"EARLY DIAGNOSIS IS THE KEY TO LONGEVITY: CURRENT INFORMATION ABOUT LUNG CANCER"

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Abstract: *Every day, thousands of people forget how precious the happiness of. breathing freely is. But lung cancer can turn this simple process into the biggest test. This article will highlight the hidden signs of this disease, its provoking factors and the vital importance of early diagnosis.*

Keywords: *lung cancer, breathing, symptoms of the disease, smoking and risk factors, early diagnosis, oncology, prevention, healthy lifestyle, treatment methods, cancer risk.*

How many people are trying to fight this disease? We can not be careless about our health, if we adhere to a healthy lifestyle, we may not get sick with the disease. Every year, the World Health Organization registers a large number of people with this disease around the world and treatment measures are taken. In this article, we will consider what kind of disease lung cancer is, its causes, examination and treatment methods. Lung cancer is a disease characterized by the growth of malignant, low-quality cells in the lung tissue. Lung cancer is characterized by metaplasia, dysplasia of the bronchial epithelium and the subsequent appearance of low-quality cells. According to statistics, the tumor is more common in the right lung and its upper lobes. Malignant tumors arising from the main and segmental bronchi are called central lung cancer, tumors arising from the segmental bronchi and bronchioles are called superficial peripheral cancer. 60% of lung cancer is central, 40% is superficial. Over time and as the disease progresses, the malignant cells that make up the tumor can multiply rapidly and metastasize (spread) to nearby tissues or other, more distant parts of the body through the blood and lymph by hematogenous and lymphatic routes. There are two main types of lung cancer based on their cellular origin: non-small cell lung carcinoma (NSCLC) and large cell lung carcinoma (LCLC). The most common clinical symptoms of lung cancer are cough, bloody sputum, shortness of breath, weight loss, and chest pain. The vast majority (85%) of lung cancer cases are associated with long-term tobacco smoking. It has been observed that 10-15% of cancer cases occur in people who have never smoked. These conditions are often caused by a combination of genetic factors or exposure to forms of air pollution, such as high levels of a carcinogen called benzopyrene. Diagnosis is usually confirmed by chest X-ray, CT scan, bronchoscopy, and biopsy with a chest tube. The main way to prevent the disease is to stop smoking, which is considered one of the risk factors. The results of cancer treatment depend on the type of cancer, its stage (degree of spread), and the

person's general condition. In most cases, the disease cannot be cured. One of the main reasons for this can be explained by the late diagnosis of the patient and the patient's late presentation to the hospital. Common treatments for lung cancer include surgery, chemotherapy, and radiotherapy. In 2020, 2.2 million people worldwide were diagnosed with lung cancer, of which 1.8 million died from the disease. It is the most common type of cancer-related death in both men and women. The average age of people diagnosed with lung cancer is 71 years. According to statistics, in most countries, only about 10-20% of people survive more than 5 years after being diagnosed with cancer. This figure is even worse in developing countries.

Lung cancer often has no symptoms when it is still developing. As the disease progresses, cough, shortness of breath, and chest pain begin, but these symptoms do not occur in everyone. When a cough occurs, patients complain that it is stronger and more painful than previous coughs. About one in four patients coughs up blood. About half of patients with lung cancer complain of shortness of breath, and 30-40 percent complain of persistent chest pain. Some patients experience symptoms such as loss of appetite, weight loss, fatigue, fever, and night sweats. Patients may sometimes develop swelling of the face, legs, and arms. Tumors in the chest can block the bronchi, cause breathing problems by compressing the diaphragmatic nerve, cause swallowing problems due to compression of the esophagus, cause hoarseness due to the effect on the laryngeal nerves, and cause Horner's syndrome (ptosis, miosis, and enophthalmos) due to the tumor's invasion of the sympathetic nervous system. Involvement of the apex of the lung is called a Pancoast tumor. This condition causes pain in the arm on the side of the affected apex of the lung, swelling of the arm, muscle hypotrophy, and later muscle atrophy. One in three people diagnosed with lung cancer will develop metastases to distant organs. Lung cancer can metastasize to any part of the body, and symptoms vary depending on where it metastasizes. When metastases spread to the brain, headaches, nausea, vomiting, and other neurological symptoms may occur. Bone metastases can cause pain and fractures. Lung tumors often produce hormones that cause changes in the body, causing unusual symptoms called paraneoplastic syndromes. Disruption of hormone production can cause dramatic changes in the concentration of minerals in the blood. Hypercalcemia (high blood calcium) often occurs as a result of excessive production of parathyroid hormone-related protein or parathyroid hormone. Hypercalcemia causes nausea, vomiting, abdominal pain, constipation, increased thirst, frequent urination, and rapid mood swings. Patients with lung cancer have hypokalemia (low blood potassium) due to inappropriate secretion of adrenocorticotropic hormone, as well as hyponatremia (low sodium) due to overproduction of antidiuretic hormone or natriuretic peptide. One in three people with lung cancer have brittle nails, and one in ten have hypertrophic primary osteoarthropathy. Various autoimmune diseases manifest as paraneoplastic syndromes in patients with lung cancer, including Lambert-Eaton myasthenic syndrome (causing muscle weakness), sensory neuropathies, muscle inflammation, brain swelling, and changes in the cerebellum. One in twelve people with lung cancer have paraneoplastic blood clotting, including venous thrombophlebitis and disseminated intravascular coagulation. Paraneoplastic syndromes involving the skin and kidneys are rare, occurring in up to 1% of patients with lung cancer.

