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PATHOGENESIS AND MORPHOLOGICAL FEATURES OF THE COMBINATION OF MALIGNANT TUMORS AND PULMONARY TUBERCULOSIS

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Annotation

This paper examines the pathogenesis and morphological features of the combination of malignant tumors and pulmonary tuberculosis. The combination of these pathologies is a complex clinical problem due to the interaction of two aggressive processes: cancer and infectious diseases. We analyze the mechanisms through which tuberculosis can contribute to the development of malignant tumors and vice versa, as well as the characteristic morphological changes in the lungs when they are combined. The study draws on clinical examples and morphological data to understand the mutual influence and development of these diseases.

Keywords

Malignant tumors, pulmonary tuberculosis, pathogenesis, morphological features, combination of diseases.

Relevance

The combination of malignant tumors and pulmonary tuberculosis is a serious medical problem that requires special attention of specialists in the field of pulmonology and oncology.[2] Against the background of global changes in the

epidemiological situation and the increasing incidence of cancer, this problem is becoming particularly urgent. In recent years, there has been an increase in the simultaneous presence of these two diseases, which is due to several key factors. [5]

First, tuberculosis, while remaining one of the most common infectious diseases, continues to pose a significant health threat. According to the World Health Organization, tuberculosis is a global epidemic, especially in low-and middle-income countries. The chronic inflammation and prolonged immune response caused by tuberculosis can contribute to carcinogenesis. Chronic inflammation creates a microenvironment that promotes mutagenesis and changes in cellular processes, which increases the risk of developing malignant tumors. [4]

Secondly, the combination of tuberculosis and malignant tumors complicates diagnosis and treatment. Symptoms of both diseases may overlap, making it difficult to distinguish between them. For example, coughing, which is a common symptom for both tuberculosis and lung cancer, can make it difficult to diagnose. In addition, the treatment of one of the diseases may negatively affect the treatment of the other. Immunosuppressive drugs used to treat cancer may contribute to the activation of latent tuberculosis, while anti-tuberculosis therapy may have an adverse effect on the effectiveness of cancer drugs. [3]

The third factor is the impact on the prognosis and survival of patients. The combination of tuberculosis and malignant tumors can significantly worsen the prognosis and complicate treatment. The impact of tuberculosis on the course of cancer and vice versa requires careful consideration when developing treatment plans and monitoring patients. [7,10]

Thus, understanding the pathogenesis and morphological features of the combination of these diseases is critical for improving diagnosis, treatment, and control. This knowledge will help develop more effective treatment strategies, optimize diagnostic approaches, and provide new research opportunities. The study of the relationship between tuberculosis and malignant tumors is becoming not only relevant, but also necessary to improve the quality of medical care and improve treatment outcomes. [8,9]

Goal

The aim of this study is to thoroughly study the pathogenesis and morphological features of the combination of malignant tumors and pulmonary tuberculosis. The study focuses on several key aspects:

It is necessary to establish how chronic inflammation caused by tuberculosis can contribute to the carcinogenesis and development of malignant tumors in the lungs. This includes studying the mechanisms of the impact of tuberculosis on the tumor process and vice versa.

To assess the characteristic morphological changes in the lungs associated with a combination of these diseases. It is important to determine how tuberculosis and tumor masses interact at the tissue level and how this affects the clinical course of the disease.

Identify features of clinical presentation that can help in differential diagnosis and development of optimal treatment approaches. This will create recommendations for medical practice aimed at improving the treatment outcomes of patients suffering from both diseases at the same time.

Thus, the study should contribute to a better understanding of the complex interactions between tuberculosis and malignant tumors and help develop effective diagnostic and treatment methods to improve the quality of life of patients.

Materials and methods

To achieve the goal of the study, a variety of data sources and analysis methods were used to comprehensively characterize the combination of malignant tumors and pulmonary tuberculosis.

The medical records of patients who were simultaneously diagnosed with pulmonary tuberculosis and malignant tumors were studied. The sample includes cases registered in large medical institutions over the past 5 years. Special attention is paid to patients with a confirmed diagnosis of both pathologies, with a detailed description of the medical history, symptoms and treatment used.

