

MORPHOLOGY OF LUNG CANCER

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Abstract: Lung cancer is a malignant tumor that forms from bronchial epithelial cells. Affects different segments of the lungs. This is the most common cancer: it is detected in 70 people out of 100,000. It occupies a share of ~25% in the structure of oncopathologies. Women get sick 6 times less often than men. 63,000 cases of lung cancer are detected annually in the Russian Federation, 53,000 of them in men. The average age of the patients was 65 years.

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Lung cancer leads in the number of deaths compared to other oncopathologies – 60,000 annually (this is 20% of all deaths from malignant tumors). The one-year survival rate after diagnosis is about 25%. This is due to the fact that the disease is almost asymptomatic and it is often too late to seek help. With early detection, 80% of patients are cured.

Etiology and risk factors

In 8 out of 10 cases, the cause of lung cancer is smoking, including secondhand smoke. But the disease is also found in non-smokers. Risk factors include hereditary predisposition, regular contact with volatile carcinogens, excessive chest radiation, genetic disorders, certain viruses, alcohol abuse and malnutrition.

At risk:

- smokers over 40 years of age;
- alcoholics;
- patients with chronic obstructive pulmonary diseases;
- patients with a history of oncological diseases of the upper respiratory tract and lungs;
- people with family predisposition;
- people who regularly come into contact with asbestos, radon, arsenic, and dust;
- People with low social status.

Factors independent of a person include age over 50, endocrine disorders, and chronic lung

diseases.

How does lung cancer manifest itself?

At the earliest stage, lung cancer is asymptomatic. The time of the first signs of lung cancer depends on its form. There are two types — peripheral and central. In the peripheral form, the tumor grows in the small bronchi or the lung tissue itself, so it does not disrupt respiratory function for a long time. With the central form, the neoplasm grows in large bronchi, so the manifestations of the disease occur earlier.

The very first signs of the disease are completely nonspecific and do not allow us to suspect cancer.:

- atypically rapid fatigue;
- feeling of discomfort in the chest;
- poor exercise tolerance.

Few people pay attention to such symptoms, and if the disease is diagnosed at this stage, it is most often by chance, during routine fluorography or examination for other reasons.

A more pronounced and specific clinical picture of lung cancer appears when the tumor begins to damage the walls of blood vessels and block the lumen of the bronchi.:

- shortness of breath during exercise;
- feeling of lack of air;
- chest pain;
- persistent dry cough;
- in some cases, hemoptysis occurs.

Such symptoms continue to be nonspecific, and not all patients seek medical help at this stage. This is especially true for smokers with many years of experience, who attribute all these symptoms to the effect of smoking.

Even when contacting a doctor, the diagnosis is not always made immediately. Coughing and chest pain are also symptoms of pneumonia, including those caused by the coronavirus. Therefore, the doctor necessarily collects an anamnesis of the life and development of the disease, prescribes radiography and computed tomography for accurate diagnosis.

The clinical picture

Consult a doctor at the first symptoms of the disease:

- prolonged fever;
- severe sweating;
- Increasing weakness;
- cough;
- chest pain when coughing or inhaling;
- bloody sputum;
- severe shortness of breath;
- weight loss;
- deterioration of the general condition.

The characteristic signs of lung cancer are a whistling sound when breathing and a hoarse voice. The symptoms depend on the location of the neoplasm. For example, peripheral lung cancer is asymptomatic and painless for a long time, since the tumor does not affect the nerve endings. And central lung cancer manifests itself in the early stages in the form of a cough with sputum mixed with blood and pus, constant shortness of breath, changes in voice, and general malaise. In peripheral lung cancer, one side of the face and shoulder girdle is affected. With metastasis, pain is transmitted to neighboring organs, and the face acquires a bluish tinge.

In addition to these symptoms, thrombophlebitis, muscle pathologies and neuritis, dermatoses, disorders of fat metabolism, rheumatoid conditions, bone lesions and joint pain are possible at different stages. With advanced lung cancer, complications develop – impaired bronchial patency, respiratory failure, pulmonary bleeding, lung collapse (closure), and general exhaustion.

