ejpmr, 2021,8(2), 247-257

SJIF Impact Factor 6.222

EUROPEAN JOURNAL OF PHARMACEUTICAL AND MEDICAL RESEARCH

www.ejpmr.com

Review Article

ISSN 2394-3211

EJPMR

HISTOPATHOLOGY OF MAMMARY GLAND ONCOTHERAPY TO DEFEAT THE PINK RIBBON

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Article Received on 04/12/2020 **Article Revised on 25/12/2020** **Article Accepted on 15/01/2021**

ABSTRACT

Breast cancer is cancer that develops from breast tissue. Signs of breast cancer may include a lump in the breast, a change in breast shape, dimpling of the skin, fluid coming from the nipple, a newly-inverted nipple, or a red or scaly patch of skin. In those with distant spread of the disease, there may be bone pain, swollen lymph nodes, shortness of breath, or yellow skin. Risk factors for developing breast cancer include being female, obesity, a lack of physical exercise, alcoholism, hormone replacement therapy during menopause, ionizing radiation, an early age at first menstruation, having children late in life or not at all, older age, having a prior history of breast cancer, and a family history of breast cancer. About 5–10% of cases are the result of a genetic predisposition inherited from a person's parents, including BRCA1 and BRCA2 among others. Breast cancer most commonly develops in cells from the lining of milk ducts and the lobules that supply these ducts with milk. Cancers developing from the ducts are known as ductal carcinomas, while those developing from lobules are known as lobular carcinomas. There are more than 18 other sub-types of breast cancer. Some, such as ductal carcinoma in situ, develop from pre-invasive lesions. The diagnosis of breast cancer is confirmed by taking a biopsy of the concerning tissue. Once the diagnosis is made, further tests are done to determine if the cancer has spread beyond the breast and which treatments are most likely to be effective.

KEYWORDS: Breast Cancer, Mammogram, Histopathology.

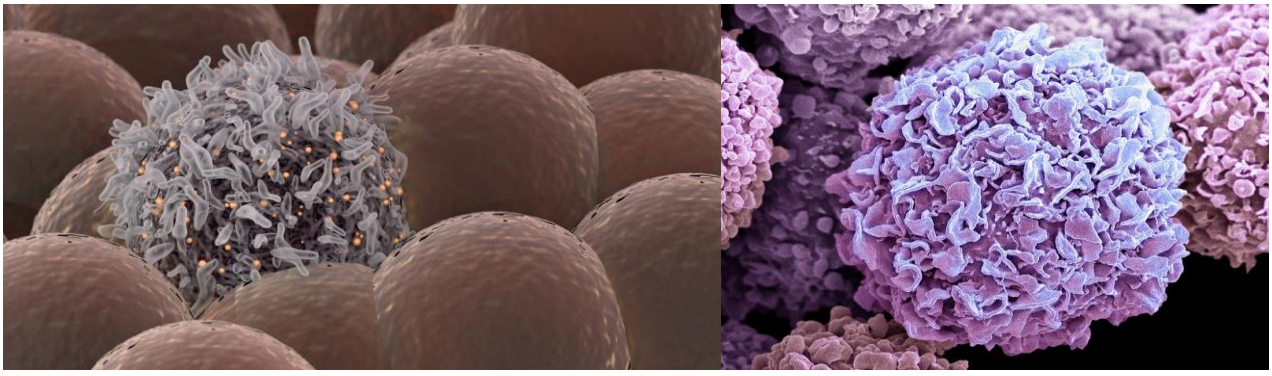

Figure-1: Scanning Electron Micrograph of malignant cell.

INTRODUCTION

A mammary gland is an exocrine gland in humans and other mammals that produces milk to feed young offspring. Mammals get their name from the Latin word mamma, "breast". The mammary glands are arranged in organs such as the breasts in primates (for example, humans and chimpanzees), the udder in ruminants (for example, cows, goats, and deer), and the dugs of other animals (for example, dogs and cats). Lactorrhea, the occasional production of milk by the glands, can occur in any mammal, but in most mammals, lactation, the production of enough milk for nursing, occurs only in phenotypic females who have gestated in recent months or years. They are both cancer types. They both end in “oma,” a suffix meaning tumor or cancer. But that’s where the similarities between carcinoma and sarcoma end. Rather, these two cancers are different in more ways than they are alike, starting with the fact that carcinomas are very common and sarcomas are fairly rare. The biggest difference between the two, though, has nothing

