

DIAGNOSTIC CRITERIA FOR DCIS

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SUMMARY

The incidence of breast cancer in the Republic of Uzbekistan is increasing for years. We studied the statistics of the spread of breast cancer and the impact of screening on the prognosis and disease state. Also we have studied the data of the world literature to improve the early diagnosis and treatment of ductal carcinoma in situ. The article describes the statistical indicators of breast cancer incidence, screening methods of research and their effectiveness in the early diagnosis of DCIS.

KEYWORDS: screening, DCIS, breast cancer, mammography, breast MRI.

INTRODUCTION

Breast cancer is the most common malignant neoplasm among women all over the world. According to the data, annually in the world detected at about 1.38 million or 158 every hour new cases of breast cancer, in addition there is an inexorable rise in morbidity and mortality from this type of disease.^[5,6]

The highest rates of breast cancer incidence are observed in developed countries, such as the USA, Western European countries.^[6, 11] However, in developing countries, there is also observe an increasing tendency in the incidence of breast cancer, due to changes in the reproductive behavior of the population, lifestyle changes and an increase in the life expectancy of the population. According to GLOBACAN 2018 forecasts, by 2020, in low- and medium human development index countries, the number of newly diagnosed cases of breast cancer will be about 1 million cases per year.^[5]

According to IARC data (2015), breast cancer mortality varies depending on the country's income level, in high-income countries the mortality rate is 24%, while in low- and middle-income countries it is 48%, 38%, respectively.^[1] At the same time, about 1.5 million deaths from breast cancer could have been prevented. High mortality is due to late treatment of patients, lack of effective screening programs, low level of diagnosis and treatment of breast cancer.^[3]

However, even an early diagnosis of breast cancer does not guarantee a complete recovery. According to

research (O'Shaughnessy, 2005; EBCTGG 2012), in developed countries, 20-30% of patients diagnosed at an early stage may subsequently experience disease progression, while this indicator may be much higher in developing countries, where the quality of breast cancer treatment is significantly lower than in developed countries.^[8]

When analyzing the dynamics of the incidence of breast cancer in the Republic of Uzbekistan, there is a slow but steady increase.^[5,6] According to the data of the cancer registry of the Republican Specialized Scientific and Practical Medical Center of Oncology and Radiology, in 2010 the incidence of breast cancer was 7.9 cases per 100 thousand population, whereas in 2016 it was 9.1 cases per 100 thousand population. Mortality from this type of malignant tumor is also growing, if in 2010 the mortality rate was 3.5 per 100 thousand population, then in 2016 – 4.4 per 100 thousand population. There is also an increase in the number of new cases of breast cancer detected for the first time from 2010 to 2016, 2296 and 2932, respectively. Of the newly detected cases of breast cancer, patients with stage I-II in 2010 accounted for 1,244 (54.2%) cases, III-828 (36%) cases, IV-224 (9.8%) cases, whereas in 2016 the distribution of patients by stages of the disease was: I-II-1776 (60.5%) III-834 (28.5%) IV-322 (11%). The trend towards the growth of breast cancer in stages I-II may be due to active educational work on the part of the oncological community, the growth of oncological alertness among primary care physicians, and an increase in the sanitary literacy of the population.^[1,5]

Speaking about the survival rate of breast cancer, there is a direct dependence of life expectancy on the prevalence of the tumor process.^[2] In the case of a local process, the 5-year survival rate is 99%, if the process spreads regionally - 85%, in the case of distant metastases - 26%. The survival rate is strongly influenced by the size of the tumor. For example, in the case of regional spread of the tumor process, with a tumor size of up to 2.0 cm, the 5-year survival rate is 95%, from 2.1 to 5.0 cm - 84%, with a tumor size of more than 5.0 cm - 42%.^[2,9]

Breast cancer is a heterogeneous disease that includes malignant neoplasms of the breast with a different clinical course, response to treatment and prognosis. To date, there are 21 histological subtypes of breast cancer, and at least 4 different molecular subtypes.^[1,2]

