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Breast Cancer In India And Its Managment

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Abstract

Breast cancer is the most commonly diagnosed cancer in women globally, with a cure rate of approximately 65-80% for those with early-stage, non-metastatic disease. However, when the cancer progresses to an advanced stage with metastasis to distant organs, it is currently regarded as incurable with existing treatments.Breast cancer development is a complex, multi-step process that involves various cell types, and preventing the disease remains a significant challenge

globally. One of the most effective strategies for combating breast cancer is early detection, which plays a crucial role in reducing its impact Breast cancer is becoming an increasingly important health issue in India, 192020 new cases of breast cancer is reported in 2022 and 87090 women dies from breast cancer a rising number of cases diagnosed annually.This review article look into the epidemiology of breast cancer in india over time and in different registries, survival rate among women in different stage of breast cancer . This article also review the different stages of breast cancer,its sign and symptoms,the current treatment method and the intervention can be made to counter the disease

Keywords: Breast cancer, Mastectomy, Carcinoma, Surgery, Radiotherapy, Chemotherapy, Treatment , Screening, Diagnosis, Receptors

Introduction:-

Breast cancer (BC) is the most prevalent type of cancer among women worldwide. In 2020, it surpassed lung cancer as the leading cause of cancer incidence globally, with approximately 2.3 million new cases, accounting for 11.7% of all cancer diagnoses. Epidemiological forecasts suggest that by 2030, the global burden of BC will exceed 2 million cases. In India, the incidence of breast cancer has seen a significant rise, increasing by nearly 50% between 1965 and 1985.In India, the age-adjusted incidence rate of breast cancer is lower (25.8 per 100,000) compared to the United Kingdom (95 per 100,000); however, the mortality rate is similar (12.7 vs. 17.1 per 100,000). Studies conducted globally and within India have highlighted a significant rise in both the incidence of breast cancer and its associated morbidity and mortality in the Indian subcontinent.

In 2018, there were 2,088,849 new cases of breast cancer globally, resulting in 626,679 deaths.

The rising incidence of breast cancer in developing countries may be attributed to socioeconomic changes such as delayed marriage and childbirth, fewer children, increased obesity, and greater awareness. In India, breast cancer tends to occur at an earlier age, and patients often present with more advanced stages of the disease.

Breast Cancer cases in india:-

Epidemiological studies predict that the global burden of breast cancer will surpass 2 million cases by 2030. In India, the incidence has risen significantly, increasing by nearly 50% between 1965 and 1985. In 2016, the estimated number of new cases in India was 118,000 (with a 95% uncertainty interval ranging from 107,000 to 130,000), of which 98.1% were females. The total number of prevalent cases was estimated at 526,000 (ranging from 474,000 to 574,000)

All population-based cancer registries have reported a notable rise in the incidence of breast cancer.From 1993 to 1997, the Age-Adjusted Rate (AAR) of breast cancer varied across registries, ranging from 28.9 in Mumbai to 19.1 in Ahmedabad. Trend analysis over time showed an increase in incidence rates (AAR) for women in most registries, except for Ahmedabad. The AAR rose from 18.2 to 21.1 in Bangalore, 19.9 to 23.9 in Chennai, 20.1 to 28.9 in Mumbai, 19.2 to 24.2 in Nagpur, and 23.3 to 26.9 in Pune, with corresponding Annual Percentage Changes (APCs) of 1.1%, 1.3%, 2.0%, 1.5%, and 0.5%, respectively. Further analysis of Age-Specific
Rates (ASR) for age groups 15–34, 35–44, 45–54, 55–64, and >64 years revealed an overall increase in incidence across various registries. The APC for the youngest group (15–34 years) ranged from 0.80% in Chennai to 4.24% in Nagpur. Similarly, the APC for other age groups varied, with the oldest age group (>64 years) showing a range from 0.53% to 2.64%. India's rapid urbanization and industrialization are contributing to these changing trends.The mortality- to-incidence ratio was significantly higher in rural registries, reaching 66, compared to just 8 in urban registries. Additionally, younger age has been identified as a major risk factor for breast cancer in Indian women.

A study reported the 5-year overall survival rates as 95% for stage I, 92% for stage II, 70% for stage III, and 21% for stage IV patients.