to do with how often they occur, but where. The main difference between carcinomas and sarcomas comes down to tissue. A carcinoma forms in the skin or tissue cells that line the body's internal organs, such as the kidneys and liver.[1] A sarcoma grows in the body's connective tissue cells, which include fat, blood vessels, nerves, bones, muscles, deep skin tissues and cartilage. Carcinomas are the most common type of cancer. Carcinoma subtypes include: Adenocarcinoma, including lung, colon and breast cancers, Squamous cell carcinoma, including head and neck, lung, anal and skin cancers, Transitional cell carcinoma, such as bladder cancer. Clear cell carcinoma, such as renal cell carcinoma. Symptoms and treatments for carcinoma depend on the subtype. Common symptoms of basal cell carcinoma include open sores, red patches, pink growths, and shiny bumps or scars. Squamous cell carcinomas, on the other hand, tend to crust or bleed, and may appear as scaly patches, open sores or warts. Treatment for carcinoma often includes surgery, radiation therapy and/or chemotherapy. Sarcomas have more than 50 subtypes. Sarcomas are categorized in two ways: Soft tissue sarcoma, which forms in soft tissues and Bone sarcoma (or osteosarcoma), which develops in bone tissue, cartilage or bone marrow.[2]

The first sign of a sarcoma in an arm, leg or the torso is typically a painless lump or swelling. In general, sarcomas are treated with surgery, and are harder to treat than carcinomas. The balance of benefits versus harms of breast cancer screening is controversial. A 2013 Cochrane review found that it was unclear if mammographic screening does more harm than good, in that a large proportion of women who test positive turn out not to have the disease. A 2009 review for the US Preventive Services Task Force found evidence of benefit in those 40 to 70 years of age, and the organization recommends screening every two years in women 50 to 74 years of age. The medications tamoxifen or raloxifene may be used in an effort to prevent breast cancer in those who are at high risk of developing it. Surgical removal of both breasts is another preventive measure in some high-risk women. In those who have been diagnosed with cancer, a number of treatments may be used, including surgery, radiation therapy, chemotherapy, hormonal therapy, and targeted therapy. Types of surgery vary from breast-conserving surgery to mastectomy. Breast reconstruction may take place at the time of surgery or at a later date. In those in whom the cancer has spread to other parts of the body, treatments are mostly aimed at improving quality of life and comfort.

Figure-2: Detection Of Breast Cancer Through Mammogram.

Outcomes for breast cancer vary depending on the cancer type, the extent of disease, and the person's age. The five-year survival rates in England and the United States are between 80 and 90%. In developing countries, five-year survival rates are lower. Worldwide, breast cancer is the leading type of cancer in women, accounting for 25% of all cases. In 2018 it resulted in 2 million new cases and 627,000 deaths. It is more common in developed countries and is more than 100 times more common in women than in men.[3]

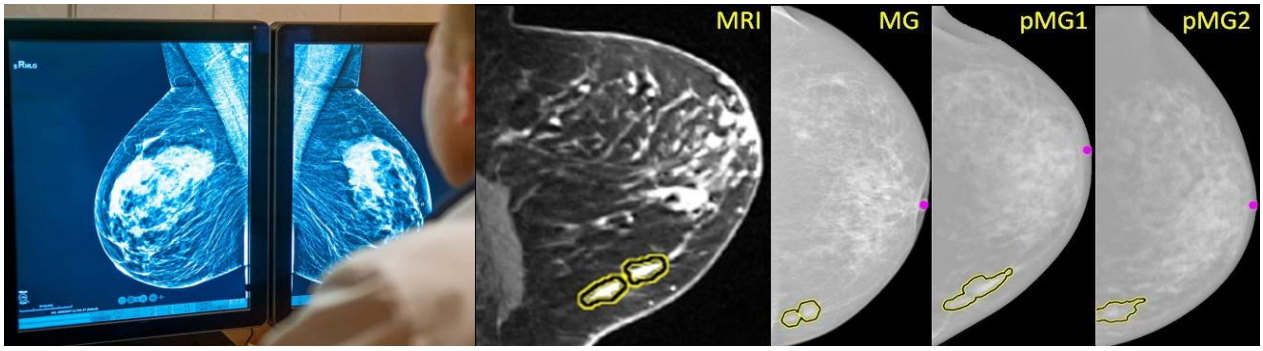

Figure-3: Mammogram Report.

Symptoms: Breast cancer most commonly presents as a lump that feels different from the rest of the breast tissue. More than 80% of cases are discovered when a person detects such a lump with the fingertips. The earliest breast cancers, however, are detected by a mammogram. Lumps found in lymph nodes located in the armpits may also indicate breast cancer.

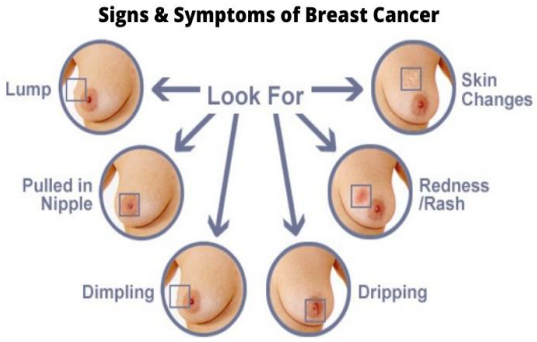

Figure-4: Symptoms of Breast Cancer.

