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(REVIEW ARTICLE)

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Breast cancer in women: Its risk factors and prevention

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Abstract

Breast cancer occurs when some breast cells begin to grow abnormally than healthy cells do and continue to accumulate, forming a lump or mass. The tumor size, lymph node status, histological grade, mitotic index, presence of estrogen and progesterone receptors, c-erbB2 expression, p53 and the MIB-1 proliferation index were evaluated histo-pathologically and immunohistochemically in the breast cancer patients. Types of chemicals carcinogens such as benzene, asbestos, nickel, cadmium, vinyl chloride, asbestos, N-nitrosamines, tobacco or cigarette smoke (contains at least 66 known potential carcinogenic chemicals and toxins), asbestos, and aflatoxin etc. play important role to induce breast cancer. Bovine leukemia virus (BLV) infects dairy and beef cattle's blood cells and mammary tissue. The most well-known are breast cancer gene 1 (BRCA1) and breast cancer gene 2 (BRCA2), both of which significantly increase the risk of both breast and ovarian cancer. The tamoxifen and aromatase inhibitors express the estrogen receptor (ER) and/or progesterone receptor (PR) are likely to respond to endocrine (hormone) therapies. Where resources are limited, diagnosis and treatment services should initially target all patients presenting with curable cancers, such as breast, cervical and oral cancers that can be detected early.

Keywords: Breast Cancer; Lump; Bovine Leukemia Virus; Tamoxifen; Aromatase; Breast Cancer Gene 1 (BRCA1); Breast Cancer Gene 2 (BRCA2).

1. Introduction

Normal body cells grow divides and die in an orderly manner. The division of normal cells is normally precisely controlled. During the early year of a person's life, normal cells divided more rapidly until the persons become an adult. After that, cells in most part of the body divide only to replace warm out or dying cells and to repair injuries. These abnormal cells are termed cancer cells, malignant cells or tumor cells. Cancer is the uncontrolled growth of abnormal cells anywhere in a body. They crowd out other normal cells and function abnormally. They can also destroy the correct functioning of major organs, although there are many kinds of cancer, they all are started because out of control growth of abnormal cells. Cancerous cells divide repeatedly out of control even though they are not needed. It is one of the most common diseases in the developed world and 1 in 4 deaths are due to cancers in which 1 in 17 are due to lung cancer. Lung cancer is the most common cancer in the man while Breast cancer has ranked number one cancer among Indian females with age adjusted rate as high as 25.8 per 100,000 women and mortality 12.7 per 100,000 women. There are over 10 different forms of cancer, but breast cancer is common in women. Breast cancer projection for India during time periods 2020 suggests the number to go as high as 1797900 [1].

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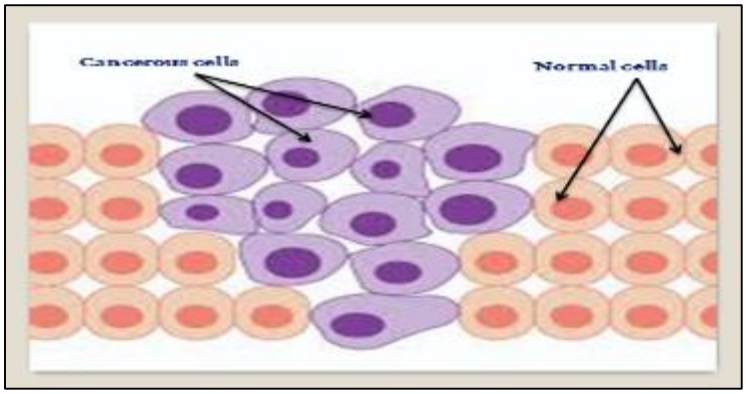

Figure 1 Different between normal cells and cancerous cells.

In addition to uncontrolled growth, malignant tumors exhibit **Metastasis,** is the process of small clusters of cancerous cells dislodged from a tumor invade the blood or lymphatic vessels and are carried to other tissues, where they continue to proliferate. For example, if breast cancer cells spread to a bone, it means that the individual has metastatic breast cancer to bone. This is not the same as "bone cancer" which would mean the cancer had started in the bone which would mean the cancer had started in the bone. In this way the primary tumors at one site can give rise to a secondary tumor at another site. These cells can infiltrate normal body tissues. A tumor that is capable of indefinite growth and does not invade the healthy surrounding tissue extensively is benign.

The three most common cancers in men, women, and children are as follows:

- **Men:** Prostate, lung and colorectal.
- **Women:** Breast, lung, and colorectal.
- **Children:** Leukemia, brain tumors and lymphoma.

