MORPHOLOGICAL CHANGES IN TISSUES AND CELLS OF THE IMMUNE SYSTEM RESULTING FROM CHEMICAL THERAPY

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Relevance

It is currently known that the types of cytostatic therapy widely used in the treatment of oncological diseases have a negative impact not only on tumor cells but also on physiological tissues. In particular, morphological changes occurring in the organs of the immune system - the thymus gland, lymph nodes, and bone marrow - weaken the body's overall defense capabilities and reduce resistance to infections.

In recent years, the issue of determining the role of immunological mechanisms in ensuring the effectiveness of chemotherapy has been actively discussed, and experimental and clinical evidence has been obtained to confirm this position. It is known that immune system cells are an important component of the fight against tumor cells and play a significant role in the formation and development of malignant tumors, as well as in the development of resistance to chemotherapy.

It is known that malignant transformation of cells occurs as a result of the disruption of intracellular control mechanisms that ensure genetic stability. These can include genes that control proliferation, apoptosis, as well as other genes that ensure the stability of the genome. However, only if it overcomes the extracellular control exercised by the immune system (IS) can the tumor progress and reach the point of destroying the organism. The tumor's microenzyme environment—stroma and immune system cells—is also actively involved in this process.

Chemotherapy is used as a factor capable of inducing such changes leading to tumor growth inhibition.

Under the influence of chemotherapy, the following morphological changes are observed in the lymphoid organs:

• In the thymus gland - involution of the cortical layer, increased lymphocyte apoptosis, dystrophic changes in epithelioreticulocytes;

• In the spleen - atrophy of the white pulp, decreased number of lymphoid follicles, sclerotic changes in the walls of blood vessels;

• In lymph nodes - decreased activity of germinative centers, decreased lymphocyte proliferation, and destructive changes in reticulostroma.

During chemotherapy, an imbalance in humoral and cellular immunity is also observed: a decrease in the number of B-lymphocytes and plasma cells, and changes in the ratio of T-helpers and T-suppressors disrupt the body's immune response.

Conclusion

The resulting morphological changes can reduce the reactivity of the immune system, leading to complications of infection, delayed remission, and a deterioration in the overall prognosis in patients. Therefore, to mitigate the negative effects of chemotherapy, the development of immunomodulatory drugs, nutritional support, rehabilitation programs, and the implementation of natural biocorrection are considered effective methods for eliminating chemotherapy complications.

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