

Immunohistochemical Study Breast Cancer

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Abstract: Breast cancer requires adequate diagnosis at the preoperative stage and a certain scheme of investigation of surgical and biopsy material. The prognosis and further tactics of treatment of patients depend on the result of histological examination with determination of receptor status (IHC-study) of breast cancer. Static data of breast cancer detection with the use of IHC-study on the basis of Tashkent City Dispensary for the period of 2020-2022 are indicated in the article.

Key words: Breast cancer, immunohistochemical study, molecular genetic subtype of breast cancer

Introduction:

Breast cancer (BC) is the most common malignant tumor in women. Morphologic studies in breast cancer (BC), especially with the introduction of immunohistochemical (IHC) methods, have become crucial, as their results allow not only to give a prognosis, but also to determine the direction of antitumor drug therapy. According to the WHO International Agency for Research on Cancer (IARC) estimates, 2.3 million new cases of breast cancer were detected in 185 countries in 2020, and mortality from this disease continued to be one of the leading causes among malignant diseases and amounted to 6.9% [1]. Pathomorphological characteristics of breast cancer include such parameters as the size of the primary focus, its localization in the breast, type of growth, morphological structure, degree of differentiation, presence of regional and distant metastases. Right and left mammary glands are affected equally often. The tumor is most often localized in the upper external quadrant (60-65% of patients), followed by the upper-internal (12%), lower-internal (6%), lower-external (10%), and central quadrants (12%) in terms of frequency [2]. The localization of cancer in the breast has prognostic significance. Tumor location in the upper outer quadrant more often leads to metastasis to axillary lymph nodes, while tumor location in the central and medial regions leads to metastasis to parasternal lymph nodes in 15-60% of cases. The type of tumor growth reflects the degree of its malignancy. There are two main forms of cancer: nodal and diffuse cancer [3]. The latter, in turn, is subdivided into edematous-infiltrative, pancreatic, and inflammatory (mastitis- and rye-like). Diffuse forms of cancer have rapid growth and are poorly amenable to treatment. The rate of tumor growth characterizes the degree of aggressiveness. Clinically, it is determined approximately, using anamnestic data, by the increase in size over certain time intervals from the moment of detection of a thickening. A distinction is made between rapid growth - time of doubling of tumor size 1-3 months, medium growth - 3-12 months, slow growth - 12 months and more [4].

The morphological structure of breast tumors has a certain importance for the prognosis of the disease. The most common (up to 80%) is invasive ductal cancer, which grows into the surrounding tissue and is a dense tumor with irregular edges, prone to frequent recurrence and metastasis. Regardless of the histological structure, three grades of tumor malignancy are distinguished on the basis of structure formation (formation of glandular and tubular structures), nuclear polymorphism and mitotic activity:

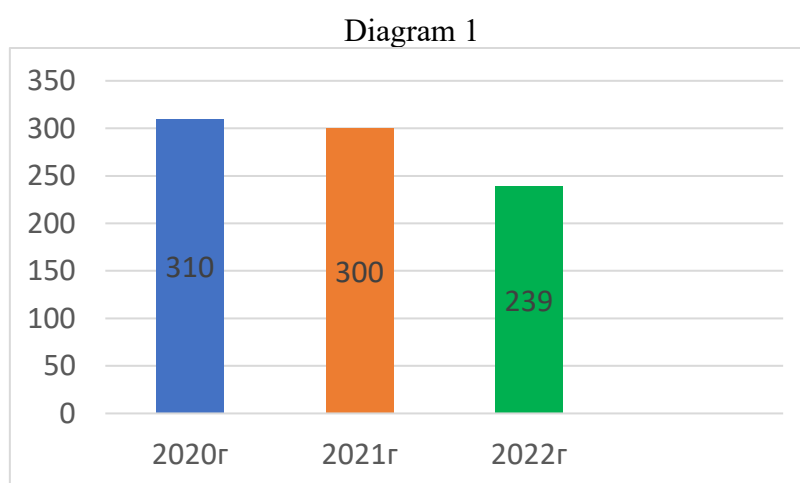
- Grade I: low (highly differentiated G1);
- Grade II: moderate (moderately differentiated G2);
- Grade III: high (low-differentiated G3).

Perineural and vascular invasion, as well as the presence of tumor emboli in blood and lymphatic vessels are of great importance for prognosis. This is directly related to regional and distant metastasis, tumor recurrence, survival rate and should be taken into account when choosing treatment tactics [5].

