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EFFECTIVE TREATMENT METHODS FOR BREAST CANCER IN ELDERLY WOMEN

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Abstract

Breast cancer represents a major health concern among women and its prevalence tends to rise with increasing age. As global life expectancy continues to increase, the number of older women diagnosed with breast cancer and requiring appropriate therapeutic management is also growing. Advanced age is considered an important risk factor for the development of breast cancer, with a considerable proportion of cases occurring in women aged 60 years and above. Treating breast cancer in elderly patients presents particular clinical challenges due to age-associated physiological alterations, the presence of multiple comorbidities, reduced functional capacity, and age-related variations in tumor characteristics. Consequently, therapeutic strategies should be carefully tailored to each patient, taking into account the tumor's molecular subtype, stage of disease, functional and general health status, estimated life expectancy, existing comorbidities, and the patient's individual treatment preferences.

Objective. The aim of this review was to analyze current approaches to the treatment of breast cancer in elderly women and to evaluate the role of surgical treatment, adjuvant systemic therapy, endocrine therapy, chemotherapy, and radiotherapy according to tumor subtype and patient characteristics.

Materials and Methods. The article is based on an analysis of scientific publications concerning the treatment of breast cancer in women aged 60 years and older. Particular attention was paid to molecular subtypes of breast cancer, surgical treatment, endocrine therapy, chemotherapy, radiotherapy, and the influence of concomitant diseases and functional status on treatment selection.

Results. The analysis demonstrated that breast cancer in elderly women is biologically heterogeneous and requires an individualized therapeutic approach. Hormone receptor-positive and HER2-negative tumors, particularly luminal A tumors, are frequently encountered in older patients and may respond favorably to endocrine therapy. Tamoxifen and other endocrine approaches may represent important components of adjuvant treatment. In selected patients, omission or modification of radiotherapy may be considered depending on tumor characteristics, endocrine treatment, life expectancy, and recurrence risk. Surgical treatment remains an important component of management, although the extent of surgery and axillary lymph-node intervention should be individualized. Chemotherapy requires careful consideration because age-related physiological changes and comorbidities may increase the risk of treatment-related toxicity.

Conclusion. Treatment of breast cancer in elderly women should be based

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not on chronological age alone but on tumor biology, disease stage, functional status, comorbidities, life expectancy, and patient preferences. Surgery remains an important treatment modality, while endocrine therapy plays a particularly important role in hormone receptor-positive disease. Radiotherapy and chemotherapy should be considered according to individual risk-benefit assessment. Further development of standardized geriatric and oncological assessment approaches may improve treatment selection in this patient population.

Keywords: breast cancer, elderly women, old age, molecular subtype, adjuvant treatment, endocrine therapy, chemotherapy, radiotherapy, surgery.

Introduction

Breast cancer represents one of the most common malignant diseases among women worldwide. The incidence of malignant tumors increases with age, and the growing life expectancy of the population has resulted in an increasing number of elderly patients requiring oncological care. According to the age classification adopted by the World Health Organization Regional Office for Europe, individuals aged 60–74 years are considered elderly, those aged 75–89 years are classified as old, and individuals aged 90 years and older are considered long-lived.Age is one of the major risk factors for breast cancer. The average age at diagnosis is approximately 60 years, and more than 40% of breast cancer cases occur in women aged 60 years and older. Consequently, the treatment of elderly women with breast cancer represents an increasingly important clinical and public health problem.The management of malignant tumors in elderly patients has historically received less attention than treatment in younger populations. Patients older than 70 years have frequently been excluded from clinical trials, resulting in limited evidence regarding the optimal therapeutic strategy for this population. At the same time, elderly patients demonstrate considerable differences in physiological reserve, functional status, life expectancy, and the presence of concomitant diseases.Age-related changes may influence the pharmacokinetics and pharmacodynamics of antineoplastic drugs and may increase the risk of treatment-related complications. Cardiovascular disease, heart failure, chronic obstructive pulmonary disease, renal impairment, cerebrovascular disease, diabetes mellitus, and obesity may substantially influence treatment selection and tolerance.The biological heterogeneity of breast cancer also has an important role in treatment selection. Advances in molecular biology and gene-expression analysis have resulted in the identification of several molecular subtypes, including luminal A, luminal B, HER2-enriched, and basal-like tumors. These subtypes differ in prognosis, hormone sensitivity, response to systemic treatment, and therapeutic requirements.Therefore, treatment decisions in elderly women should incorporate both tumor-related and patient-related factors.