Indications of breast cancer other than a lump may include thickening different from the other breast tissue, one breast becoming larger or lower, a nipple changing position or shape or becoming inverted, skin puckering or dimpling, a rash on or around a nipple, discharge from nipple/s, constant pain in part of the breast or armpit and swelling beneath the armpit or around the collarbone. Pain ("mastodynia") is an unreliable tool in determining the presence or absence of breast cancer, but may be indicative of other breast health issues.

Another symptom complex of breast cancer is Paget's disease of the breast. This syndrome presents as skin changes resembling eczema; such as redness, discoloration or mild flaking of the nipple skin. As Paget's disease of the breast advances, symptoms may include tingling, itching, increased sensitivity, burning, and pain. There may also be discharge from the nipple. Approximately half the women diagnosed with Paget's disease of the breast also have a lump in the breast.

Inflammatory Breast Cancer presents with similar effects. Inflammatory Breast Cancer is a rare (only seen in less than 5% of breast cancer diagnosis) yet aggressive form of breast cancer characterized by the swollen, red areas formed on the top of the Breast. The visual effects of Inflammatory Breast Cancer is a result of a blockage of lymph vessels by cancer cells. This type of breast cancer is seen in more commonly diagnosed in younger ages, obese women and African American women. As inflammatory breast cancer does not present as a lump there can sometimes be a delay in diagnosis.

In rare cases, what initially appears as a fibroadenoma (hard, movable non-cancerous lump) could in fact be a phyllodes tumor. Phyllodes tumors are formed within the stroma (connective tissue) of the breast and contain glandular as well as stromal tissue. Phyllodes tumors are not staged in the usual sense; they are classified on the basis of their appearance under the microscope as benign, borderline or malignant.

Malignant tumors can result in metastatic tumors—secondary tumors (originating from the primary tumor) that spread beyond the site of origination. The symptoms caused by metastatic breast cancer will depend on the location of metastasis. Common sites of metastasis include bone, liver, lung, and brain. When cancer has reached such an invasive state, it is categorized as a stage 4 cancer, cancers of this state are oftentimes fatal. Common symptoms of stage 4 cancer include unexplained weight loss, bone and joint pain, jaundice and neurological symptoms. These symptoms are called non-specific symptoms because they could be manifestations of many other illnesses. Rarely breast cancer can spread to exceedingly uncommon sites such as peripancreatic lymph nodes causing biliary obstruction leading to diagnostic difficulties.

Most symptoms of breast disorders, including most lumps, do not turn out to represent underlying breast cancer. Less than 20% of lumps, for example, are cancerous, and benign breast diseases such as mastitis and fibroadenoma of the breast are more common causes of breast disorder symptoms.

Lifestyle: Obesity and drinking alcoholic beverages are among the most common modifiable risk factors. However, the correlation between these factors and breast cancer is anything but linear. Studies show that those who rapidly gain weight in adulthood are at higher risk than those who have been overweight since childhood. Likewise excess fat in the midsection seems to induce a higher risk than excess weight carried in the lower body. This implies that the food one eats is of greater importance than one's BMI.[4]

The consumption of alcohol is linked to the risk for breast cancer. Drinking alcoholic beverages increases the risk of breast cancer, even at relatively low (one to three drinks per week) and moderate levels. The risk is highest among heavy drinkers. Dietary factors that may increase risk include a high-fat diet and obesity-related high cholesterol levels. Dietary iodine deficiency may also play a role. Evidence for fiber is unclear. A 2015 review found that studies trying to link fiber intake with breast cancer produced mixed results. In 2016 a tentative association between low fiber intake during adolescence and breast cancer was observed.

Smoking tobacco appears to increase the risk of breast cancer, with the greater the amount smoked and the earlier in life that smoking began, the higher the risk. In those who are long-term smokers, the risk is increased 35% to 50%. A lack of physical activity has been linked to about 10% of cases. Sitting regularly for prolonged periods is associated with higher mortality from breast

cancer. The risk is not negated by regular exercise, though it is lowered.

There is an association between use of hormonal birth control and the development of premenopausal breast cancer, but whether birth control pills actually cause premenopausal breast cancer is a matter of debate. If there is indeed a link, the absolute effect is small. Additionally, it is not clear if the association exists with newer hormonal birth controls. In those with mutations in the breast cancer susceptibility genes *BRCA1* or *BRCA2*, or who have a family history of breast cancer, use of modern oral contraceptives does not appear to affect the risk of breast cancer.

