



Section 2. Medical science

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CLINICAL AND PATHOLOGICAL SPECIFICS AND RESPONSE TO TREATMENT OF RARE HISTOLOGICAL FORMS OF BREAST CANCER

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Abstract

The purpose of the study is to study the features of the clinical course, characteristics and response to treatment of rare histological forms of breast cancer.

Methods: The study included 102 patients with rare forms of breast cancer and a control group of 54 patients with invasive ductal cancer. Analysis of histological subtypes was performed, as well as evaluation of clinical and pathological parameters. Statistical methods were used to compare survival and other key metrics between groups.

Results: The study revealed statistically significant differences in age, histological grade, tumor size, lymph node incidence and incidence of stage IV de novo between patients with rare histological forms of breast cancer and standard invasive ductal carcinoma. In addition, differences in response to therapy have been found among different subtypes of these rare forms

Conclusions: Rare histological forms of breast cancer exhibit unique clinicopathological features and disease behavior, which may influence treatment strategy and prognosis. The results highlight the importance of an individualized approach to the diagnosis and treatment of these patients, as well as the need for in-depth stratification to improve therapeutic outcomes and quality of life.

Keywords: *breast cancer, rare histological forms, clinicopathological features, survival, individualized treatment*

Introduction

Breast cancer (BC) occupies a leading position in terms of prevalence among cancer diseases in women around the world. The annual morbidity and mortality caused by this disease highlight the urgency of continuing

to study its characteristics and search for new approaches to treatment and prevention. In addition to the generally recognized invasive ductal breast cancers, which constitute the majority of cases, there is a spectrum of rare histological subtypes, each characterized by

individual clinicopathological features and response to therapeutic interventions. These specific forms of breast cancer, which include adenoid cystic, apocrine, medullary, metaplastic, and other types, constitute a significant percentage of breast cancer and require careful consideration to understand their impact on prognosis and treatment strategies.

The traditional approach to the classification and treatment of breast cancer often does not take into account the specifics of these rare forms, which can lead to suboptimal treatment results. Understanding the unique characteristics of these subtypes is critical to developing targeted and effective therapeutic strategies.

The purpose of this article is to identify the features of the clinical course of rare histological forms of breast cancer.

Materials and methods

The main group included 102 patients with breast cancer who were diagnosed with rare histological forms of breast cancer; the control group included 54 patients with invasive ductal breast cancer. This study identified eight groups of histological subtypes of breast cancer, including adenoid cystic, apocrine, medullary, metaplastic, micropapillary, mucinous, papillary, and tubular breast cancer.

Data from the patients' medical records were used to determine clinical and pathological characteristics. Based on these data, an analysis was carried out of the distribution of patients by age, stage of cancer, tumor size, as well as the presence of metastases in the lymph nodes and hormonal status. Immunohistochemical staining was used to determine the expression of estrogen receptor, progesterone receptor, and HER2/neu.

The study included a data collection system including demographic information, medical history, clinical trial results, and follow-up events. Overall survival and disease-free survival were assessed using the Kaplan-Meier method, and statistical methods were used to compare survival between groups.

Descriptive statistics and student t-test were used to analyze statistical data to compare means. Differences between categorical variables were assessed using the chi-square test or Fisher's exact test when necessary due

to small sample size. The significance level for all statistical tests was set at 0.05.

All procedures were in accordance with the ethical standards of the national research committee and with the Declaration of Helsinki and its later amendments or comparable ethical standards. Informed consent was obtained from patients to participate in the study.

Results

Significant differences were found in the clinicopathological characteristics of the patients between both groups. The average age of the patients was 60.99 and 64.24 years ($P < 0.01$). Compared with invasive ductal breast cancer, rare histological forms of breast cancer had a lower histological grade (III–IV, 22.5% vs. 35.3%, $P < 0.01$), smaller tumor size (>5 cm, 11.7% vs. 13.72%, $P < 0.01$), higher incidence of node-negative disease (N0, 80.39% vs. 70.6%, $P < 0.01$), and lower incidence of stage IV de novo disease (M1, 0.98% vs 5.5%, $P < 0.01$), while the proportion of the TN subtype was significantly higher in patients with specific breast cancer (TN, 13.2% vs 9.8%, $P < 0.01$). In terms of therapeutic options, receipt of both systemic and local treatment was consistently lower in patients with rare histologic forms of breast cancer, including radiation therapy (46.1% vs. 56.9%, $P < 0.01$) and chemotherapy (24.5% vs. 41.1%, $P < 0.01$).

Regarding specific subtypes, patients with rare histological forms of breast cancer tended to be older than patients with invasive breast cancer. The histological grade of IDC was significantly higher than that of medullary breast cancer (III–IV, 92.6% vs. 36.2%, $P < 0.01$) and metaplastic breast cancer (III–IV, 80.4% vs. 35.3%, $P < 0.01$), while it was relatively lower than in adenoid cystic breast cancer (III–IV, 12.7% versus 37.2%, $P < 0.01$), mucinous breast cancer gland (III–IV, 3.9% vs. 34.3%, $P < 0.01$) and tubular breast cancer. Breast cancer (III–IV, 0.98% vs. 34.3%, $P < 0.01$). Overall survival for rare histological forms of breast cancer and invasive breast cancer was 79.2 months (95% CI, 75.71–80.39 m) and 71.56 m (95% CI, 67.15–73.1 m) accordingly with a statistical difference ($P = 0.05$). There was heterogeneity among the identified histological subtypes of breast cancer ($P < 0.05$). Regard-

ing the prognosis of molecular types, OS was significantly improved in specific breast cancers with HER2 subtypes (mOS71.15 m vs 67.19 m, $P = 0.01$).

Comparison of treatment approaches and response to treatment of different histological subtypes also revealed significant differences. Thus, patients with adenoid cystic and mucinous breast cancer more often received hormone therapy due to the high frequency of hormone-positive tumors (ER and PR positive status), which potentially improved prognostic indicators and overall survival.

Immunoprofile evaluation has shown that, in contrast to invasive ductal carcinoma, rare histological forms are often characterized by higher lymphocyte infiltration, which may partly explain the more favorable prognosis of some forms, such as medullary breast cancer.

In addition, it was observed that relapse-free survival (RFS) was significantly improved in patients with specific histologies, especially those with hormone-sensitive

tumors. Factors such as HER2 status and triple negative status served as important predictors of treatment outcomes for various breast cancer subtypes.

From a clinical perspective, the data from our study highlight the need for an individualized approach to the treatment of patients with rare histological forms of breast cancer, based on accurate diagnosis of tumor subtype and its molecular biological characteristics. An adapted treatment plan depending on the tumor subtype can increase the effectiveness of therapy, improve the quality of life of patients and increase overall and relapse-free survival.

Conclusions

In summary, the present study revealed differences in the clinicopathological features and treatment outcomes of invasive ductal breast cancer compared with rare histological forms, providing valuable information to further improve treatment protocols and increase clinician awareness of the need for in-depth patient stratification.

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