Objective. The aim of this review was to analyze effective approaches to the treatment of breast cancer in elderly women and to summarize the role of surgical,

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endocrine, chemotherapeutic, and radiation treatment according to molecular subtype, tumor characteristics, functional status, and comorbidities.

Materials and methods

A literature-based analytical approach was used to review scientific publications concerning the diagnosis and treatment of breast cancer in women aged 60 years and older.

The analysis focused on the following aspects:

- surgical treatment of breast cancer;
- breast-conserving surgery and mastectomy;
- assessment of axillary lymph-node involvement;
- sentinel lymph-node biopsy;
- endocrine therapy;
- adjuvant chemotherapy;
- radiotherapy;
- molecular and biological subtypes of breast cancer;
- influence of age and comorbidities on treatment selection;
- functional status and life expectancy of elderly patients.

Particular attention was given to hormone receptor-positive tumors, HER2-positive disease, luminal A and luminal B subtypes, and the role of individualized treatment strategies.

Molecular subtypes of breast cancer. Breast cancer is characterized by substantial genetic and biological heterogeneity. The development of molecular classification has improved understanding of tumor behavior and has contributed to individualized therapeutic strategies.The major molecular subtypes include luminal A, luminal B, HER2-enriched, and basal-like tumors. Luminal tumors are generally characterized by hormone receptor expression, whereas HER2-enriched tumors demonstrate increased expression of human epidermal growth factor receptor 2. Basal-like tumors usually have a different biological profile and may demonstrate more aggressive clinical behavior.The molecular characteristics of the tumor are particularly important in elderly patients because treatment tolerance may be reduced, and the selection of systemic therapy requires careful consideration of the expected benefit and potential toxicity. CANCER

Treatment of luminal A breast cancer. Among women aged 60 years and older, hormone receptor-positive and HER2-negative tumors are frequently observed. These tumors correspond predominantly to the luminal A subtype and may demonstrate a favorable response to endocrine therapy.The main therapeutic approaches include surgery followed by endocrine therapy, with radiotherapy considered according to the individual clinical situation. In elderly women with hormone-sensitive tumors, endocrine therapy may represent an important component of adjuvant treatment.Tamoxifen has been widely studied in older women. Clinical studies have demonstrated a reduction in local-regional recurrence when radiotherapy is combined with endocrine treatment in selected patients.

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However, the absolute benefit of radiotherapy may be relatively small in patients with a low baseline risk of recurrence.Therefore, treatment decisions should consider tumor size, grade, lymph-node status, hormone receptor status, expected survival, comorbidities, and the patient's preferences.

Treatment of luminal B breast cancer.Luminal B breast cancer differs from luminal A tumors by its generally higher proliferative activity and less favorable prognosis. Some tumors may demonstrate HER2 amplification, while others are characterized by a higher histological grade.The treatment of luminal B breast cancer in elderly women may include surgery, endocrine therapy, radiotherapy, and, in selected cases, chemotherapy. Endocrine therapy remains an important component in hormone receptor-positive disease.Radiotherapy may provide additional local control in patients with higher-risk pathological characteristics. The decision regarding systemic chemotherapy should be individualized because the potential oncological benefit must be balanced against the increased risk of adverse effects in elderly patients.

Treatment of HER2-enriched breast cancer.HER2-enriched breast cancer is characterized by increased HER2 expression and generally has limited sensitivity to endocrine therapy when hormone receptors are absent.The decision to administer chemotherapy to elderly patients with HER2-positive disease can be challenging. Treatment selection should take into account biological characteristics of the tumor, disease stage, cardiovascular status, renal and hepatic function, functional capacity, and the presence of concomitant diseases.Modern systemic treatment strategies have replaced some older chemotherapy regimens in appropriate patients. However, the intensity of systemic therapy should be individualized according to the patient's overall condition and expected treatment tolerance.