Genetics: Genetics is believed to be the primary cause of 5–10% of all cases. Women whose mother was diagnosed before 50 have an increased risk of 1.7 and those whose mother was diagnosed at age 50 or after has an increased risk of 1.4. In those with zero, one or two affected relatives, the risk of breast cancer before the age of 80 is 7.8%, 13.3%, and 21.1% with a subsequent mortality from the disease of 2.3%, 4.2%, and 7.6% respectively. In those with a first degree relative with the disease the risk of breast cancer between the age of 40 and 50 is double that of the general population.

In less than 5% of cases, genetics plays a more significant role by causing a hereditary breast–ovarian cancer syndrome. This includes those who carry the *BRCA1* and *BRCA2* gene mutation. These mutations account for up to 90% of the total genetic influence with a risk of breast cancer of 60–80% in those affected. Other significant mutations include *p53* (Li–Fraumeni syndrome), *PTEN* (Cowden syndrome), and *STK11* (Peutz–Jeghers syndrome), *CHEK2*, *ATM*, *BRIP1*, and *PALB2*. In 2012, researchers said that there are four genetically distinct types of the breast cancer and that in each type, hallmark genetic changes lead to many cancers.

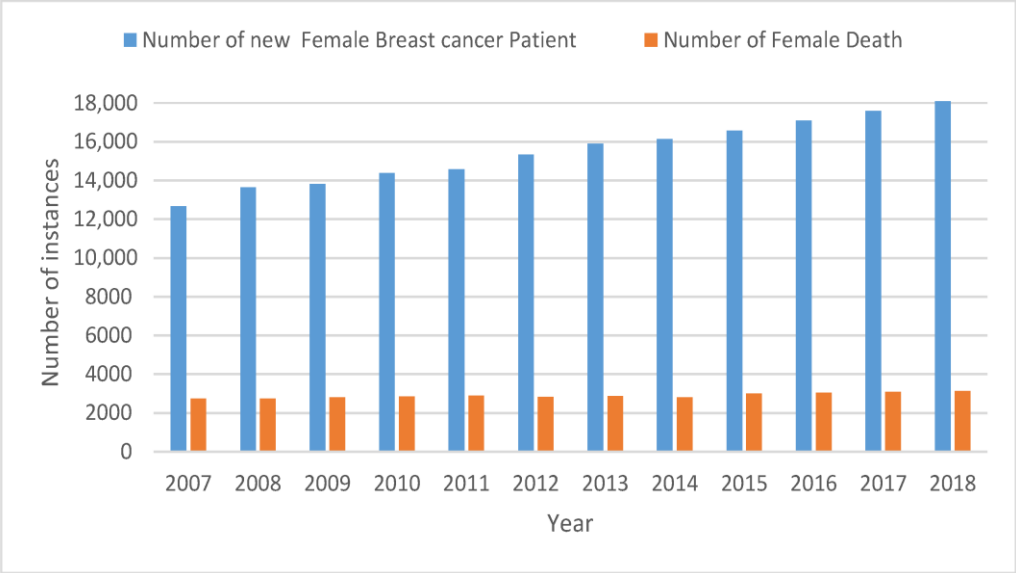

Figure-5: Graphical Representation of Number of Breast Cancer Patients Year after Year.

Other genetic predispositions include the density of the breast tissue and hormonal levels. Women with dense breast tissue are more likely to get tumors and are less likely to be diagnosed with breast cancer - because the dense tissue makes tumors less visible on mammograms. Furthermore, women with naturally high estrogen and progesterone levels are also at higher risk for tumor development.[5]

Diagnosis: Most types of breast cancer are easy to diagnose by microscopic analysis of a sample - or biopsy - of the affected area of the breast. Also, there are types of breast cancer that require specialized lab exams.

The two most commonly used screening methods, physical examination of the breasts by a healthcare provider and mammography, can offer an approximate likelihood that a lump is cancer, and may also detect some other lesions, such as a simple cyst. When these examinations are inconclusive, a healthcare provider can remove a sample of the fluid in the lump for microscopic analysis (a procedure known as fine needle aspiration, or fine needle aspiration and cytology, FNAC) to help establish the diagnosis. A needle aspiration can be performed in a healthcare provider's office or clinic. A local anesthetic may be used to numb the breast tissue to prevent pain during the procedure, but may not be necessary if the lump isn't beneath the skin. A finding of clear fluid makes the lump highly unlikely to be cancerous, but bloody fluid may be sent off for inspection under a microscope for cancerous cells. Together, physical examination of the breasts, mammography, and FNAC can be used to diagnose breast cancer with a good degree of accuracy.