Table 1 According to the National Cancer Institute 2016, the estimated numbers of new cases and deaths for each common cancer type

Cancer Type	Estimated New Cases	Estimated Deaths
Bladder	76,960	16,390
Breast (Female -- Male)	246,660 -- 2,600	40,450 -- 440
Colorectal Cancer	134,490	49,190
Endometrial	60,050	10,470
Kidney (Renal Cell and Renal Pelvis) Cancer	62,700	14,240
Leukemia (All Types)	60,140	24,400
Lung (Including Bronchus)	224,390	158,080
Melanoma	76,380	10,130
Non-Hodgkin Lymphoma	72,580	20,150
Pancreatic	53,070	41,780
Prostate	180,890	26,120
Thyroid	64,300	1,980

2. Breast cancer

Breast cancer originates in your breast tissue. It occurs when breast cells mutate (change) and grow out of control, creating a mass of tissue (tumor). Like other cancer, breast cancer can invade and grow into the tissue surrounding your breast. It can also travel to other parts of your body and form new tumors. The spreading of cancer is called Metastasis.

Breast cancer can occur in both men and women, but it's far more common in women. Transgender and women are more likely to develop breast cancer compared to cis-gender men. Additionally, transgender men are less likely to develop breast cancer compared to cis-gender women. Though rare, men can also develop breast cancer. Among young women, breast cancer mortality rates varied more worldwide than breast cancer incidence. In contrast, among older women/women of all ages, breast cancer incidence varied more than breast cancer mortality [2]. (Figure 2).

Figure 2 Male and female breast cancer.

Approximately, 2,600 men develop male breast cancer every year in the United States, making up less than 1% of all cases while, in India breast cancer is quite rare in men, it was found that only 0.7% out of 1200 male cancer diagnoses are to do with breast cancer, the incidence of male breast cancer is on the increase. In all the population, breast cancer was found to be less prevalent at the lower education level and the incidence increased with the education level. The trends for increase in breast cancer incidence over time for most of the populations in India were found to be statistically significant [3]. The Christians society, and Muslims society in India have the greatest risk of breast cancer. Breast cancer is one of the most common cancers among women, second only to skin cancer. It's most likely to affect women over the age of 50 years. Breast cancer has ranked number one cancer among Indian females with age adjusted rate as high as 25.8 per 100,000 women and mortality 12.7 per 100,000 women [1].

Factors like obesity, liver disease, genetics and overall estrogen exposure can potentially lead to breast cancer in men. The breast cancer arises in the lining cells (epithelium) of the ducts (85%) or lobules (15%) in the glandular tissue of the breast. Initially, the cancerous growth is confined to the duct or lobule ("in situ") where it generally causes no symptoms and has minimal potential for spread. Over time, these in situ (stage 0) cancers may progress and invade the surrounding breast tissue (invasive breast cancer) then spread to the nearby lymph nodes (regional metastasis) or to other organs in the body (distant metastasis). The age specific incidence rates for breast cancer for most of the urban population in India were found to show steep increase till menopause years, after which the curves plateau.

2.1. What race is most affected by breast cancer?

Breast cancer (BC) in young women is rare, affecting only 4-6% of women under the age of 40 years. It remains the most common malignancy among in young women and requires special attention due to its specific morphologic and prognostic characteristics and unique aspects, including fertility preservation and psychosocial issues (e.g. its impact on family life and career) and Also, surgical management includes mastectomy or breast-conserving surgery, followed by radiation therapy in younger women have higher local recurrence rates than older women, especially after breast-conserving therapy [4]. The breast cancer in young women has different clinicopathological characteristics than in the elderly, while others found no correlation between prognosis and age. Tumor size, lymph node status, histological grade, mitotic index, presence of estrogen and progesterone receptors, c-erbB2 expression, p53 and the MIB-1 proliferation index were evaluated histo-pathologically and immunohistochemically in the breast cancer patients at the age of 60 years and older [5].

Overall, women who are non-Hispanic white have a slightly higher chance of developing breast cancer than women of any other race or ethnicity. Women who are non-Hispanic Black are almost as likely as non-Hispanic white women to develop the disease. Statistically, women who are Asian, Hispanic or Native American are the least likely to develop breast cancer. In India breast cancer is the second-leading cause of cancer death in women, after lung cancer. It's also the leading cause of cancer death among women ages 35 to 54. It is a common chief complaint in patients with breast disease and is indicative of a possible intraductal lesion, thus it requires further evaluation. It is most commonly caused by intraductal papilloma or benign duct ectasia, but is also associated with underlying malignancies such as ductal carcinoma *in situ* and invasive ductal carcinoma [6].