Role of radiotherapy. Radiotherapy remains an important component of breast cancer treatment. Its indication depends on tumor characteristics, type of surgery, lymph-node status, biological subtype, and risk of local recurrence.In selected elderly women with hormone receptor-positive, low-risk tumors who undergo breast-conserving surgery and receive endocrine therapy, omission of radiotherapy may be considered. However, the decision should be based on individualized risk assessment rather than age alone.In patients with higher-risk tumors or unfavorable pathological characteristics, adjuvant radiotherapy may provide improved local disease control.Thus, radiotherapy should be integrated into the overall treatment plan according to the biological and clinical characteristics of the disease.

Surgical treatment of breast cancer. Surgery remains one of the principal treatment modalities for breast cancer. The major surgical approaches include mastectomy and breast-conserving surgery.The extent of surgical intervention depends on tumor size, localization, stage, lymph-node status, biological characteristics, general functional status, and patient preference.Assessment and management of axillary lymph nodes remain important components of surgical treatment. Sentinel lymph-node biopsy may be used in selected patients, while complete axillary lymph-node dissection may not always be

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necessary in carefully selected elderly women with hormone-sensitive tumors and clinically negative lymph nodes receiving appropriate adjuvant endocrine treatment.The available evidence indicates that the extent of axillary surgery should be individualized in older women rather than automatically determined by chronological age.

Features of treatment in elderly patients. Elderly patients require an individualized treatment strategy because chronological age does not fully reflect biological age or functional reserve.Important comorbidities that may influence treatment selection include ischemic heart disease, heart failure, chronic obstructive pulmonary disease, renal insufficiency, cerebrovascular disease, diabetes mellitus, and obesity.A comprehensive geriatric assessment may provide additional information for determining whether an elderly patient is likely to tolerate intensive systemic therapy.

Discussion

The available literature indicates that breast cancer in elderly women cannot be managed solely on the basis of chronological age. The substantial heterogeneity of both the tumor and the patient requires a personalized therapeutic approach.Hormone receptor-positive breast cancer is common in older women, making endocrine therapy an important component of treatment. In selected low-risk patients, endocrine therapy may allow modification of the intensity of local treatment. However, patients with higher-risk tumors may require additional radiotherapy or systemic therapy.Surgical treatment continues to play an important role. Nevertheless, the optimal extent of surgery should be determined according to disease stage, tumor biology, functional status, and the patient's preferences.Chemotherapy presents a particular challenge in elderly patients because physiological aging and comorbidities may increase treatment toxicity. Therefore, the expected oncological benefit should be carefully weighed against potential adverse effects.The available evidence also emphasizes the importance of distinguishing chronological age from functional age. Two patients of the same chronological age may have substantially different functional capacities, comorbidities, life expectancy, and treatment tolerance.Consequently, individualized assessment is essential for selecting the appropriate combination of surgery, endocrine therapy, chemotherapy, and radiotherapy.

Conclusion

Breast cancer in elderly women represents a clinically heterogeneous disease requiring individualized treatment strategies. Chronological age alone should not determine the choice or intensity of treatment.Surgical treatment remains an important component of breast cancer management, while endocrine therapy plays a particularly important role in hormone receptor-positive tumors. Radiotherapy may improve local disease control but can be omitted or modified in selected low-risk elderly patients receiving appropriate endocrine treatment. Chemotherapy should be considered carefully because of the increased risk of treatment-related toxicity associated with age and comorbidities.The selection of treatment should therefore be based on tumor stage, molecular subtype, hormone receptor and HER2

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status, functional condition, comorbidities, life expectancy, expected treatment tolerance, and patient preferences.

Further clinical research is needed to develop standardized approaches that combine oncological risk assessment with comprehensive geriatric evaluation and thereby improve treatment selection and outcomes in elderly women with breast cancer.

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