Different stages of breast cancer patient in metropolitan cities of India in 2019

STAGE	NEW DELHI %	MUMBAI%	KOLKATA%	CHENNAI%
I II III IV	10.3 26.8 55 7.9	9.2 45.5 38.8 6.5	6.9 34.5 46.6 12	7.9 42.5 40.3 9.8

(**Table.1)**

Reported cases and 5 Years survival percentages of breast cancer patient in differet States of india in 2015

S. NO.	STATE	REPORT CASE	5 YEARS SURVIVAL PERCENTAGE
1.	WEST BENGAL	23%	66%
2.	MIZORAM GUJARAT	13.5%	74.9%
3.	KARNATAKA TAMIL	37.3%	72.7%
4.	NADU MAHARASHTRA	29.5%	71.5%
5.		25.5%	69.1%
6.		28.8%	66.4%

(Table 2)

Types Of Breast Cancer

The breast consists of two primary tissue types: glandular tissue and stromal (supporting) tissue. Glandular tissue contains the milk-producing glands (lobules) and the ducts, which are the passages for milk. Stromal tissue includes the fatty and fibrous connective tissues of the breast. Additionally, the breast contains lymphatic tissue, which is part of the immune system and is responsible for removing cellular fluids and waste.

Non-invasive breast cancer refers to cancer cells that remain confined to the ducts and do not spread to the surrounding fatty and connective tissues of the breast.

The most common type of non-invasive breast cancer is ductal carcinoma in situ (DCIS), accounting for 90% of cases.

(1) Non Invasive Breast Cancer

(a)Lobular carcinoma in situ (LCIS)-, also known as lobular neoplasia, refers to a condition where there is an abnormal increase in the number of cells within the milk glands (lobules) of the breast. The term "in situ" indicates that the abnormal cell have not spread beyond the area where it is originated

(b) Ductal carcinoma in situ (DCIS)- is the most prevalent form of non-invasive breast cancer, and it remains confined to the ducts of the breast without spreading to surrounding tissue.

Infiltrating lobular carcinoma (ILC)-also referred to as invasive lobular carcinoma, originates in the milk-producing glands (lobules) of the breast. However, it has the potential to spread (metastasize) to other parts of the body. ILC represents approximately 10% to 15% of all breast cancer cases.

(a)Infiltrating ductal carcinoma (IDC), also known as invasive ductal carcinoma, starts in the milk ducts of the breast. It then breaks through the duct walls, spreading into the surrounding fatty tissue of the breast and potentially other areas of the body.

Sign And Symptoms of Breast Cancer

Breast lump-A breast lump is the most frequently observed symptom, affecting approximately 83% of women.The hallmark sign of breast cancer is the discovery of a lump in the breast or under the armpit.

Nipple retraction-Nipple retraction refers to the inward pulling or turning of the nipple, which can be a sign of underlying conditions, including breast cancer. It occurs when tissues inside the breast change, leading to the nipple being drawn inward.

Change in breasts shape-The size or shape of the nipple can be influenced by natural changes or fluctuations in body weight [30]. However, if the nipple becomes retracted and does not return to its normal position, it could be a sign of breast cancer. Any changes in the size and shape of the breast after puberty may indicate a potential issue, including the possibility of breast cancer.

Breast pain- If you experience breast pain, it's important to track whether it corresponds with your menstrual cycle and whether it's affecting one or both breasts.if the pain is localized to one breast, the armpit, or occurs outside your cycle, it is recommended to seek medical advice

Management Of Breast Cancer

Currently, treatment approaches for breast cancer include both loco-regional methods, which focus on the tumor through surgery and radiation, and systemic therapies that target the entire body. Systemic treatments encompass endocrine therapy for hormone receptor-positive cancers, chemotherapy, anti-HER2 therapy for HER2-positive cancers, bone-stabilizing agents, polymerase inhibitors for individuals with BRCA mutations, and more recently, immunotherapy.

(1) Surgery- Despite these advancements, the majority of breast cancer patients still undergo primary ablative surgical procedure it is of various type

(a) Mastectomy -

Mastectomy is no longer a simple procedure. It can be done as a traditional mastectomy, which is often an effective treatment option for certain patients. This approach can be performed on an outpatient basis, offering a quick recovery with minimal risk of complications. Alternatively, subcutaneous mastectomy with primary reconstruction is a viable choice for some women. This procedure combines the removal of the breast and tumor with the preparation of skin flaps for immediate breast reconstruction, either using a prosthesis or autologous tissue.

(B)Breast conserving therepy

Wire localization of a breast tumor is a key component of breast-conserving surgery (BCS). This procedure is typically carried out by a breast imaging radiologist on the day of surgery. The surgical incision is then strategically placed based on both cosmetic factors and the location of the tumor.