3. Types of Breast Cancer

There are several different types of breast cancer, including:

- ***Infiltrating (invasive) ductal carcinoma:*** Starting in your milk ducts of your breast, this cancer breaks through the wall of your duct and spreads to surrounding breast tissue. Making up about 80% of all cases, this is the most common type of breast cancer.
- ***Ductal carcinoma in situ***: Also called Stage 0 breast cancer, ductal carcinoma in situ is considered by some to be precancerous because the cells haven't spread beyond your milk ducts. This condition is very treatable. However, prompt care is necessary to prevent the cancer from becoming invasive and spreading to other tissues.
- ***Infiltrating (invasive) lobular carcinoma:*** This cancer forms in the lobules of your breast (where breast milk production takes place) and has spread to surrounding breast tissue. It accounts for 10% to 15% of breast cancers. (Figure 3).
- ***Lobular carcinoma in situ:*** It is a precancerous condition in which there are abnormal cells in the lobules of your breast. It isn't a true cancer, but this marker can indicate the potential for breast cancer later on. So, it's important for women with lobular carcinoma in situ to have regular clinical breast exams and mammograms.

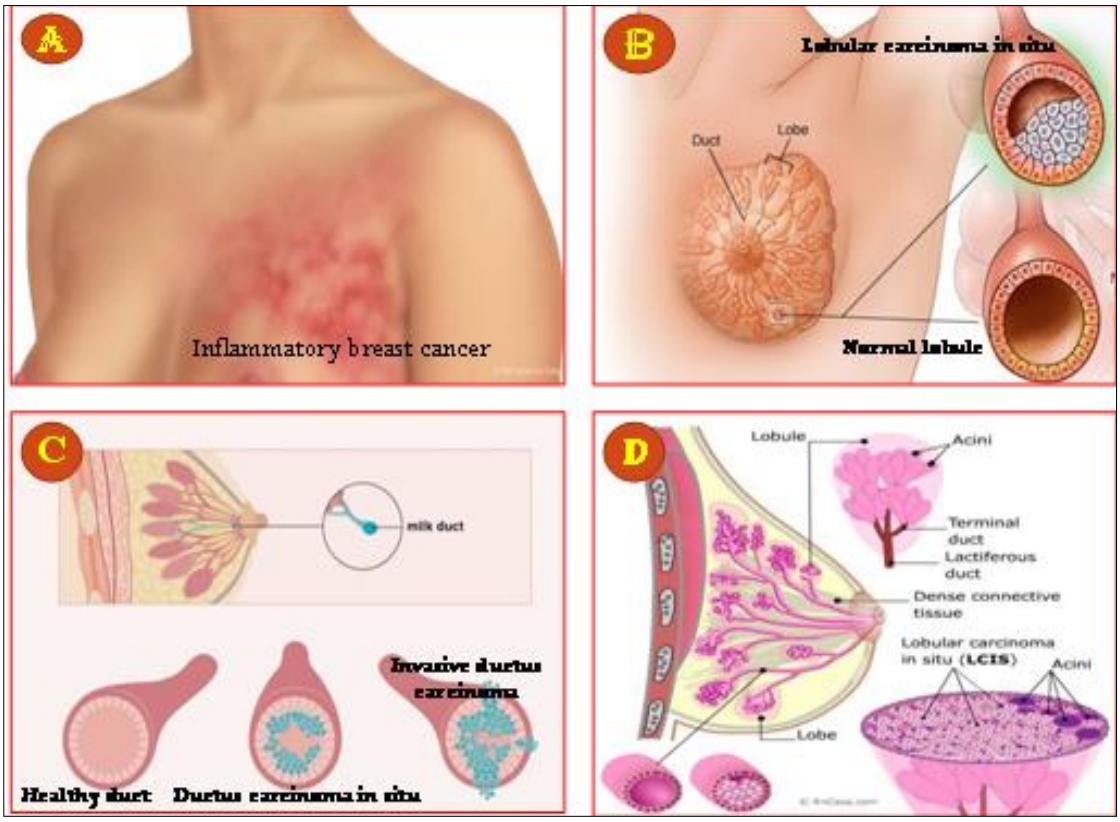

Figure 3 Types of breast cancer in female.

- ***Triple negative breast cancer (TNBC):*** Making up about 15% of all cases, triple negative breast cancer is one of the most challenging breast cancers to treat. It's called triple negative because it doesn't have three of the markers associated with other types of breast cancer. This makes prognosis and treatment difficult.
- ***Inflammatory breast cancer:*** Rare and aggressive, this type of cancer resembles an infection. People with inflammatory breast cancer usually notice redness, swelling, pitting and dimpling of their breast skin. It's caused by obstructive cancer cells in their skin's lymph vessels.
- ***Paget's disease of the breast:*** This type of cancer affects the skin of nipple and areola (the skin around your nipple) [7].

