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COMPREHENSIVE MANAGEMENT OF BREAST CANCER IN YOUNG WOMEN: INTEGRATING DIAGNOSIS, TREATMENT AND PSYCHOSOCIAL SUPPORT IN INDIAN SCENARIO

Dr. Anmol Mahani*	Senior Resident, Department of Radiation Oncology, Himalayan Institute of Medical Sciences, Dehradun. *Corresponding Author
Dr. Prof Vipul Nautiyal	Professor, Department of Radiation Oncology, Himalayan Institute of Medical Sciences, Dehradun.
Dr. Prof Meenu Gupta	Professor, Department of Radiation Oncology, Himalayan Institute of Medical Sciences, Dehradun.

ABSTRACT Breast cancer is the most common malignancy among women globally, having transitioned from the fourth position in India's list of prevalent cancers during the 1990s to the foremost position. This examination of existing literature aims to understand the factors contributing to the substantial burden of breast cancer in the country. We delve into the changing landscape of early diagnosis and treatment modalities, shedding light on challenges within the Indian healthcare delivery systems, including delayed diagnosis, constraints in human resources, and funding limitations. The review also discusses emerging interventions and envisions the future of breast cancer management, considering the constraints imposed by the coronavirus disease 2019. Special attention is warranted for breast cancer in young women due to its distinctive morphologic and prognostic characteristics, along with unique considerations such as fertility preservation and psychosocial impacts on family life and career. Young women are predisposed to tumors with negative clinicopathologic features, including a higher histological grade, increased lymph node positivity, lower estrogen receptor (ER) positivity, and higher rates of Her2/neu overexpression. Moreover, they often receive diagnoses at more advanced disease stages, leading to a less favorable prognosis than their older counterparts. Treatment approaches for young women typically mirror those for older patients, involving surgical management such as mastectomy or breast-conserving surgery, followed by radiation therapy. Younger women, especially those undergoing breast-conserving therapy, exhibit elevated local recurrence rates. While the fundamentals of chemotherapy apply universally, special considerations are crucial for younger women, emphasizing the need to explore fertility preservation options before commencing systemic treatment. Access to genetic testing is essential, as results can significantly influence therapeutic choices. Adequate psychological support and counselling are imperative for both younger women and their families.

KEYWORDS : Breast Cancer, Young Female, Radiotherapy, Chemotherapy, Hormonal Therapy

INTRODUCTION

Breast cancer (BC) has become the most prevalent malignancy among women worldwide, surpassing lung cancer as the leading cause of global cancer incidence in 2020 (1). In that year alone, there were approximately 2.3 million new cases, constituting 11.7% of all cancer cases (2). Epidemiological studies project a continued increase in the global burden of Breast cancer, estimating nearly 2 million cases by 2030 (3). India has experienced a notable rise in BC incidence, with a 50% increase between 1965 and 1985. In 2016, India reported 118,000 incident cases, with 98.1% affecting females (4). The age-standardized incidence rate of BC in Indian females increased by 39.1% from 1990 to 2016, reflecting a rising trend in every state of the country (5). In 2020, BC accounted for 13.5% of all cancer cases and 10.6% of all deaths in India, highlighting its significant impact on public health (6).

Recent trends indicate a shift towards a higher proportion of Breast cancer cases occurring at a younger age in Indian women compared to the West. The National Cancer Registry Program reported a substantial increase in Breast cancer incidence across all population-based cancer registries between 1988 and 2013 (7). While cervical cancer was the leading site in 1990, Breast cancer had overtaken in most registries by 2000-2003, except in the rural registry of Barshi (8). This shift emphasizes the changing landscape of Breast cancer epidemiology in India.

Survival rates for Breast cancer patients in India are comparatively poor, with a study reporting 5-year overall survival rates of 95% for stage I, 92% for stage II, 70% for stage III, and only 21% for stage IV patients (9). Several factors contribute to this, including an earlier age at onset, late-stage disease presentation, delayed initiation of definitive management, and inadequate or fragmented treatment. The World Cancer Report 2020 underscores the importance of early detection and prompt treatment in BC control (10). A systematic review in 2018 highlighted that treatment costs increased with higher cancer stage at diagnosis, emphasizing the economic burden associated with delayed detection (11).