Breast surgery has progressed significantly, moving from total mastectomy to breast conservation therapy, and now to oncoplastic breast surgery. This emerging field of oncoplastic surgery provides a practical alternative to both total mastectomy and breast conservation therapy. Although still in its early stages, it is anticipated to become more widely accepted in the near future, due to its cost-effectiveness and economic feasibility. Oncoplastic breast surgery is also

particularly suitable for low-resource environments, such as India.

Chemotherapy - Chemotherapy is a drug treatment that uses powerful chemicals to kill fast- growing cells in your body.Chemotherapy is most often used to treat cancer, since cancer cells grow and multiply much more quickly than most cells in the body.Many different chemotherapy drugs are available. Chemotherapy drugs can be used alone or in combination to treat a wide variety of cancers.

(A) Neoadjuvant Chemotherapy -

Adjuvant chemotherapy is typically recommended after definitive surgery for patients at high risk of cancer recurrence. Factors that may indicate the need for chemotherapy include the presence of ER-, PR-, and HER2-negative receptors, HER2-positive status, larger tumor size, and positive lymph nodes.

*(*B) HER2-Directed Therapy- *HER2-targeted* therapy, specifically trastuzumab, a monoclonal antibody that targets the HER2 receptor, has been shown to improve survival rates in patients with HER2-positive early-stage breast cancer. It is typically administered alongside chemotherapy to enhance treatment outcomes.

(C)Hormonal therepy-Endocrine therapy plays a crucial role in the treatment of estrogen- receptor positive breast tumors. The preferred drugs include selective estrogen-receptor modulators (SERMs) like tamoxifen and raloxifene, aromatase inhibitors, and GnRH agonists. These treatments help manage the disease by targeting hormone receptors.

*(*D)Therepy for metastatic disease

Metastatic breast cancer is generally considered incurable, so the primary goal of treatment is to prolong life while minimizing symptoms and side effects. For patients with ER- or PR-positive and HER2-negative breast cancer, endocrine therapy is typically administered several times before moving to single-agent chemotherapy. Recent studies have shown that adding palbociclib, an oral cyclin-dependent kinase 4 and 6 inhibitor, to first-line letrozole and second-line fulvestrant can be effective for patients with ER-positive metastatic breast cancer.

Radiation:-

Radiotherapy is considered the most effective approach for preventing locoregional recurrence after primary surgery for invasive breast cancer. It is currently more effective than adjuvant chemotherapy following either mastectomy or breast-conserving surgery.

*(*A)Radiation after Breast consurvation surgery

Randomized trials have demonstrated that recurrence rates are higher with breast-conserving surgery (BCS) alone compared to BCS combined with radiation therapy, even in patients with favorable clinical and pathological characteristics.

*(B)*Postmastectomy Radiation

Postmastectomy radiation is recommended for women at intermediate to high risk of local- regional recurrence, based on clinical or pathological factors.In women who undergo mastectomy, radiation is recommended as adjuvant treatment when clinical or pathological factors indicate an intermediate to high risk (greater than 10%) of local-regional recurrence. Randomized prospective trials have shown that postmastectomy radiation reduces local-regional recurrence and improves survival in this group of women

Steps To Combat The Breast Cancer In India

Government bodies, non-governmental organizations, and the media can significantly contribute to raising awareness about breast cancer among the public. Awareness campaigns should be conducted in regional languages to ensure wider reach.

(1) Breast cancer management guidelines have been established for developed countries. However, India, being a resource-limited nation with significant cultural, social, and healthcare infrastructure differences, should develop its own management guidelines that are both practical and feasible within the local context.
Chemotherapy drug should be provided by regulatory agency to the distant area of india with cost effectiveness for complete treatment of breast cancer.

(2) Health Personnel are trained and educated to spread awareness about the breast cancer in diff government or non government medical organisation

(3) Population-based screening programs for breast cancer are designed to reduce mortality by enabling early detection and timely treatment.

Conclusion

The epidemiological data on breast cancer collected thus far highlights the severity of the disease. There is a need for diagnostic and therapeutic methods that are sensitive, specific, readily accessible, and cost-effective.

The survival rates are lower than those in Western countries, primarily due to factors like late- stage diagnosis, limited awareness, and restricted access to quality healthcare.Early detection of primary breast cancer can lower the risk of death by 30%. Most patients can be effectively treated with breast-conserving surgeries, and the inclusion of systemic hormone therapy and chemotherapy can further decrease the risk of death by 25 to 50%.Although there have been notable advancements in breast cancer treatment in India, challenges continue to exist. Access to advanced treatment options, particularly in rural regions, remains limited. Financial barriers often prevent many from receiving quality care, and there is still a need to enhance awareness regarding early detection and preventive strategies.

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