IJCNP, Volume 2, Issue 7, 2024 ISSN: 2995-536X
https://medicaljournals.eu/index.php/IJCNP

INTERNATIONAL JOURNAL OF COGNITIVE NEUROSCIENCE AND PSYCHOLOGY

CURRENT DIAGNOSTIC METHODS FOR METASTATIC BREAST CANCER

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Abstract: As we know, metastatic breast cancer (MBC) is breast cancer that spreads beyond the primary tumor site to other organs and tissues, which makes it more difficult to treat and reduces patient survival. The epidemiology of metastatic breast cancer represents an important aspect of the study of this disease, which includes its distribution, risk factors, survival, and treatment trends. The spread of metastatic breast cancer (MBC) is a significant public health problem that greatly impacts the lives of many women around the world.

Key words: metastatic breast cancer, triple-negative, BRCA1 and BRCA2, biopsy, HER2/neu.

In 2022, 2.3 million women worldwide were diagnosed with breast cancer, resulting in 670,000 deaths. This cancer occurs among women of all ages after puberty, and the risk of developing it increases with age. Interestingly, the prevalence and mortality rate of breast cancer varies greatly depending on the level of development of a country. For example, in highly developed countries, one in twelve women will experience this disease in their lifetime, and one in 71 will die from it. While in countries with low levels of development, breast cancer affects one in 27 women, but one in 48 women dies from this disease. This indicates significant differences in access to health care and effectiveness of treatment in different parts of the world. In a research context, data from the World Health Organization published in 2020 shows that in Uzbekistan, breast cancer mortality reached 1,821 cases, accounting for 1.13% of the total mortality in the country.

The age-adjusted mortality rate from this disease in Uzbekistan is 12.55 cases per 100,000 population. This puts Uzbekistan in 136th place in the world ranking for this indicator. These statistics highlight the need for further analysis of the factors influencing the prevalence and mortality of breast cancer in this region, which may help develop effective strategies to control the disease and improve public health.

Metastatic breast cancer can affect various organs and tissues in the body, such as bones, lungs, liver, brain and others. The clinical course of the disease can be varied depending on the location and nature of the metastases. Bone is one of the most common sites of metastasis in MBC, often leading to bone pain, fractures, and other complications. Lung metastases can cause cough, shortness of breath, and other breathing-related symptoms. Liver damage can lead to jaundice, right upper quadrant pain, and other signs of liver dysfunction.

Material and methods: Modern approaches to the diagnosis of metastatic breast cancer (MBC) include a wide range of methods and technologies aimed at early detection of metastases, determining tumor characteristics and assessing the spread of the cancer process. Biopsy plays a key role in diagnosing metastatic breast cancer (MBC), providing doctors with tissue samples for further analysis and characterization of the tumor. Here are some basic aspects of biopsy for MBC. A biopsy provides samples of tumor or metastasis tissue for histological analysis. Histological examination allows us to determine the cell type, degree of tumor differentiation, presence of invasion and other characteristics that may be important for the choice of treatment methods. Tissue samples obtained from biopsies can also be used to perform molecular and genetic tests. These tests can help identify mutations or changes in DNA that may be associated with tumor development and help guide more personalized treatment.

Immunohistochemical analysis can determine the presence of specific markers on the surface of cancer cells, such as estrogen receptors, progesterone receptors or HER2/neu. This can be useful in determining the subtype of breast cancer and choosing the most effective treatment.

A biopsy can be used to determine the sensitivity of cancer cells to various drugs, including chemotherapy, hormonal therapy and targeted therapy. This allows you to choose the most suitable and effective treatment method for each patient.

Various imaging modalities, such as computed tomography (CT), magnetic resonance imaging (MRI), positron emission tomography (PET-T), and diagnostic ultrasound (US), can be used to assess the size of tumors, detect new metastases, and assess overall patient's condition. Measuring levels of biomarkers in the blood, such as certain proteins or genes associated with breast cancer, can provide information about disease dynamics and response to treatment. For example, changes in carcinoembryonic antigen (CEA) levels or Ki-67 proliferation index may serve as indicators of treatment effectiveness.

Metastatic breast cancer (MBC) is one of the most serious and complex forms of cancer, requiring careful analysis of various prognostic factors to determine the most effective treatment strategies. Understanding these factors helps estimate patients' life expectancy, likelihood of response to therapeutic interventions, and possible risks and side effects that may occur during treatment. One of the key factors influencing prognosis and choice of treatment methods is the molecular biological subtype of breast cancer. There are several main subtypes, defined by the presence of estrogen receptors (ER), progesterone receptors (PR), and human epidermal receptor 2 (HER2). These subtypes include ER-positive, PR-positive, HER2-positive, and triple-negative forms. The response to therapy and the overall prognosis of the disease depend on the subtype.

ER- and PR-positive MBC often respond to hormonal therapy, which blocks or reduces the effects of estrogen on tumor cells, which can significantly slow disease progression. HER2-positive patients may benefit from targeted therapy, such as trastuzumab (Herceptin), which significantly improves treatment outcomes. Triple-negative cancers, which do not express any of these receptors, are considered the most aggressive and difficult to treat, often requiring combinations of chemotherapy drugs.

