponge like cone shaped organs in the chest cavity. The right lung is larger than the left lung and has 3 sections called lobes while the left has only 2 lobes. When we breathe in, the lung takes in oxygen which is circulated throughout the body and carbon dioxide, which is a waste product of the body, is exhaled.

Cancer is an uncontrolled growth of any body tissue, with the ability to spread to other areas. Cancer that begins in the lung is called lung cancer. There are two basic types of lung cancer, which are further subdivided:

- Small cell lung cancer or oat cell cancer (less common)
- Non small cell lung cancer (more common) – further subdivided into
 - o Squamous cell (epidermoid cancer)
 - o Adenocarcinoma
 - o Large cell carcinoma

Lung cancer epidemiology has changed from histologic types related to tobacco use (squamous and small cell) to an era wherein adenocarcinoma became equal and now it has become dominant. In the last decade a larger number of women and never smokers has also been noticed.

RISK FACTORS

- **Smoking** - Smoking cigarettes, beedies, cigars and pipes expose lung cells to carcinogens. Quitting smoking greatly reduces a person's risk of developing lung cancer.
- **Environmental Tobacco Smoke or passive smoking called second hand smoke** also increases the chance of developing lung cancer.
- **Asbestos** particles when inhaled can lodge in the lungs, damaging cells.

- **Radon**, an invisible, odorless and tasteless radioactive gas occurring naturally in soil and rocks, especially in mines can cause lung cancer.
- **Pollution** – Researchers have found a link between lung cancer and exposure to certain air pollutants, such as by-products of the combustion of diesel and other fossil fuels.
- **Lung Disease** – Lung diseases, such as tuberculosis (TB), increase a person's chance of developing lung cancer in areas of the lung scarring.
- **Personal Medical and Family History** – A person who has previously had lung cancer, or has close relatives with lung cancer, is at higher risk but this may be due to both inherited and lifestyle factors.
- **Other Mineral Exposures** - People with silicosis and berylliosis (lung diseases caused by breathing in certain minerals) also have an increased risk of lung cancer.

LUNG CANCER SYMPTOMS

- Unexplained chronic cough
- Repeated attacks of lung infection
- Breathlessness, wheezing, hoarseness
- Sputum mixed with blood
- Constant chest pain
- Loss of appetite or weight loss
- Fatigue

Some of the symptoms mentioned above are quite common in everyday illnesses and do not necessarily indicate cancer. Nevertheless, it is wise to pay heed to these symptoms and seek advice from your doctor. Early detection gives the best choice of cure.

LUNG CANCER DIAGNOSIS

To help find the cause of symptoms, the doctor evaluates a person's risk factors, followed by clinical examination, x-ray and CT scan of the chest. To confirm the diagnosis of cancer, a biopsy is done to take a piece of the tumour and examine cells or tissues from the suspected lesion under a microscope by a pathologist. This can be done through a diagnostic tube- Bronchoscope or a needle biopsy under CT scan guidance.

Bronchoscopy - The doctor puts a thin flexible tube with lighted glass fibers, a bronchoscope, into the mouth and down through the windpipe to collect cells or small samples of tissue.

LUNG CANCER STAGING

Staging is done to find out the extent of the disease, whether the cancer has spread and if so, to which part of the body. Knowing the

stage of the disease helps the doctor to plan treatment. Some tests are done to determine whether the cancer has spread include:

MRI (magnetic resonance imaging)-A powerful magnet linked to a computer makes detailed pictures of areas inside the body.

Radionuclide scanning (Bone scan or PET Scan)-Scanning can show whether cancer has spread to other organs. The patient receives an injection of a mildly radioactive substance. A machine (scanner) measures and records the level of radioactivity in the body to reveal abnormal areas.

TREATMENTS OPTIONS FOR LUNG CANCER

Treatment depends on a number of factors, including the type of lung cancer (non-small cell or small cell lung cancer), the stage of the disease, and the general health of the patient. The most common modes of cancer treatment are surgery, radiation therapy, chemotherapy and targeted therapy.

Surgery is the most commonly used mode of cancer treatment in localized disease, wherein the surgeon removes the tumour with some part of adjacent normal tissue. Removal of a lobe of the lung is called a lobectomy. Pneumonectomy is the removal of an entire lung. The human lung has substantial reserve capacity and removal of a lobe or even one full lung does not severely incapacitate the person.

Chemotherapy is treatment of cancer by drugs. Cancer chemotherapy employs cytotoxic drugs capable of arresting fast cellular growth. Unfortunately, chemotherapy also affects other fast growing and dividing normal cells in the body giving rise to side effects like nausea, vomiting, loss of hair etc. Most of these side effects are temporary; lasting only a few days and can be controlled with medication. The treatment is given in cyclic form once in 3 or 4 weeks, to allow for adequate recovery of normal tissues.

Radiation therapy involves subjecting the cancer-bearing region to high energy radiation which destroys the cancer cells. Normally the treatment is divided over a period of one month, during which radiation is delivered five days a week. Radiation affects normal cells in the area as well. The schedule for radiation is planned in a way that ensures recovery of normal tissues while ensuring sustained tumor destruction.

Contact CPAA for detailed literature on Chemotherapy and Radiation in different languages.

Targeted Therapies have recently been developed to treat NSCLC cells with specific genetic alterations. In the past decade many such mutations have been identified. A number of therapies against such alterations exist, that can improve the median overall survival of patients by as much as one year. Tumours undergo