Understanding 'young age' in the context of Breast cancer is crucial, and typically, it refers to women diagnosed before the age of 40 (12). While Breast cancer predominantly affects older women, those under 40 exhibit distinct biological characteristics, leading to specialized management challenges. The disease in young women often follows a more aggressive course, with less favorable prognoses and lower survival rates compared to older counterparts. Treatment complexities arise due to considerations like fertility preservation, decisions regarding pregnancy continuation post-diagnosis, and potential challenges with breastfeeding. Beyond medical aspects, Breast cancer in young women also poses social implications as it often manifests during the period of peak family and career involvement.

Despite the general increase in Breast cancer incidence with age, women between 50 and 69 years are most affected. However, 2–7% of diagnoses occur in the under-40 age group (13). The GRELL study, examining data from seven European countries between 1990 and 2008, revealed an annual mean rate increase of 1.2%, particularly pronounced in the age group of 15–34 years (14). The concern arises from an increasing number of young patients being diagnosed at advanced stages due to inadequate screening and preventive measures. Delayed diagnosis may result from a lack of oncological vigilance among practitioners encountering breast changes in young women during pregnancy, puerperium, or lactation.

Significant variations in Breast cancer incidence based on race and ethnicity are observed, particularly in multi-ethnic American society. Beyond the age of 45, the disease is more frequently detected in Caucasian women compared to African Americans. In contrast, morbidity and mortality rates among African Americans are 2- and 3-fold higher, respectively, in the age group of 35 years or younger(15). Additionally, genetic background and family history are more commonly identified in women under 40.

Early Detection and Screening Programs

The success of screening programs depends on various factors, including proper guidance manuals, the development and utilization of appropriate diagnostic instruments, and effective implementation. Organized screening programs target specific populations and involve multidisciplinary teams, clinical oversight committees, and regular evaluations to optimize benefits. There is a shift towards a risk-based approach in screening strategies, necessitating India to assess risk

factors and incorporate them into BC screening initiatives.

A study from Mumbai demonstrated that clinical breast examinations every two years by primary health workers significantly reduced the stage of Breast cancer at diagnosis, leading to a non-significant 15% reduction in overall Breast cancer mortality, with a significant reduction of nearly 30% in women aged ≥ 50 (16). Mammography, a commonly used screening tool, has reported sensitivity varying from 64% to 90%, with specificity ranging from 82% to 93% (17).

Challenges in Breast cancer Control

Challenges in India include denser breasts, a shortage of mammography machines, and trained personnel, potentially resulting in false positives and overdiagnosis. While digital mammography with computer-aided detection software exists, its cost remains a limiting factor for mass-scale routine screening.

Ultrasonography, with an overall sensitivity of 53% to 67% and specificity of 89% to 99%, proves beneficial, especially in younger women aged 40 to 49 years. However, the requirement for trained professionals to perform and interpret ultrasounds poses a significant obstacle. Breast self-examination, though not universally accepted, can serve as a useful adjunct if practiced diligently and skilfully, making women aware of their normal breast.

Understanding India-specific differences through genomics may facilitate the identification of women at high risk, allowing for cost-effective targeted screening. The urgent need to pinpoint Indian-specific genetic/epigenetic biomarkers for early detection is emphasized.

Diagnostic Testing

Young women suspected of having breast cancer should undergo diagnosis by a proficient medical team. Despite the relatively low risk of breast cancer in younger women, healthcare providers need to remain vigilant due to the potential for aggressive disease.

Triple assessment, which includes clinical breast examination, imaging (mammography, ultrasound, or MRI), and tissue diagnosis (biopsy), is the gold standard for diagnosing breast cancer (18). Core needle biopsy is preferred over fine-needle aspiration as it provides more accurate histological information (19). The biopsy is essential for determining the tumour type, grade, hormone receptor status, and HER2/neu status, crucial information influencing treatment decisions.

Breast Imaging Modalities

Imaging plays a pivotal role in the diagnosis and staging of breast cancer. Mammography is the most widely used screening tool, especially in older women, and has contributed to a significant reduction in breast cancer mortality. However, its sensitivity is lower in younger women, and dense breast tissue can limit its effectiveness.