4. Symptoms of the breast cancer

Breast cancer occurs when some breast cells begin to grow abnormally. These cells divide more rapidly than healthy cells do and continue to accumulate, forming a lump or mass. Cells may spread (metastasize) through your breast to your lymph nodes or to other parts of your body. Breast cancer most often begins with cells in the milk-producing ducts (invasive ductal carcinoma). Breast cancer may also begin in the glandular tissue called lobules (invasive lobular carcinoma) or in other cells or tissue within the breast. Researchers have identified hormonal, lifestyle and environmental factors that may increase your risk of breast cancer. But it's not clear why some people who have no risk factors develop cancer, yet other people with risk factors never do. It's likely that breast cancer is caused by a complex interaction of your genetic makeup and your environment. Although the sign and symptoms of breast cancer include:

- A breast lump or thickening that feels different from the surrounding tissue
- Change in the size, shape or appearance of a breast
- Changes to the skin over the breast, such as dimpling
- A newly inverted nipple
- Peeling, scaling, crusting or flaking of the pigmented area of skin surrounding the nipple (areola) or breast skin.
- Redness or pitting of the skin over your breast, like the skin of an organism.

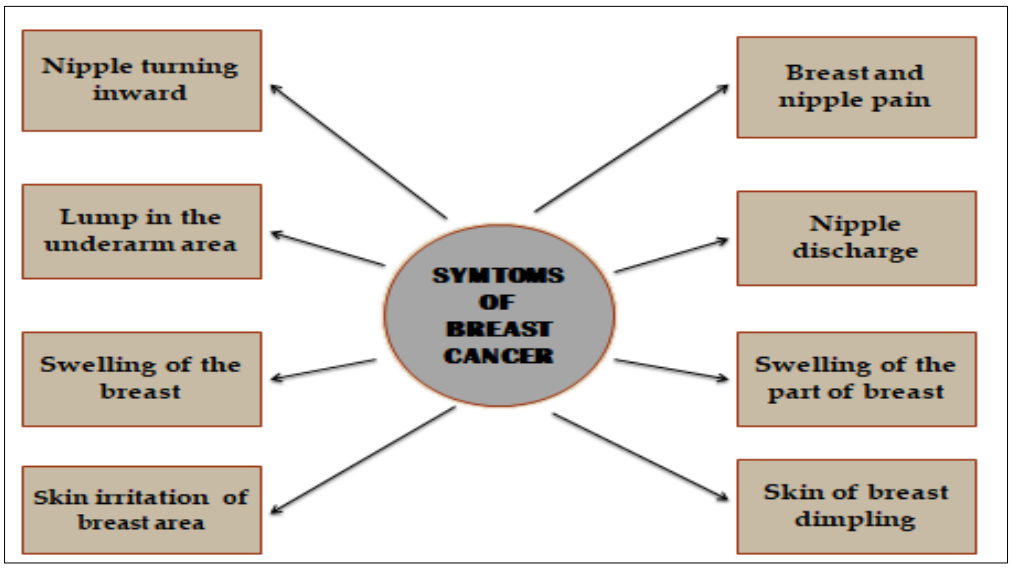

Figure 4 Symptoms of the breast cancer in female.

5. Causes of Breast Cancer

Types of chemicals carcinogens are benzene, asbestos, nickel, cadmium, vinyl chloride, benzidine, N-nitrosamines, tobacco or cigarette smoke (contains at least 66 known potential carcinogenic chemicals and toxins), asbestos, and aflatoxin etc. Chemical carcinogens are entering into the body via inhalation, ingestion or through skin and affects breast cancer. Certain chemicals such as gasoline, diesel and other vehicle exhaust, flame retardants, stain-resistant textiles, paint removers, and disinfection byproducts in drinking water are common in everyday life have been shown to cause breast cancer in women [8]. Bovine leukemia virus infects dairy and beef cattle's blood cells and mammary tissue. The retrovirus is easily transmitted among cattle primarily through infected blood and milk, but it only causes disease in fewer than 5 percent of infected animals. a higher likelihood of the presence of BLV in breast cancer tissue. When the

data was analyzed statistically, the odds of having breast cancer if BLV were present were 3.1 times greater than if BLV was absent [9].

