EFFECTIVENESS OF NEOADJUVANT CHEMOTHERAPY IN PATIENTS WITH BREAST CANCER

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ABSTRACT

Neoadjuvant chemotherapy (NACT) for breast cancer (BC) is highly effective in reducing tumor size, converting unresectable tumors to operable ones, and increasing the rate of breast-conserving surgery. Achieving a complete pathological response (pCR/RCB-0) significantly improves 5-year relapse-free survival (up to 92-94%), especially in HER2-positive and triple-negative breast cancer.

Introduction. Breast cancer (BC) remains a leading cause of malignant morbidity and mortality. Triple-negative breast cancer (TNBC) is the most aggressive subtype of all breast cancers. In early and locally advanced TNBC, adequate and timely neoadjuvant chemotherapy (NAC) determines the prognosis. Patients over 60 years of age represent a special subgroup, but this subgroup has not previously been specifically addressed.

Local research data confirms that breast cancer is one of the leading oncological diagnoses in women in Uzbekistan, especially in the 40-60 age group. In Uzbekistan, the mortality rate from breast cancer is estimated at 12.8-13 per 100,000 population, which also reflects the high mortality rate relative to incidence. [4].

In Uzbekistan, the incidence of breast cancer is increasing at approximately 2-3% annually, with many patients presenting at advanced stages of the disease, which worsens the prognosis and limits treatment options. Neoadjuvant chemotherapy (NCT) is used to reduce tumor volume before surgery, increase the likelihood of organ preservation, and assess the tumor's sensitivity to systemic treatment. In the Fergana region, where access to modern diagnostic and therapeutic methods is expanding, assessing the true effectiveness of NCT is of great practical importance for improving clinical practice.

Purpose of the study. To evaluate the effectiveness of neoadjuvant chemotherapy in patients with breast cancer in the Fergana region.

Material and methods. A retrospective analysis of medical records of female patients at an oncology clinic in the Fergana region was conducted for the period 2020-2025. The study included 185 patients with a verified diagnosis of invasive breast cancer, stages II-III, who underwent NCT prior to surgery at the Fergana oncology clinic. The average patient age was 49.6 ± 8.2 years. Statistical analysis included frequency analysis, the χ^2 test, and logistic regression to identify factors associated with a complete pathological response (pCR); the significance level was $p < 0.05$.

Results and discussion. The response to neoadjuvant chemotherapy was revealed, where the complete clinical response (cCR) was 32.4%, partial response (PR) - 48.6%, stabilization (SD) - 13.5%, progression (PD) - 5.5%. Complete pathological response (pCR) was achieved in 27.3% of patients. The highest pCR rate was observed in the triple-negative breast cancer group - 42% ($p < 0.01$), while among ER / PR-positive patients, pCR was 18%. The results of surgical treatment showed: organ-preserving surgeries accounted for 49.2%, radical mastectomies - 50.8%. Patients who achieved pCR significantly more often received organ-preserving treatment ($p < 0.01$). When studying the side effects, it was found that NHT was tolerated satisfactorily, severe complications (hematological, cardiotoxicity) were noted in 12.4% of cases, without fatal outcomes during the chemotherapy period.

The obtained results are consistent with data from international studies: the rate of complete pathological response after NACT in the literature ranges from 20% to 40%, depending on the molecular subtype of breast cancer and the chosen treatment regimen. Triple-negative breast cancer traditionally shows a higher pCR rate compared to hormone-positive forms, which is confirmed by our analysis.

The high rate of organ-preserving surgery among patients with pCR confirms the clinical significance of NAC as a means of reducing tumor volume and expanding surgical options. Moreover, the lower pCR rate in ER/PR-positive patients reflects the biological resistance of these tumors to standard cytostatics, which serves as the basis for the development of adapted regimens.

The results also highlight the need for a personalized approach in therapy selection and the importance of tumor molecular profiling for predicting response to NCT.

Conclusions:

1. NAC effectively reduces primary tumor size and increases the rate of breast-conserving surgery in patients with breast cancer in the Fergana region;

2. Complete pathological response is achieved in a significant proportion of patients, especially those with the triple-negative subtype;

3. The use of molecular markers (ER, PR, HER2) allows for the prediction of response to NAC and optimization of treatment.

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