Other options for biopsy include a core biopsy or vacuum-assisted breast biopsy, which are procedures in which a section of the breast lump is removed; or an excisional biopsy, in which the entire lump is removed. Very often the results of physical examination by a healthcare provider, mammography, and additional tests that may be performed in special circumstances (such as imaging by ultrasound or MRI) are sufficient to warrant excisional biopsy as the definitive diagnostic and primary treatment method.

Histopathology

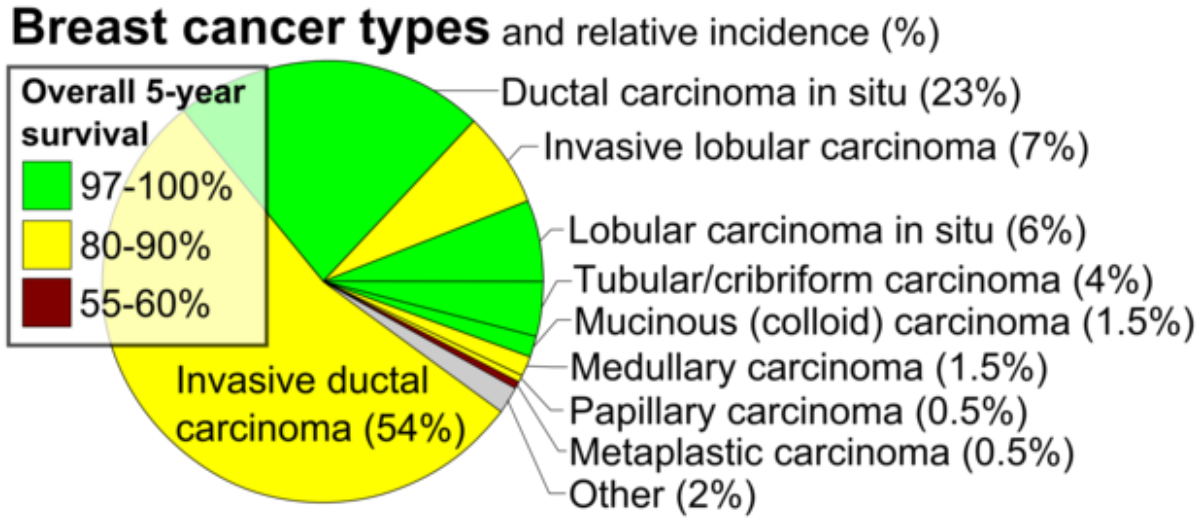

Figure-6: Histopathologic types of breast cancer, with relative incidences and prognoses.

Histopathologic classification is based upon characteristics seen upon light microscopy of biopsy specimens. They can broadly be classified into

Carcinoma *in situ*. This group constitutes about 15-30% of breast biopsies, more so in countries with high coverage of breast screening programs. These have favorable prognosis, with 5-year survival rates of 97-99%.

Invasive carcinoma. This group constitutes the other 70-85%. The most common type in this group is invasive ductal carcinoma, representing about 80% of invasive carcinomas. In the USA, 55% of breast cancers are invasive ductal carcinoma. Invasive lobular carcinoma represents about 10% of invasive carcinomas, and 5% of all breast cancers in the US. The overall 5-year survival rate for both invasive ductal carcinoma and invasive lobular carcinoma was approximately 85% in 2003. Ductal carcinoma in situ, on the other hand, is in itself harmless, although if untreated approximately 60% of these low-grade DCIS lesions will become invasive over the course of 40 years in follow-up.

Prevention

Lifestyle: Women can reduce their risk of breast cancer by maintaining a healthy weight, reducing alcohol use, increasing physical activity, and breast-feeding. These modifications might prevent 38% of breast cancers in the US, 42% in the UK, 28% in Brazil, and 20% in China. The benefits with moderate exercise such as brisk walking are seen at all age groups including postmenopausal women. High levels of physical activity reduce the risk of breast cancer by about 14%. Strategies that encourage regular physical activity and reduce obesity could also have other benefits, such as reduced risks of cardiovascular disease and diabetes.

The American Cancer Society and the American Society of Clinical Oncology advised in 2016 that people should eat a diet high in vegetables, fruits, whole grains, and legumes. High intake of citrus fruit has been associated with a 10% reduction in the risk of breast cancer. Marine omega-3 polyunsaturated fatty acids appear to reduce the risk. High consumption of soy-based foods may reduce risk.[6]

Pre emptive surgery: Removal of both breasts before any cancer has been diagnosed or any suspicious lump or other lesion has appeared (a procedure known as "prophylactic bilateral mastectomy" or "risk reducing mastectomy") may be considered in people with BRCA1 and BRCA2 mutations, which are associated with a substantially heightened risk for an eventual diagnosis of breast cancer. Evidence is not strong enough to support this procedure in anyone but those at the highest risk. BRCA testing is recommended in those with a high family risk after genetic counseling. It is not recommended routinely. This is because there are many forms of changes in BRCA genes, ranging from harmless polymorphisms to obviously dangerous frameshift mutations. The effect of most of the identifiable changes in the genes is uncertain. Testing in an average-risk person is particularly likely to return one of these indeterminate, useless results. Removing the second breast in a person who has breast cancer (contralateral risk-reducing mastectomy or CRRM) may reduce the risk of cancer in the second breast, however, it is unclear

if removing the second breast in those who have breast cancer improves survival.