Exposure to ionizing radiation has clearly been established as one of the risk factors for the development of breast cancer. The relationship between radiation exposures and subsequent breast cancer are derived from atomic bomb survivors and women who received medical exposures either for diagnostic or therapeutic purposes. Although in the female the risks factors of by radiations which induce breast cancer are depend on the dose, quality, and timing of radiation, consistent findings include an increased risk with younger age at exposure, long latency to breast cancer development, and increasing risk with increasing radiation dose [10].

Inherited Breast Cancer: About 5% to 10% of breast cancers are linked with gene mutations and passed through generation to generation of a family and induced breast cancer in members of family especially female members. A number of inherited mutated genes that can increase the likelihood of breast cancer have been identified. The most well-known are breast cancer gene 1 (BRCA1) and breast cancer gene 2 (BRCA2), both of which significantly increase the risk of both breast and ovarian cancer. If you have a strong family history of breast cancer or other cancers, your doctor may recommend a blood test to help identify specific mutations in BRCA or other genes that are being passed through your family. Consider asking your doctor for a referral to a genetic counselor, who can review your family health history. A genetic counselor can also discuss the benefits, risks and limitations of genetic testing to assist you with shared decision-making.

6. Risk factors of Breast Cancer

A breast cancer risk factor is anything that makes it more likely you'll get breast cancer. But having one or even several breast cancer risk factors doesn't necessarily mean you'll develop breast cancer. Many women who develop breast cancer have no known risk factors other than simply being women. Factors that are associated with an increased risk of breast cancer include

- **Being female.** Women are much more likely than men are to develop breast cancer.
- **Increasing age.** Your risk of breast cancer increases as you age.
- **A personal history of breast conditions.** If you've had a breast biopsy that found lobular carcinoma in situ (LCIS) or atypical hyperplasia of the breast, you have an increased risk of breast cancer.
- **A personal history of breast cancer.** If you've had breast cancer in one breast, you have an increased risk of developing cancer in the other breast.
- **A family history of breast cancer.** If your mother, sister or daughter was diagnosed with breast cancer, particularly at a young age, your risk of breast cancer is increased. Still, the majority of people diagnosed with breast cancer have no family history of the disease.
- **Inherited genes that increase cancer risk.** Certain gene mutations that increase the risk of breast cancer can be passed from parents to children. The most well-known gene mutations are referred to as BRCA1 and BRCA2. These genes can greatly increase your risk of breast cancer and other cancers, but they don't make cancer inevitable.
- **Radiation exposure.** If you received radiation treatments to your chest as a child or young adult, your risk of breast cancer is increased.
- **Obesity.** Being obese increases your risk of breast cancer.
- **Beginning your period at a younger age.** Beginning your period before age 12 increases your risk of breast cancer.
- **Beginning menopause at an older age.** If you began menopause at an older age, you're more likely to develop breast cancer.
- **Having your first child at an older age.** Women who give birth to their first child after age 30 may have an increased risk of breast cancer.
- **Having never been pregnant.** Women who have never been pregnant have a greater risk of breast cancer than do women who have had one or more pregnancies.
- **Postmenopausal hormone therapy.** Women who take hormone therapy medications that combine estrogen and progesterone to treat the signs and symptoms of menopause have an increased risk of breast cancer. The risk of breast cancer decreases when women stop taking these medications.
- **Drinking alcohol.** Drinking alcohol increases the risk of breast cancer.

7. Prevention of Breast Cancer

Making changes in your daily life may help reduce your risk of breast cancer. Try to Ask your doctor about breast cancer screening. Discuss with your doctor when to begin breast cancer screening exams and tests, such as clinical breast exams and mammograms. Talk to your doctor about the benefits and risks of screening. Together, you can decide what breast cancer screening strategies are right for you.

Women may choose to become familiar with their breasts by occasionally inspecting their breasts during a breast self-exam for breast awareness. If there is a new change, lumps or other unusual signs in your breasts, talk to your doctor promptly.

- Breast awareness can't prevent breast cancer, but it may help you to better understand the normal changes that your breasts undergo and identify any unusual signs and symptoms.
- Limit the amount of alcohol you drink to no more than one drink a day, if you choose to drink.
- Aim for at least 30 minutes of exercise on most days of the week. If you haven't been active lately, ask your doctor whether it's OK and start slowly.
- Combination hormone therapy may increase the risk of breast cancer. Talk with your doctor about the benefits and risks of hormone therapy. Some women experience bothersome signs and symptoms during menopause and, for these women, the increased risk of breast cancer may be acceptable in order to relieve menopause signs and symptoms. To reduce the risk of breast cancer, use the lowest dose of hormone therapy possible for the shortest amount of time.
- If your weight is healthy, work to maintain that weight. If you need to lose weight, ask your doctor about healthy strategies to accomplish this. Reduce the number of calories you eat each day and slowly increase the amount of exercise.
- Women who eat a Mediterranean diet supplemented with extra-virgin olive oil and mixed nuts may have a reduced risk of breast cancer. The Mediterranean diet focuses mostly on plant-based foods, such as fruits and vegetables, whole grains, legumes, and nuts. People who follow the Mediterranean diet choose healthy fats, such as olive oil, over butter and fish instead of red meat. The non-vegetarian food having the risk of cancer specially breast cancer in female by the accumulation of heavy metals and pesticide.

