

BIO THERAPY OF TUMORS: DIVERSITY OF METHODOLOGICAL APPROACHES

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According to modern scientific ideas, biotherapy is considered as a complex of methods and tools for treating malignant neoplasms based on multidirectional pathogenetic approaches with the help of which directly affect the tumor cell by inhibiting its proliferation, blocking the processes of angiogenesis and invasion. Mediated antitumor effects can be achieved by activation of the immune system. With such a multifaceted effect on the tumor in the process of biotherapy, it is possible to block various stages of the tumor focus and influence the various elements of the antitumor protection system [1].

The main purpose of using biotherapy in oncology is to achieve an antitumor effect by drugs of biogenic origin or activation of body resources with the help of biologics. Cancer biotherapy arose on the basis of tumor immunotherapy (BCG, interferons, interleukins, colony stimulating factors, monoclonal antibodies and vaccines). Somewhat later, she began using gene therapy, influencing biological factors controlling apoptosis (antisense therapy), as well as antiangiogenic and antimetastatic therapy. The essence of targeted biotherapy is the use of monoclonal antibodies or synthetic molecules to influence certain target molecules in a tumor cell [2,3].

Currently, the following biotherapeutic approaches are being developed for the treatment of oncological diseases: 1) the use of colony-stimulating factors, erythropoietin, interleukins (IL-2,4,6,12), cytokines (tumor necrosis factor, interferons- α , β , γ); 2) adoptive cellular immunotherapy; 3) therapy with monoclonal antibodies; 4) vaccine therapy (adjuvants, whole cells, tumor antigens); 5) gene therapy (genetically modified stem cells or lymphocytes, genes for self-destruction, direct gene transfer, antisense oligodeoxyribonucleotides, genetic modification of tumors), 6) other methods of biotherapy (immunomodulators, interferon inducers, inducers of cell differentiation, tamoxifen, liposomal drug delivery systems) [4].

Biological methods include methods that activate natural antitumor immunity, in particular, active immunotherapy with the help of nonspecific or specific immunotherapy (vaccine therapy), gene therapy [5].

With nonspecific immunotherapy, methods of induction of active inflammation, nonspecific vaccination are used; the use of immunomodulators, cytokines and growth factors, of levamisole, high doses of antiestrogens, of as well as ways to stimulate immunity with the help of physical factors. In addition, in the process of biotherapy of tumors of a certain therapeutic effect, they are achieved using passive immunotherapy (monoclonal antibodies, adoptive cell therapy).

Adoptive cell therapy of cancer is carried out by the method of transferring cells that have a multi-purpose antitumor effect. In this case, immunocompetent cells (lymphokine-activated killers, sensitized in vitro lymphocytes, tumor-infiltrating lymphocytes) are activated outside the body and returned to the organism of host, often in combination with other therapeutic agents [6,7].

Promising, from our point of view, and chemoimmunotherapeutic approach to therapy of tumors. It is known that sublethal doses of certain chemotherapeutic agents can stimulate the expression of tumor-associated antigens or adhesion molecules and / or reduce the expression of anti-apoptotic genes by change the phenotype of tumor cells and making them more accessible for antigen-specific T-mediated lysis [8].

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