Medications: The selective estrogen receptor modulators (such as tamoxifen) reduce the risk of breast cancer but increase the risk of thromboembolism and endometrial cancer. There is no overall change in the risk of death. They are thus not recommended for the prevention of breast cancer in women at average risk but it is recommended they be offered for those at high risk and over the age of 35. The benefit of breast cancer reduction continues for at least five years after stopping a course of treatment with these medications. Aromatase inhibitors (such as exemestane and anasatrozole) may be more effective than selective estrogen receptor modulators (such as tamoxifen) at reducing breast cancer risk and they are not associated with an increased risk of endometrial cancer and thromboembolism.

Figure-7: Types of Drugs Used in Breast Cancer.

Management: The management of breast cancer depends on various factors, including the stage of the cancer and the person's age. Treatments are more aggressive when the cancer is more advanced or there is a higher risk of recurrence of the cancer following treatment.

Breast cancer is usually treated with surgery, which may be followed by chemotherapy or radiation therapy, or both. A multidisciplinary approach is preferable. Hormone receptor-positive cancers are often treated with hormone-blocking therapy over courses of several years. Monoclonal antibodies, or other immune-modulating treatments, may be administered in certain cases of metastatic and other advanced stages of breast cancer. Although this range of treatment is still being studied.[7]

Surgery

Figure-8: Normal breast and breast after mastectomy.

Surgery involves the physical removal of the tumor, typically along with some of the surrounding tissue. One or more lymph nodes may be biopsied during the surgery; increasingly the lymph node sampling is performed by a sentinel lymph node biopsy.
Standard surgeries include:

- Mastectomy: Removal of the whole breast.
- Quadrantectomy: Removal of one-quarter of the breast.
- Lumpectomy: Removal of a small part of the breast.

Once the tumor has been removed, if the person desires, breast reconstruction surgery, a type of plastic surgery, may then be performed to improve the aesthetic appearance of the treated site. Alternatively, women use breast prostheses to simulate a breast under clothing, or choose a flat chest. Nipple prosthesis can be used at any time following the mastectomy.

Medication

Figure-9: Say No To Breast Cancer.

Medications used after and in addition to surgery are called adjuvant therapy. Chemotherapy or other types of therapy prior to surgery are called neoadjuvant therapy. Aspirin may reduce mortality from breast cancer when used with other treatments.

There are currently three main groups of medications used for adjuvant breast cancer treatment: hormone-blocking agents, chemotherapy, and monoclonal antibodies.

Hormonal therapy: Some breast cancers require estrogen to continue growing. They can be identified by the presence of estrogen receptors (ER+) and progesterone receptors (PR+) on their surface (sometimes referred to together as hormone receptors). These ER+ cancers can be treated with drugs that either block the receptors, e.g. tamoxifen, or alternatively block the production of estrogen with an aromatase inhibitor, e.g. anastrozole or letrozole. The use of tamoxifen is recommended for 10 years. Letrozole is recommended for 5 years. Aromatase inhibitors are only suitable for women after menopause; however, in this group, they appear better than tamoxifen. This is because the active aromatase in postmenopausal women is different from the prevalent form in premenopausal women, and therefore these agents are ineffective in inhibiting the predominant aromatase of premenopausal women. Aromatase inhibitors should not be given to premenopausal women with intact ovarian function (unless they are also on treatment to stop their ovaries from working). CDK inhibitors can be used in combination with endocrine or aromatase therapy.

Chemotherapy: Chemotherapy is predominantly used for cases of breast cancer in stages 2–4, and is particularly beneficial in estrogen receptor-negative (ER-) disease. The chemotherapy medications are administered in combinations, usually for periods of 3–6 months. One of the most common regimens, known as "AC", combines cyclophosphamide with doxorubicin. Sometimes a taxane drug, such as docetaxel, is added, and the regime is then known as "CAT". Another common treatment is cyclophosphamide, methotrexate, and fluorouracil (or "CMF"). Most chemotherapy medications work by destroying fast-growing and/or fast-replicating cancer cells, either by causing DNA damage upon replication or by other mechanisms. However, the medications also damage fast-growing normal cells, which may cause serious side effects. Damage to the heart muscle is the most dangerous complication of doxorubicin, for example.[8]

Monoclonal antibodies: Trastuzumab, a monoclonal antibody to HER2, has improved the 5-year disease free survival of stage 1–3 HER2-positive breast cancers to about 87% (overall survival 95%).Between 25% and 30% of breast cancers overexpress the HER2 gene or its protein product, and overexpression of HER2 in breast cancer is associated with increased disease recurrence and worse prognosis. Trastuzumab, however, is very expensive, and its use may cause serious side effects (approximately 2% of people who receive it develop significant heart damage). Another antibody pertuzumab prevents HER2 dimerization and is recommended together with trastuzumab and chemotherapy in severe diease.

