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EVALUATION OF MORPHOLOGICAL CHANGES IN MAMMARY GLAND CELLS AFTER CHEMOTHERAPY FOR BREAST CANCER

Madaminov S.M., Fozilova Z.M.
Fergana medical Institute of Public Health

Abstract: Breast cancer is one of the most common oncological diseases in women, and its morphological changes during the disease are of great importance. The study observed the cessation of growth and proliferation, apoptosis processes, as well as changes in the structure of cells, the morphological spectrum of breast tumors, cell size and nuclear shape during chemotherapy. Morphological changes occurring in organs, tissues, cells and subcellular organelles after chemotherapy were analyzed. In particular, it was found that the inflammatory process in atypical cells significantly decreased. The studied changes play an important role in determining the effectiveness of treatment and serve as a basis for future treatment strategies.

INTRODUCTION.

Breast cancer is a global health problem and the most common disease among women in Uzbekistan. One of the main types of breast cancer treatment is systemic chemotherapy[1,2,3]. Morphological changes in mammary gland cells during chemotherapy are important for understanding the effectiveness of treatment for this disease. Breast cancer ranks first among oncological diseases worldwide. Breast cancer accounts for 22.3% of all oncological diseases in our republic, and 18.1% in the Fergana region. In recent years, breast cancer has become the leading cause of death in women among other malignant tumors. Therefore, any methods of treating breast cancer are becoming increasingly relevant. Every year, breast cancer is diagnosed in approximately 1 million women (annual growth rate of 2%), of which more than 500,000 in developed countries and more than 300,000 in developing countries suffer from this disease[4,5,6]. At the same time, the mortality rate among breast cancer patients is also high. A recent report from the International Agency for Research on Cancer (IARC) estimates that the incidence of breast, uterine, colorectal and lung cancer in women will almost double in all countries over the next 20 years.

METHODOLOGY

For this study, 40 biopsy samples were taken from breast cancer patients at the Fergana branch of the Republican Specialized Scientific and Practical Medical Center of Oncology and Radiology. Biopsies were taken before surgery and after chemotherapy. Hematoxylin and eosin (H&E) staining was used to detect morphological changes[7,8]. This method was used to perform microscopic analysis to assess cellular structures, apoptosis rates and growth factors. The level of cancer cell proliferation was also studied by identifying specific markers (e.g. Ki-67) using immunohistochemistry. The results were statistically analyzed.

RESULTS

Patients who received chemotherapy showed positive changes in cell morphology. That is, a decrease in the number of cancer cells and an increase in apoptotic processes were observed[9]. Negative changes also occurred in the cell. For example:

The process of apoptosis:

- Chemotherapeutic drugs such as Doxorubicin increased the process of apoptosis (self-destruction) in tumor cells. This, in turn, prevented the growth of neoplasia.

Immune response:

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- Chemical drugs such as carboplatin changed the expression of cell surface proteins (MASP-2, PD-L1), and also increased the activity of immune cells. This effect enhanced the ability of the immune system to fight tumor cells.

Genetics and DNA damage:

For example, damage to the p53 gene led to the development of tumors and increased resistance.

Microecology around the tumor:

- The proliferation of fibroblasts and other neighboring cells during chemotherapy changed the microecology of the tumor, creating favorable conditions for the nutrition and reproduction of tumor cells.

DISCUSSION.

There are different opinions among scientists regarding the exact nature of these processes, the mechanisms of drug action, and the changes in tumors. Some scientists believe that chemotherapy increases cell growth and apoptosis, which reduces tumors. Others argue that morphological changes are minimal in tumors with high drug resistance[10,11,12]. For example, some studies show that changes occur in the neoplastic programs of tumor cells, while others show that the drug effect is temporary and the changes are partially reversible. There are different views among scientists regarding the effect of chemotherapy on morphological changes. It is important that these discussions serve as a basis for further in-depth studies in the future and lead to civilized discussions. Behind the competent work, the need to develop the interaction of each study remains open

CONCLUSION.

In conclusion, various cellular changes after chemotherapy in breast tumors play an important role in oncological treatment. Structural changes in cells also help to further improve the efficacy and indications of drugs used in chemotherapy, predict the course of tumor treatment, and facilitate the development of targeted therapy strategies. This article may create opportunities for the development of new treatment strategies in the future.

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