LUNG CANCER

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1. WHAT IS LUNG CANCER?

Lung cancer is the term used to describe the growth of abnormal cells lining the air passages inside the lung tissue. These cells divide and grow more rapidly than normal cells and combine to form a cluster, or tumour.

Lung cancer is not just one disease. There are two main types of lung cancer:

**Non-small cell lung cancer (NSCLC)**
NSCLC is the most common form of lung cancer, comprising of 80-85% of lung cancer cases. NSCLC can be further divided into several different subtypes which are determined by the types of cells and the location of the tumour. Each subtype needs to be treated differently. The most common subtypes are:

- **Adenocarcinoma** (40-50% of NSCLC) – both the most common type of lung cancer and the most common form of NSCLC, adenocarcinoma develops within the mucus-producing cells in the lining of the airways.
- **Squamous cell carcinoma** (25-40% of NSCLC) – develops in the squamous cells that line the airways and tends to spread locally. It is often caused by smoking and has limited treatment options.
- **Large cell carcinoma** (3-5% of NSCLC) – named after the large, rounded cells that are seen when examined microscopically. It is sometimes known as ‘undifferentiated carcinoma’ and has a high tendency to spread to other parts of the body.
- **Not otherwise specified** (<5% of NSCLC).

**Small cell lung cancer (SCLC)**
About 15% of all lung cancers are small cell lung cancer. In this type, the cancerous cells are small cells in which the nucleus (the control centre of cells) dominates. SCLC is commonly associated with smoking and generally spreads quickly at an early stage. Due to its aggressive nature there are only two stages of SCLC: limited disease and extensive disease and prognosis is generally poor.
2. HOW COMMON IS LUNG CANCER?

Lung cancer is one of the most common cancers in the world, accounting for 1.8 million new cases each year. It is also the biggest cancer killer, with incidence rates higher in men than women. There are particularly high prevalence rates seen in Central, Eastern and Southern Europe, Northern America and Eastern Asia.

- 1.6 million deaths each year are attributable to lung cancer.
- Overall, lung cancer is the cause of 19% of all cancer deaths.
- 13% of all new cases of cancer are lung cancers.
- More than two-thirds of lung cancers are diagnosed at a late stage and only 10-15% of lung cancer patients survive for at least five years after diagnosis.

3. WHAT ARE THE RISK FACTORS FOR LUNG CANCER?

Cigarette smoking is the primary cause of most lung cancer contributing to nearly 90% of cases in high-income countries. Other causes include prolonged contact with asbestos, radon gas or certain other chemicals. Prior non-malignant (non-cancerous) lung diseases also increase the risk of lung cancer.

4. WHAT ARE THE SIGNS AND SYMPTOMS OF LUNG CANCER?

The signs and symptoms of lung cancer may take many years to appear and are often confused with symptoms of less serious conditions, such as flu or bronchitis. A chronic cough can be an early symptom of lung cancer. Other symptoms can include coughing up blood, shortness of breath and pain or aching in the shoulders, back, chest or arm (lung cancers may press on nerves, resulting in pain even before they cause a cough or difficulty breathing).

Due to the unspecific nature and the late onset of symptoms, approximately two-thirds of lung cancer patients present in a late, advanced stage when there is a very poor rate of cure.

5. HOW IS LUNG CANCER DIAGNOSED?

A wide range of diagnostic procedures may be used to confirm or eliminate a diagnosis of lung cancer. Initially, a general examination will be conducted, followed by a number of additional tests which may include:
Blood tests
Baseline tests can rule out other possible causes of symptoms and more in depth blood tests, e.g. for renal and liver function, can indicate the existence and severity of acute or chronic tissue damage.

Sputum tests
Samples of mucus from the lower airways (sputum) are checked for cancer cells.

Chest x-ray
Most lung tumours are highlighted on X-rays as a white-grey mass. However, X-rays cannot give a definitive diagnosis because they often cannot distinguish between cancer and other conditions, such as a lung abscess.

Further imaging tests
To establish whether a suspicious mass might be cancerous, to identify how far a cancer may have spread or to determine if a treatment has been effective, additional imaging tests can be conducted which may include ultrasound, CT (computerised tomography) scans, MRI (magnetic resonance imaging), PET (positron emission tomography) or bone scans.

Bronchoscopy and biopsy
A bronchoscopy may be conducted to take a biopsy which is examined under a microscope to determine if the tissue is cancerous (malignant) or benign (not malignant). If the cells are cancerous, they may be studied further to detect the rate of growth and extent of the cancer.

Biomarker testing
A biomarker is a naturally occurring molecule, gene or characteristic by which a particular process, condition or disease can be identified. By conducting biomarker testing a genetic mutation may be identified which can then be targeted with a specific and potentially more effective treatment.

6. WHAT ARE THE TREATMENT OPTIONS AVAILABLE?

There are various forms of treatment used in the management of lung cancer that can be used separately or in combination – surgery, radiation, chemotherapy and a newer form of treatment called ‘targeted therapy’. To determine the most appropriate treatment, cancers are ‘staged’ to establish the severity of a patient’s disease:
Lung Cancer Stages

<table>
<thead>
<tr>
<th>Stage</th>
<th>Extent</th>
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<tbody>
<tr>
<td>Stage I</td>
<td>Cancer is present only in one part of the lung and has not spread to lymph nodes</td>
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<tr>
<td>Stage II</td>
<td>Cancer has spread to nearby lymph nodes or nearby tissues, e.g. chest wall</td>
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<tr>
<td>Stage III</td>
<td>Cancer has spread more extensively within the chest and, generally, to the major lymph nodes. Large tumours have invaded surrounding organs and lymph nodes outside the chest</td>
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<tr>
<td>Stage IV</td>
<td>Cancer has spread to distant parts of the body, e.g. to the liver or bones (metastases)</td>
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Most patients with advanced (or metastatic) lung cancer are treated with chemotherapy regimens. However, traditional chemotherapy is indiscriminate and will affect not only the rapidly multiplying cancer cells but also normal healthy cells. Research is ongoing to identify new, more targeted treatment strategies.

REFERENCES