Radiation

Figure-10: Internal Radiotherapy For Breast Cancer.

Radiotherapy is given after surgery to the region of the tumor bed and regional lymph nodes, to destroy microscopic tumor cells that may have escaped surgery. When given intraoperatively as Targeted intraoperative radiotherapy, it may also have a beneficial effect on tumor microenvironment. Radiation therapy can be delivered as external beam radiotherapy or as brachytherapy (internal radiotherapy). Conventionally radiotherapy is given *after* the operation for breast cancer. Radiation can also be given at the time of operation on the breast cancer. Radiation can reduce the risk of recurrence by 50–66% (1/2 – 2/3 reduction of risk) when delivered in the correct dose and is considered essential when breast cancer is treated by removing only the lump (Lumpectomy or Wide local excision). In early breast cancer, partial breast irradiation does not give the same cancer control in the breast as treating the whole breast and may cause worse side effects.

Follow-up care: Care after primary breast cancer treatment, otherwise called 'follow-up care', can be intensive involving regular laboratory tests in asymptomatic people to try to achieve earlier detection of possible metastases. A review has found that follow-up programs involving regular physical examinations and yearly mammography alone are as effective as more intensive programs consisting of laboratory tests in terms of early detection of recurrence, overall survival and quality of life. Multidisciplinary rehabilitation programmes, often including exercise, education and psychological help, may produce short-term improvements in functional ability, psychosocial adjustment and social participation in people with breast cancer.[9]

Society and culture: Before the 20th century, breast cancer was feared and discussed in hushed tones, as if it were shameful. As little could be safely done with primitive surgical techniques, women tended to suffer silently rather than seeking care. When surgery advanced, and long-term survival rates improved, women began raising awareness of the disease and the possibility of successful treatment. The "Women's Field Army", run by the American Society for the Control of Cancer (later the American Cancer Society) during the 1930s and 1940s was one of the first organized campaigns. In 1952, the first peer-to-peer support group, called "Reach to Recovery", began providing post-mastectomy, in-hospital visits from women who had survived breast cancer. The breast cancer movement of the 1980s and 1990s developed out of the larger feminist movements and women's health movement of the 20th century. This series of political and educational campaigns, partly inspired by the politically and socially effective AIDS awareness campaigns, resulted in the widespread acceptance of second opinions before surgery, less invasive surgical procedures, support groups, and other advances in care.

Pink ribbon: A pink ribbon is the most prominent symbol of breast cancer awareness. Pink ribbons, which can be made inexpensively, are sometimes sold as fundraisers, much like poppies on Remembrance Day. They may be worn to honor those who have been diagnosed with breast cancer, or to identify products that the manufacturer would like to sell to consumers that are interested in breast cancer. In the 1990s breast cancer awareness campaigns were launched by US based corporations. As part of these cause related marketing campaigns corporations donated to a variety of breast cancer initiatives for every pink ribbon product that was purchased. The Wall Street Journal noted "that the strong emotions provoked by breast cancer translate to a company's bottom line". While many US corporations donated to existing breast cancer initiatives others such as Avon established their own breast cancer foundations on the back of pink ribbon products.

Wearing or displaying a pink ribbon has been criticized by the opponents of this practice as a kind of slacktivism, because it has no practical positive effect. It has also been criticized as hypocrisy, because some people wear the pink ribbon to show good will towards women with breast cancer, but then oppose these women's practical goals, like patient rights and anti-pollution legislation. Critics say that the feel-good nature of pink ribbons and pink consumption distracts society from the lack of progress on preventing and curing breast cancer. It is

also criticized for reinforcing gender stereotypes and objectifying women and their breasts. In 2002 Breast Cancer Action launched the "Think Before You Pink" campaign against pinkwashing to target businesses that have co-opted the pink campaign to promote products that cause breast cancer, such as alcoholic beverages.[10]