Types of lung cancer by histological structure:

Non-small cell lung cancer - This is the most common type of lung cancer. It can be squamous cell carcinoma, adenocarcinoma, or large cell carcinoma.

Small cell lung cancer - This is not a very common type, but it can spread quickly.

Lung carcinoid tumor - This is a rare type of lung cancer that affects neuroendocrine cells.

What are the clinical symptoms of lung cancer?

Lung cancer can be asymptomatic in the early stages. However, in the poorly differentiated type of cancer, signs and symptoms of the disease may be present even in the early stages of the disease. These symptoms include:

- Change in voice timbre
- General weakness
- Persistent cough that does not respond to medication
- Coughing up blood
- Chest pain
- Shortness of breath
- Unexplained weight loss

What causes lung cancer?

Smoking is one of the main factors for lung cancer. People who smoke cigarettes (active smokers) or are exposed to secondhand smoke have a higher risk of developing lung cancer. However, it can sometimes occur even in non-smokers. Some other factors that increase the risk of developing lung cancer are:

Family history: the risk increases with the presence of the disease in a family (hereditary factor)

Toxins: increased concentration of the carcinogen benzopyrene in the air, prolonged exposure to carcinogenic gases and agents such as radon, asbestos, etc.

Weakened immune system: For example, people with HIV, patients taking long-term steroids, those who have undergone organ transplant surgery, etc.

What are the complications of lung cancer?

Some common complications of lung cancer are:

Difficulty breathing (shortness of breath, shortness of breath)

Fluid accumulation in the chest (hydrothorax)

Metastasis of the tumor: the spread of cancer to nearby organs such as the brain and bones

Mouth ulcers, tooth decay, or dry mouth

Bone pain due to the spread of the disease to other organs and bones

Recurrent diarrhea or constipation

What are the stages of lung cancer?

Like other types of cancer, lung cancer is divided into 4 stages. The sooner it is diagnosed, the better the treatment, and the faster the patient recovers.

The tumor is staged according to the location, lymph node involvement, and spread of the tumor, known as TNM (tumor, node, metastasis). Determining the stage of lung cancer

provides important information for the doctor to determine the course of the disease and treatment options.

Stages of Non-Small Cell Lung Cancer:

Non-small cell lung cancer is the most common type of lung cancer, accounting for 85% of all lung cancers.

Stage 1 - Here, the cancer has spread to the deeper layers.

The tumors can range in size from 1 cm to 4 cm, and they may partially block the airways, invade the visceral pleura, or the bronchus. However, they have not spread to the lymph nodes or distant tissues. Doctors may recommend removing the tumor and nearby lymph nodes.

Stage 2 – In stage 2, cancer has spread to the visceral pleura, the main bronchus and its branches, the chest wall, the parietal pleura, the phrenic nerve, and the membranes that surround the heart. Stage 2 tumors vary in size, but are usually no larger than 7 cm in diameter. However, the cancer has not yet spread to the lymph nodes. Treatment usually includes surgery and adjuvant chemotherapy (treatment aimed at destroying any remaining cancer cells after surgery, with or without radiation therapy).

Stage 3 – Stage 3A cancer indicates that the cancer has spread to the lymph nodes, the gateway to other parts of the body. In stages 3B and 3C, the cancer has spread more slowly through the lymph nodes and into nearby organs, but not to distant organs. Treatment options are similar to stage 2.

Stage 4 – At this stage, the cancer tissue can be any size, and may or may not have spread to the lymph nodes. The cancer may have spread to the other lung, the fluid around the lung, or the heart, the tumor may have spread outside the chest, or to distant parts of the body, such as the liver, lungs, bones, or brain. The final stage, stage 4B, means that the cancer has spread to more than one part of the body.

Stages of Small Cell Lung Cancer: Limited stage: Small cell lung cancer is limited to one lung and nearby lymph nodes.

Extensive stage: Small cell lung cancer has spread to lymph nodes and distant organs.

What is the survival rate for lung cancer?

If lung cancer is localized in the lungs, the five-year survival rate is 55%. Patients with metastatic lung cancer have a very low chance of survival, with a 5-year survival rate of 4%.

Conclusion: One of the main conditions for the successful treatment of all diseases, including oncological diseases, is early detection of the disease, in which not only the doctor, but also the population should not neglect their health. It is advisable for patients with chronic diseases to undergo a medical examination once a year, or 2 times a year for patients with chronic diseases. Various symptoms that appear for more than 30 days, such as: increased body temperature, decreased appetite, cough, headache, impaired urination and diarrhea, unexplained weight loss, and daily weakness, require people to consult a doctor. The article is recommended for medical professionals and the general. public.

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