If your doctor has assessed your family history and determined that you have other factors, such as a precancerous breast condition, you may reduce your risk, such as:

- By using preventive medications (chemoprevention)such as Estrogen-blocking medications, and aromatase inhibitors, reduces the risk of breast cancer in women with a high risk of the disease. High-risk women may benefit from medications to lower their risk for breast cancer. **Tamoxifen** blocks the effect of estrogen on breast tissue and **Raloxifene** works in a similar way as tamoxifen. It is used to lower breast cancer risk in postmenopausal women. Raloxifene has a lower risk for endometrial cancer and blood clots and fewer side effects than tamoxifen [11].
- Preventive surgery. Women with a very high risk of breast cancer may choose to have their healthy breasts surgically removed (prophylactic mastectomy). They may also choose to have their healthy ovaries removed (prophylactic oophorectomy) to reduce the risk of both breast cancer and ovarian cancer. A prophylactic mastectomy is a preventive surgery that helps reduce a person’s risk of breast cancer by up to 95%. During the procedure, a surgeon will remove most breast tissue from one or both breasts. It is a surgery that prevents the breast cancer in female [12].

8. Treatment of breast cancer

Breast cancer treatment can be highly effective, achieving survival probabilities of 90% or higher, particularly when the disease is identified early. Treatment generally consists of surgery and radiation therapy for control of the disease in the breast, lymph nodes and surrounding areas (locoregional control) and systemic therapy (anti-cancer medicines given by mouth or intravenously) to treat and/or reduce the risk of the cancer spreading (metastasis). Anti-cancer medicines include endocrine (hormone) therapy, chemotherapy and in some cases targeted biologic therapy (antibodies).

Breast cancer treatment can be highly effective, especially when the disease is identified early. Treatment of breast cancer often consists of a combination of surgical removal, radiation therapy and medication (hormonal therapy, chemotherapy and/or targeted biological therapy) to treat the microscopic cancer that has spread from the breast

tumor through the blood. Such treatment, which can prevent cancer growth and spread, thereby saves lives. Breast cancer is most often diagnosed in adults over the age of 50, but it can occur at any age.

The cytological changes due to oncotherapy in breast carcinoma cancer especially, on morphometry and proliferative activity which was collected from a total of 32 female patients suffering invasive ductal carcinoma both before and after oncotherapy [13]. A great deal is known on the epidemiology of breast cancer. The epidemiology and trends in incidence of breast cancer in various populations of India [3]. In the past, all breast cancers were treated surgically by mastectomy (complete removal of the breast). When cancers are large, mastectomy may still be required. Today, the majority of breast cancers can be treated with a smaller procedure called a "lumpectomy" or partial mastectomy, in which only the tumor is removed from the breast. In these cases, radiation therapy to the breast is generally required to minimize the chances of recurrence in the breast. Cancers that do not express ER or PR are "hormone receptor negative" and need to be treated with chemotherapy unless the cancer is very small. The chemotherapy regimens available today are very effective in reducing the chances of cancer spread or recurrence and are generally given as outpatient therapy.

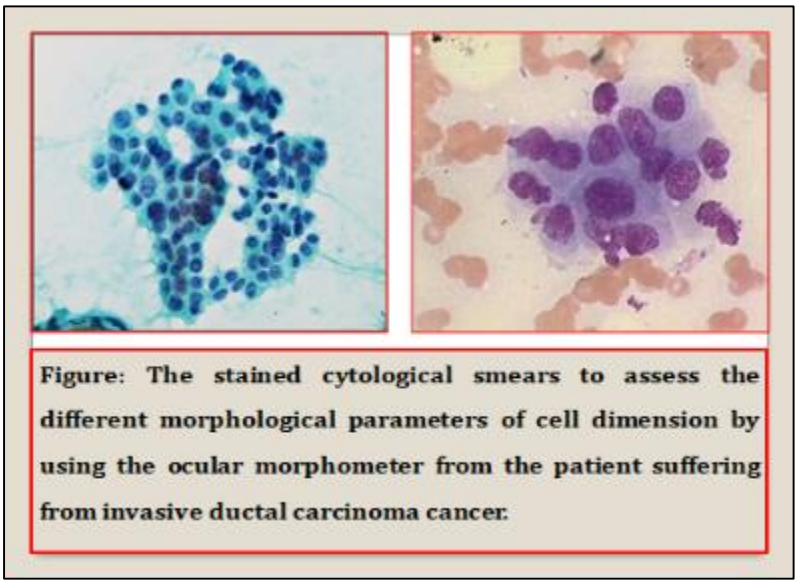

Figure 5 Cytological changes in the cells of ductal carcinoma cancer.