The stage of disease progression also has a significant impact on prognosis. The spread of metastases to vital organs, such as the liver and lungs, can significantly worsen the prognosis compared with limited involvement, for example, only bones. Early diagnosis and assessment of the degree of metastasis make it possible to more accurately predict disease outcomes and plan treatment. An important prognostic aspect is the time until the development of metastases after the initial diagnosis of breast cancer.

Longer relapse-free periods are generally associated with better prognoses and outcomes, which may indicate lower tumor aggressiveness. The presence of certain molecular genetic characteristics, such as mutations in the BRCA1 and BRCA2 genes, can also significantly affect prognosis. Although these mutations may indicate a more aggressive course of the disease, they also open up additional treatment options, including the use of PARP inhibitors, which are especially effective in cases where these mutations are present.

History of response to previous treatments, such as hormonal therapy or chemotherapy, provides valuable information about the sensitivity of the tumor to particular drugs and can guide future therapeutic strategies. In general, a good response to initial treatment is associated with a better prognosis. In addition, the patient's general health, the presence of concomitant diseases and age significantly influence the choice and effectiveness of treatment. Healthy, younger patients can often tolerate more aggressive treatment compared to older patients or patients with multiple comorbid conditions.

Conclusion: Thus, individualization of approaches in the treatment of MBC based on a comprehensive analysis of prognostic factors can significantly improve outcomes for patients, providing each of them

with the most appropriate and effective treatment plan. Ongoing research in this area promises further improvements in the treatment and understanding of this complex glandular disease.

LIST OF REFERENCES USED:

1. Almuradova D. M. et al. A Modern Approach to Diagnosis and Treatment of Breast Cancer Releases //Central Asian Journal of Medical and Natural Science. – 2021. – T. 2. – №. 5. – C. 294-298.
2. Altena R. et al. Current status of contemporary diagnostic radiotracers in the management of breast cancer: first steps toward theranostic applications //EJNMMI research. – 2023. – T. 13. – №. 1. – C. 43.
3. Belousova E. D. Vaccination in children, febrile convulsions, and epilepsy //Neuroscience and Behavioral Physiology. – 2020. – T. 50. – №. 1. – C. 8-12.
4. Beňačka R. et al. Classic and new markers in diagnostics and classification of breast cancer //Cancers. – 2022. – T. 14. – №. 21. – C. 5444.
5. Block J. P. Cardiac complications after SARS-CoV-2 infection and mRNA COVID-19 vaccination—PCORnet, United States, january 2021–January 2022 //MMWR. Morbidity and mortality weekly report. – 2022. – T. 71.
6. Deluche E. et al. Contemporary outcomes of metastatic breast cancer among 22,000 women from the multicentre ESME cohort 2008–2016 //European journal of cancer. – 2020. – T. 129. – C. 60-70.
7. Den Brok W. D. et al. Survival with metastatic breast cancer based on initial presentation, de novo versus relapsed //Breast cancer research and treatment. – 2017. – T. 161. – C. 549-556.
8. Dogan I. et al. Demographic and Clinical Features of Patients with Metastatic Breast Cancer: A Retrospective Multicenter Registry Study of the Turkish Oncology Group //Cancers. – 2023. – T. 15. – №. 6. – C. 1667.
9. Gennari A. et al. ESMO Clinical Practice Guideline for the diagnosis, staging and treatment of patients with metastatic breast cancer☆ //Annals of Oncology. – 2021. – T. 32. – №. 12. – C. 1475-1495.
10. Haddad S. A., Dizon D. S., Graff S. L. Sequencing systemic therapy in hormone-receptor positive metastatic breast cancer: a modern paradigm //Chinese Clinical Oncology. – 2023. – T. 12. – №. 4. – C. 42-42.
11. Haddad S. A., Dizon D. S., Graff S. L. Sequencing systemic therapy in hormone-receptor positive metastatic breast cancer: a modern paradigm //Chinese Clinical Oncology. – 2023. – T. 12. – №. 4. – C. 42-42.
12. Harwansh R. K., Deshmukh R. Breast cancer: An insight into its inflammatory, molecular, pathological and targeted facets with update on investigational drugs //Critical Reviews in Oncology/Hematology. – 2020. – T. 154. – C. 103070.
13. Madej-Czerwonka B., Korga-Plewko A., Czerwonka M. Modern breast cancer diagnostic methods //Current Issues in Pharmacy and Medical Sciences. – 2022. – T. 35. – №. 1. – C. 1-5.
14. Manohar P. M., Davidson N. E. Updates in endocrine therapy for metastatic breast cancer //Cancer Biology & Medicine. – 2022. – T. 19. – №. 2. – C. 202.
15. Mátrai Z. et al. Modern Breast Cancer Surgery 1st Central-Eastern European Professional Consensus Statement on Breast Cancer //Pathology and Oncology Research. – 2022. – T. 28. – C. 1610377.