The morphology of lung cancer is its histological structure and the type of tumor determined by microscopic examination. The main histological forms include non-small cell lung cancer (NSCLC), which is divided into adenocarcinoma and squamous cell carcinoma, and small cell lung cancer. The classification also includes large cell carcinoma if its type cannot be accurately determined.

The main histological types of lung cancer:

- Adenocarcinoma:

The most common type of lung cancer that develops from glandular cells. It can be both minimally invasive and invasive.

- Squamous cell carcinoma:

It arises from the cells of the squamous epithelium lining the respiratory tract. It is characterized by different growth directions: endobronchial (inside the bronchus), exobronchial (in the

thickness of the parenchyma) or peribronchial (around the bronchus).

- Small cell carcinoma:

A fast-growing type of cancer that can be oatmeal or mixed (with an admixture of squamous cell carcinoma or adenocarcinoma).

- Large cell carcinoma:

An undifferentiated cancer in which cells under a microscope do not look like adenocarcinoma, squamous cell or small cell carcinoma.

Other classifications:

- By localization:
 - Central cancer: Located in large bronchi, prone to early onset of symptoms.
 - Peripheral cancer: It begins in the small bronchi or lung tissue, and symptoms appear later.
- By stages (approximately):
 - Stage I: The tumor is limited, without metastases.
 - Stage II: There are regional metastases or spread to nearby structures.
 - Stage III: Metastasis to regional lymph nodes.
 - Stage IV: Distant metastases.

Types of lung cancer

Lung cancer is classified according to different criteria. According to the histological structure of the tumor, there are:

- adenocarcinoma;
- adenosquamous carcinoma;
- neuroendocrine carcinoma;
- diffuse idiopathic pulmonary hyperplasia;
- spindle cell carcinoma;
- Large cell carcinoma;
- Small cell carcinoma;

- Squamous cell carcinoma.

Squamous cell lung cancer is detected in 8 out of 10 cases. It spreads relatively slowly and is amenable to surgical treatment. In 17 out of 100 patients, small cell lung cancer is detected – it grows rapidly, affects neighboring organs outside the lung tissue and gives metastases in the early stages. Responds to radiation and chemotherapy.

Central and peripheral lung cancer are distinguished by localization. In the direction of growth:

- endobronchial, or exophytic, – grows into the bronchial lumen;
- exobronchial, or endophytic, grows into the thickness of the lung tissue;
- branched with periorbital muff-like growth around the bronchi;
- mixed – it grows in several directions with a predominance of one or another characteristic.

Coding of lung cancer according to ICD-10

According to the International Classification of Diseases of the 10th revision (ICD-10), malignant neoplasms of the lungs and bronchi are assigned the general code C34. Depending on the location, lung cancer may have the following ICD-10 codes:

- C34.0 – neoplasms of the main bronchi, tracheal keel, and lung root;
- C34.1 – lesion of the upper lobe of the lungs or the bronchi located in it;
- C34.2 is a cancerous tumor of the middle lobe of the lung or the bronchi located in it;
- C34.3 – neoplasm of the lower lobe of the lung or the bronchi located in it;
- C34.8 – bronchial or lung lesion extending beyond one or more of the above locations;
- C34.9 is a malignant tumor of the bronchi or lungs of unspecified localization.

Stages of lung cancer

Classification of TNM

Determining the stage of lung cancer according to the TNM classification includes features inherent in each of the criteria (T – tumor, N – lymph nodes, M – distant metastases), and a combination of these criteria.

Causes of lung cancer

Genetic predisposition is the presence of lung cancer in the next of kin, three or more cases of lung cancer in the family, as well as the presence of several tumor diseases of other organs (multiple forms of cancer) in this patient. General status of the patient: age over 50 years,

presence of chronic lung diseases (chronic bronchitis, tuberculosis, pneumonia - pneumonia, scarring of lung tissue); as well as endocrine disorders in the body, especially in women.

Human-dependent

Smoking is the main and reliably confirmed cause of lung cancer. Occupational exposure: work in factories associated with asbestos production, metal grinding and blacksmithing (iron and steel smelting); felting, cotton and linen production; professional contact with heavy metals, pesticides (arsenic, chromium, nickel, aluminum); work in the mining industry: coal mining, radon mines, coal tar; rubber industry

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