Despite numerous studies over several decades based on epidemiological and genetic studies, the carcinogenesis of breast cancer still remains unclear.^[1] The identified risk factors for breast cancer do not fully explain the changes at the molecular genetic level leading to genetic alterations that contribute to the further transition of normal breast epithelial cells to cancer.^[1,5]

The most likely mechanism for the occurrence of breast cancer is the inactivation of the tumor suppressor gene by promoting their methylation. This leads to a violation of cell cycle control and a change in apoptotic pathways, which further contributes to a violation of the balance between proliferation and apoptosis. Inactivation of the p53 gene, chromosomal instability, amplification of oncogenes triggers the process of carcinogenesis.^[1,9]

One of the important pathologies of the breast is DCIS, as it is a direct precursor of invasive breast cancer.

Success in the treatment of breast cancer depends on the detection of the disease in the early stages, as well as on the accuracy of the diagnosis of the oncological process. Prior to the introduction of screening, the incidence of DCIS was extremely low and amounted to 1-2%. In the second half of the XX century, with the introduction of screening in the form of mammographic examination, the incidence of DCIS was 20-30% of cases.

Many major international studies have been devoted to the issues of early diagnosis and screening, but, unfortunately, it has not yet found its solution and is one of the most controversial in oncology. With the introduction of screening into everyday practice, the detection of ductal carcinoma in situ increases, but still certain indicators of patients with advanced forms of the disease remain. The main screening method in most developed countries is mammographic examination.^[3,4] Recommendations for breast cancer screening vary depending on the country, its socio-economic and demographic characteristics. According to IARC, the recommended age for the start of mammographic examination is 50 years.^[3,4,8] Screening should be carried

out before the age of 70. In the USA, various scientific communities and associations have different views on screening issues. The American Cancer Society recommends starting screening at the age of 45 and conducting it annually until the age of 55, followed by mammographic examination once every two years after 55 years, whereas according to the American College of Radiology, screening research should be started at the age of 40, and conducted annually until the age of 75, then continue until life expectancy will not reach 5-7 years.^[1,4] According to the ESMO 2015 recommendations, breast cancer screening begins at the age of 50, once every 2 years.^[2] Mammographic screening also has its limitations: the impossibility of its implementation in persons with high density of breast tissue, under the age of 40 years.^[3,4] In South Korea, where most women have dense mammary glands, ultrasound is used as a screening study.^[7]

Screening programs are not functioning in most developing countries. This is due, as well as to large financial costs, lack of equipment and trained specialists, as well as geographical, social and demographic conditions.

The complex of diagnostic measures for breast cancer includes clinical examination and palpation, ultrasound, mammography, MRI of the mammary glands.^[8,10,12] In order to verify the diagnosis, fine needle puncture biopsy, core and open biopsy are used. According to the recommendations of the European Society of Medical Oncologists, an in-depth study to identify distant metastases is carried out only if there are complaints and suspicions about the widespread nature of the process (large tumor sizes, affected lymph nodes, aggressive course of the disease).^[2]

Breast MRI with contrast is a highly sensitive method (85-100%) in the diagnosis of breast diseases, however, the specificity of the method is low (47-65%). MRI examination is recommended in patients in cases where mammography and ultrasound are not informative enough: after organ-preserving operations, for the purpose of differential diagnosis of postoperative changes from a recurrent tumor, in order to detect multifocal, multicentric, bilateral breast cancer, in women with hereditary breast cancer, high breast density and silicone implants. MRI also allows you to determine the relationship of the tumor with the muscles and the chest wall. In addition, with the help of special volumetric programs, this method makes it possible to determine the volume and shape of the breast, which is especially important for planning reconstructive plastic surgery.^[10,12]

CONCLUSIONS

The biology of ductal carcinoma in situ is not fully understood, and all previous attempts to study it were an underestimation of the complexity and heterogeneity of the disease. DCIS is not an isolated disease and varies

depending on the status of the growth factor receptor, hormonal status, proliferation rate and genetic characteristics. New advances in research that allow for the analytical study of individual cells will help expand our understanding of the progression of DCIS. This work requires a collaborative approach in order to have sufficient statistical data to study the diagnostic criteria of DCIS.

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