Cancer that expresses the estrogen receptor (ER) and/or progesterone receptor (PR) are likely to respond to endocrine (hormone) therapies such as tamoxifen or aromatase inhibitors. These medicines are taken orally for 5-10 years, and reduce the chance of recurrence of these "hormone-positive" cancers by nearly half. Endocrine therapies can cause symptoms of menopause but are generally well tolerated [11]. Breast cancers may independently over express a molecule called the HER-2/neu oncogene. These "HER-2 positive" cancers are amenable to treatment with targeted biological agents such as trastuzumab. These biological agents are very effective but also very expensive, because they are antibodies rather than chemicals. When targeted biological therapies are given, they are combined with chemotherapy to make them effective at killing cancer cells [14].

Radiotherapy also plays a very important role in treating breast cancer. in the early-stage breast cancers, radiation can prevent a woman having to undergo a mastectomy. With later stage cancers, radiotherapy can reduce cancer recurrence risk even when a mastectomy has been performed. For advanced stage of breast cancer, in some circumstances, radiation therapy may reduce the likelihood of dying of the disease. The effectiveness of breast cancer therapies depends on the full course of treatment. Partial treatment is less likely to lead to a positive outcome [15].

9. Challenges in breast cancer

Breast cancer, perhaps more than any other solid tumor, was transformed by the progressive application of clinical hypothesis testing of basic biologic concepts. Survival of breast cancer for at least 5 years after diagnosis ranges from more than 90% in high-income countries, to 66% in India and 40% in South Africa. Early detection and treatment has proven successful in high-income countries and should be applied in countries with limited resources where some of the standard tools are available. The great majority of drugs used for breast cancer are already on the WHO Essential Medicines List (EML). Thus, major global improvements in breast cancer can result from implementing what we already

know works. By focusing on the areas in which the greatest progress has been seen: the revolution in locoregional therapy; the application of cytotoxic chemotherapy in both local and advanced disease; the discovery and therapeutic exploitation of estrogen receptor biology; the use of estrogen receptor biology for breast cancer prevention; and the targeting of the human epidermal growth factor receptor complex.

The revolutionary overthrow of the Halstedian hypothesis, with its emphasis on the primacy of locoregional control through extensive surgery, led to changes both in locoregional therapy as well as providing the intellectual basis for adjuvant systemic therapies. And, at a time when systemic therapies were dominated by rank empiricism, breast cancer led the way in the application of targeted biologic therapy, long before targeted therapy became an oncologic mantra.

The *HER2* gene amplification in 1980s was recognized as a prognostic marker for poor clinical outcome in early-stage breast cancer [16]. While retrospective adjuvant anthracycline regimens, with HER2-positive patients developed monoclonal anti-HER2 antibody trastuzumab [17]. The Trastuzumab resistance occurs in both the metastatic and adjuvant settings. The tyrosine kinase inhibitor lapatinib, the anti HER2-HER3 dimerization antibody pertuzumab, and the antibody drug conjugate ado-trastuzumab emtansine or T-DM1. Therapy in Patients with HER2-Positive Breast Cancer Who Have Residual Tumor in the Breast or Axillary Lymph Nodes Following Preoperative Therapy (KATHERINE) is examining the role of postoperative T-DM1 versus trastuzumab in patients with HER2-positive disease and less than a pathologic complete response after preoperative therapy with a trastuzumab-based regimen [18].

10. Discussion

A plan for the diagnosis and treatment of cancer is a key component of any overall cancer control plan. Its main goal is to cure cancer patients or prolong their life considerably, ensuring a good quality of life. In order for a diagnosis and treatment programmed to be effective, it must never be developed in isolation. It needs to be linked to an early detection programme so that cases are detected at an early stage, when treatment is more effective and there is a greater chance of cure. It also needs to be integrated with a palliative care programme, so that patients with advanced cancers, who can no longer benefit from treatment, will get adequate relief from their physical, psychosocial and spiritual suffering. Furthermore, programmes should include an awareness-raising component, to educate patients, family and community members about the cancer risk factors and the need for taking preventive measures to avoid developing cancer.