Ultrasonography is valuable in assessing breast lumps, particularly in young women with dense breast tissue. It is often used as a complementary tool to mammography and can help distinguish between solid masses and fluid-filled cysts.

Breast MRI (magnetic resonance imaging) is more sensitive than mammography and ultrasound, making it a valuable tool for evaluating the extent of disease, especially in young women with a high risk of breast cancer. It is often used in conjunction with mammography and ultrasound for a comprehensive assessment.

Genetic Testing and Counselling

Young women diagnosed with breast cancer may benefit from genetic testing, especially if there is a family history of breast or ovarian cancer. BRCA1 and BRCA2 mutations, in particular, are associated with an increased risk of breast cancer (20). Identifying such mutations can inform treatment decisions and guide risk-reduction strategies.

Genetic counselling is an essential component of the testing process, providing individuals with information about the implications of genetic mutations, discussing the potential risks for family members, and assisting in decision-making regarding testing and subsequent actions.

Treatment Approaches

The management of breast cancer in young women requires a multidisciplinary approach, considering the unique challenges and concerns specific to this age group.

Surgery:

Breast-conserving surgery (lumpectomy) and mastectomy are surgical options for treating breast cancer. The choice depends on factors such as the size and location of the tumour, as well as patient preference. In young women with early-stage breast cancer, breast-conserving surgery followed by radiation therapy is often a suitable option.

Radiation Therapy:

Following breast-conserving surgery, radiation therapy is typically recommended to reduce the risk of local recurrence. It may also be advised after mastectomy in certain cases. However, the potential impact of radiation on future fertility should be discussed with young patients.

Chemotherapy:

Young women with breast cancer may be more likely to receive chemotherapy, especially if the cancer is aggressive or has spread to the lymph nodes. The choice of chemotherapy drugs depends on various factors, including the tumour's characteristics and the individual's overall health.

Hormone Therapy:

Hormone receptor-positive breast cancers can be treated with hormone therapy. This may involve medications such as tamoxifen or aromatase inhibitors, which block the effects of estrogen on cancer cells. Hormone therapy is often recommended for premenopausal women.

Targeted Therapy:

HER2-positive breast cancers may be treated with targeted therapies such as trastuzumab (Herceptin). These drugs specifically target cancer cells that overexpress the HER2 protein.

Fertility Preservation:

Young women diagnosed with breast cancer may have concerns about fertility. Fertility preservation options, such as egg or embryo freezing, should be discussed before starting cancer treatment. Some treatments, particularly chemotherapy, can affect fertility, so proactive measures are essential.

Psychosocial Support:

A breast cancer diagnosis can have profound psychological and emotional impacts. Young women may face unique challenges related to body image, relationships, and concerns about the future. Psychosocial support, including counselling and support groups, is crucial for addressing these aspects of care.

Follow-Up and Survivorship

After completing primary treatment, young breast cancer survivors require ongoing follow-up care to monitor for recurrence, manage side effects of treatment, and address long-term health considerations.

Regular follow-up appointments with healthcare providers, including breast examinations and imaging studies, are essential. Survivorship care plans may include recommendations for healthy lifestyle choices, ongoing monitoring for potential late effects of treatment, and strategies for addressing psychosocial well-being.

CONCLUSION

Breast cancer in young women presents unique challenges that require a comprehensive and tailored approach to diagnosis and treatment. Early detection, through effective screening strategies and awareness programs, remains a critical factor in improving outcomes for this population. Genetic testing, counselling, and fertility preservation are integral components of the management plan. A multidisciplinary team involving surgeons, oncologists, radiologists, genetic counsellors, and mental health professionals collaborates to provide personalized care. Advances in targeted therapies and an evolving understanding of the genetic basis of breast cancer contribute to more effective and individualized treatment approaches. Moreover, addressing the social and psychological aspects of breast cancer in young women is vital for holistic care. Public health initiatives, healthcare policy enhancements, and community engagement are essential for creating a supportive environment that empowers young women facing breast cancer. By combining medical advancements with a compassionate and holistic approach, healthcare providers can

make significant strides in improving outcomes and quality of life for young women affected by breast cancer.

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