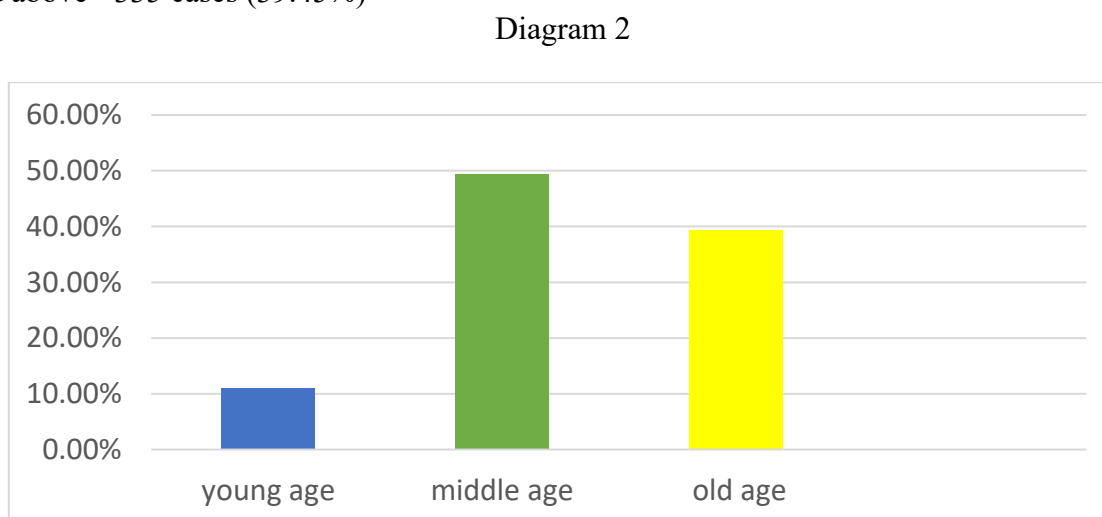
In clinical practice, the classification of breast cancer subtypes proposed in 2011 by experts in St. Gallen [6] (last revision in 2015) is used. This approach is based on IHC determination of estrogen receptor (ER), progesterone receptor (PR), human epidermal growth factor type 2 (HER2/neu) and Ki-67 proliferation index. In practical public health care, the most widely used IHC study for assessing the molecular genetic subtype of breast cancer.

Study results

In Tashkent City Branch (TCB), 849 cases of surgical and biopsy materials with breast cancer were investigated with IHC examination during 2020-2022.



Of these, young age (18 to 44 years) - 94 cases (11.07%), middle age (45-59 years) - 420 cases (49.47%), old age 60 and above - 335 cases (39.45%)



The essential markers for breast cancer research are HER2, estrogen (ER), progesterone (PgR), Ki-67. Basically four molecular genetic subtypes of breast cancer are distinguished:

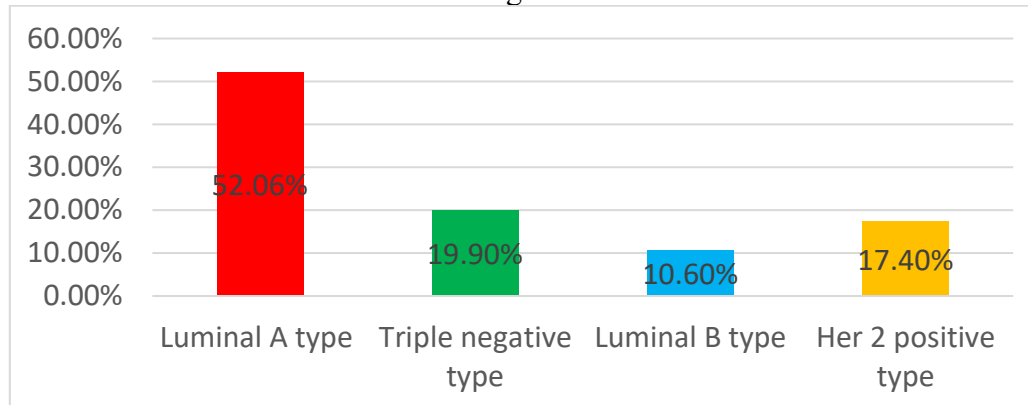
- Luminal A - hormone-positive low-aggressive tumors, no HER2 protein receptor overexpression, has the best prognosis;
- Luminal B - hormone-positive aggressive tumors, expressed amplification of HER2 oncogene, has significantly worse prognosis;

- HER2-positive - hormone-negative aggressive tumors, HER2 oncogene amplification is expressed, there is an increased probability of negative outcome of the disease.

- “Triplenegative” subtype: hormone-negative aggressive tumors, no overexpression of HER2 protein receptors, has the worst survival rates.

Of these, 442 cases (52.06%) showed Luminal A type of tumor; 169 (19.90%) Triple negative type; 90(10.6%) Luminal B type; 148(17.4%) Her 2 positive type.

Diagram 3



Conclusions

Thus, based on the studied literature data [1; 2; 3], the conducted study demonstrates the relevance of this problem. It is important to emphasize that only early tumor detection, a comprehensive clinical and morphological approach to the diagnosis of breast cancer diseases, respectively, and to the choice of an adequate method of treatment can lead to a favorable outcome and a decrease in the number of neglected forms of the disease. In the IHC study of breast cancer for the period from 2020 to 2022, the average age of women from 45 to 59 years prevails. Among the molecular genetic subtypes of breast cancer, the predominance of Luminal A (the best prognosis) was revealed, the next position is occupied by “Triplenegative” (the worst survival rates), then HER2 positive and Luminal B.

Literature

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