Where resources are limited, diagnosis and treatment services should initially target all patients presenting with curable cancers, such as breast, cervical and oral cancers that can be detected early. They could also include childhood acute lymphatic leukemia, which has a high potential for cure although it cannot be detected early. Above all, services need to be provided in an equitable and sustainable manner. As and when more resources become available, the programme can be extended to include other curable cancers as well as cancers for which treatment can prolong survival considerably.

In India the breast cancer in young women specially that women which are below the age of 40 years are rare and carries a poor prognosis relative to breast cancer in older women. Most studies examining global breast cancer patterns do not describe the trends in young women specifically. The rate of carcinoma of the breast was found as high as 41 per 100,000 women for Delhi, followed by Chennai (37.9), Bangalore (34.4) and Thiruvananthapuram District (33.7) but a statistically significant increase in age adjusted rate over time (1982-2014) in the Bangalore 2.84%, Barshi 1.87%, Bhopal 2.00%, Chennai 2.44%, Delhi 1.44% and Mumbai 1.42% was observed [1]. Besides this young age has been found as a major risk factor for breast cancer in Indian women. Breast cancer projection for India during time periods 2020 suggests the number to go as high as 1797900.

Globally, the risk of developing breast cancer to age 39 ranged from 0.13% in Guinea to 0.95% in South Korea (coefficient of variation: 46%), and the risk of death from breast cancer to age 39 ranged from 0.02% in China to 0.72% in Cameroon (coefficient of variation: 81%). In contrast, the risk of developing breast cancer to age 74 ranged from 1.5% in Mozambique to 12.2% in Belgium (coefficient of variation: 50%), and the risk of death from breast cancer to age 74 ranged from 0.65% in South Korea to 3.0% in Somalia (coefficient of variation: 36%) [2]. From various latest national cancer registries were compared for incidence, mortality rates. The age adjusted incidence Mortality-to-incidence ratio was found to be as high as 66 in rural registries whereas as low as 8 in urban registries.

Better health awareness and availability of breast cancer screening programmed and treatment facilities would cause a favorable and positive clinical picture in the country**.** Population in which cancers are detected at earlier stages have lower breast cancer mortality rates. The effectiveness and efficiency of screening modalities, including screening mammography, clinical breast examination (CBE), and breast self-examination, were reviewed in the context of resource availability and population-based need by the panel [19]. Social and cultural barriers should be considered

when early detection programs are being established, and the evaluation of early detection programs should include the use of well developed, methodologically sound process metrics to determine the effectiveness of program implementation [19].

Our study was done to assess the cytological changes due to oncotherapy in breast carcinoma especially on morphometry and proliferative activity. Cytological aspirates were collected from a total of 32 cases of invasive ductal carcinoma both before and after oncotherapy. Different morphological parameters were compared before and after oncotherapy by unpaired Student's t test. Statistically significant differences were found in morphometric parameters, e.g., mean nuclear diameter, mean nuclear area, mean cell diameter, and mean cell area, and in the expression of proliferative markers (Ki-67 and PCNA). Statistical analysis was done by obtaining p values. There are statistically significant differences between morphological parameter of breast carcinoma cells before and after oncotherapy [13].

The phases of early detection program development, beginning with management strategies required for the diagnosis of clinically detectable disease based on awareness education and technical training, history and physical examination, and accurate tissue diagnosis. The core issues address includes finance and governance, which pertain to successful planning, implementation, and the iterative process of program improvement and are needed for a breast cancer early detection program to succeed in any resource setting [20].

10.1. What race is most affected by breast cancer?

Overall, women who are non-Hispanic white have a slightly higher chance of developing breast cancer than women of any other race or ethnicity. Women who are non-Hispanic Black are almost as likely as non-Hispanic white women to develop the disease. Statistically, women who are Asian, Hispanic or Native American are the least likely to develop breast cancer. In India breast cancer is the second-leading cause of cancer death in women, after lung cancer. It's also the leading cause of cancer death among women ages 35 to 54.

11. Conclusion

This review article is based on the current status of breast cancer in female. The factors responsible for inducing cancer of breast is carcinogens chemicals which intake and by respiration this chemical enters in female body and by accumulation it induced breast cancer. If all female and male avoids all these chemicals in our diet and maintained your health in best condition than breast cancer is under control and prevented by medically treatment either by surgery and by using anticancer medicine.

Compliance with ethical standards

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Disclosure of conflict of interest

The authors declare no competing financial interests.

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