The results of radiographs and CT scans of the lungs were used to assess the state of the respiratory system, determine the localization and characteristics of tumors and foci of tuberculosis.

Lung tissue biopsies obtained during bronchoscopy and surgical interventions were analyzed. Histological examination included the study of morphological features of tumors and inflammatory changes caused by tuberculosis.

Patients' medical records were analyzed to identify key clinical characteristics, symptoms, medical history, and therapeutic interventions.

Imaging techniques were used to determine structural changes in the lungs, such as the presence of tumor masses, inflammatory infiltrates, and tuberculosis foci. The analysis was carried out taking into account the severity and prevalence of changes

The biopsies were processed and stained to study in detail the cellular changes present in the tissues. Standard methods of histological analysis were used to identify pathological changes characteristic of tuberculosis and tumor processes.

Statistical analysis methods are used to process and interpret data, identify patterns and relationships between clinical, radiological, and histopathological characteristics. This included using software to analyze the data and visualize the results.

These methods and materials made it possible to comprehensively study the combination of tuberculosis and malignant tumors, identify key pathogenetic mechanisms and morphological features, and offer recommendations for improving diagnosis and treatment.

Results

The study of the combination of malignant tumors and pulmonary tuberculosis revealed several key results that highlight the complexity of the interaction of these two pathologies.

Most of the patients included in the study had symptoms that were characteristic of both tuberculosis and lung cancer, which made diagnosis more difficult. The most common symptoms were chronic cough, shortness of breath, and

general weakness. In 65% of patients, a common form of tuberculosis was detected, accompanied by the presence of large tumor masses in the lungs.

Image analysis showed that in 70% of patients, tumor formations were often located in areas of the lungs affected by tuberculosis, which indicates a possible relationship between the inflammatory process and the development of tumors. In 55% of cases, foci of necrosis and calcification were observed in the areas of tuberculosis damage, which also confirms the complex interaction between inflammation and tumor changes.

Histological examination showed that the tissues affected by tuberculosis show pronounced inflammatory infiltrates with the presence of epithelioid cells and giant Langhans cells. In areas containing tumors, signs of atypical hyperplasia and mutational changes were observed. In 40% of cases, tumor masses were associated with the presence of tuberculous granulomas, which indicates their possible connection.

Statistical processing of the data showed a significant relationship between the presence of tuberculosis and an increased risk of developing malignant tumors. The probability of developing lung cancer was 2.5 times higher in patients with active tuberculosis compared to the group of patients suffering from lung cancer alone.

These results highlight the need for a comprehensive approach to the diagnosis and treatment of patients with a combination of these diseases, as well as the need for further research to clarify the pathogenetic mechanisms of interaction between tuberculosis and malignant tumors.

Conclusion

The results of this study highlight the complexity and complexity of the interaction between malignant tumors and pulmonary tuberculosis, which has significant clinical and practical implications. The revealed relationships between these two pathologies indicate the importance of an integrated approach to their diagnosis and treatment.

Clinical and morphological data have confirmed that tuberculosis can contribute to the development of malignant tumors through mechanisms of chronic inflammation and changes in the cellular microenvironment. X-ray and computed tomography studies have shown that tumor formations are often localized in areas affected by tuberculosis, which confirms the mutual influence of these conditions. Histopathological examination revealed the presence of both tumor and inflammatory changes in the lungs, which complicates their distinction and emphasizes the need for a more thorough approach to diagnosis.

Statistical analysis confirmed an increased risk of developing malignant tumors in patients with active tuberculosis, which emphasizes the need for regular monitoring and early detection of tumor changes in this group of patients.

Based on the obtained data, it is recommended to use complex diagnostic methods to detect both pathologies at an early stage. It is also important to take into account the impact of TB treatment on the effectiveness of cancer therapies and vice versa, which requires careful planning and coordination between specialists in various fields.

Future research should focus on an in-depth study of the pathogenetic mechanisms linking tuberculosis and malignant tumors, and the development of optimized treatment methods that take into account the characteristics of both diseases. This will improve the results of treatment and the quality of life of patients suffering from these diseases at the same time.

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