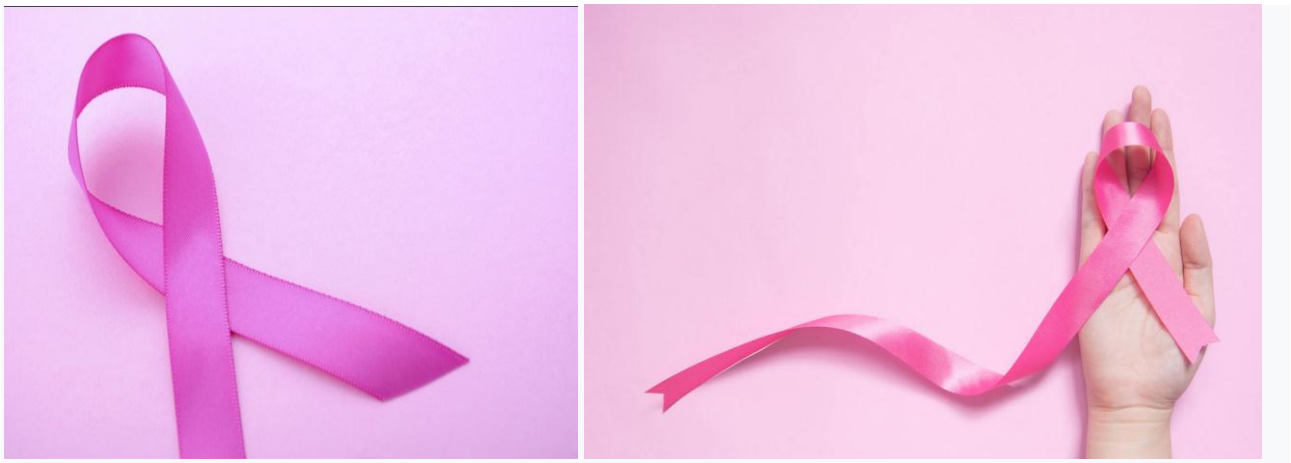

Figure-11: The pink ribbon is a symbol to show support for breast cancer awareness.

Breast cancer culture: In her 2006 book *Pink Ribbons, Inc.: Breast Cancer and the Politics of Philanthropy* Samantha King claimed that breast cancer has been transformed from a serious disease and individual tragedy to a market-driven industry of survivorship and corporate sales pitch. In 2010 Gayle Sulik argued that the primary purposes or goals of breast cancer culture are to maintain breast cancer's dominance as the pre-eminent women's health issue, to promote the appearance that society is doing something effective about breast cancer, and to sustain and expand the social, political, and financial power of breast cancer activists. In the same year Barbara Ehrenreich published an opinion piece in Harper's Magazine, lamenting that in breast cancer culture, breast cancer therapy is viewed as a rite of passage rather than a disease. To fit into this mold, the woman with breast cancer needs to normalize and feminize her appearance, and minimize the disruption that her health issues cause anyone else. Anger, sadness, and negativity must be silenced. As with most cultural models, people who conform to the model are given social status, in this case as cancer survivors. Women who reject the model are shunned, punished and shamed. The culture is criticized for treating adult women like little girls, as evidenced by "baby" toys such as pink teddy bears given to adult women.

CONCLUSION

Breast cancer culture: In her 2006 book *Pink Ribbons, Inc.: Breast Cancer and the Politics of Philanthropy* Samantha King claimed that breast cancer has been transformed from a serious disease and individual tragedy to a market-driven industry of survivorship and corporate sales pitch. In 2010 Gayle Sulik argued that the primary purposes or goals of breast cancer culture are to maintain breast cancer's dominance as the pre-eminent women's health issue, to promote the appearance that society is doing something effective about breast cancer, and to sustain and expand the social, political, and financial power of breast cancer activists In the same year Barbara Ehrenreich published an opinion piece in Harper's Magazine, lamenting that in breast cancer culture, breast cancer therapy is viewed as a rite of passage rather than a disease. To fit into this mold, the woman with breast cancer needs to normalize and feminize her appearance, and minimize the disruption that her health issues cause anyone else. Anger, sadness, and negativity must be silenced. As with most cultural models, people who conform to the model are given social status, in this case as cancer survivors. Women who reject the model are shunned, punished and shamed. The culture is criticized for treating adult women like little girls, as evidenced by "baby" toys such as pink teddy bears given to adult women.[11]

Emphasis: In 2009 the US science journalist Christie Aschwanden criticized that the emphasis on breast cancer screening may be harming women by subjecting them to unnecessary radiation, biopsies, and surgery. One-third of diagnosed breast cancers might recede on their own. Screening mammography efficiently finds non-life-threatening, asymptomatic breast cancers and precancers, even while overlooking serious cancers. According to the cancer researcher H. Gilbert Welch screening mammography has taken the "brain-dead approach that says the best test is the one that finds the most cancers" rather than the one that finds dangerous cancers.

In 2002 it was noted that as a result of breast cancer's high visibility, the statistical results can be misinterpreted, such as the claim that one in eight women will be diagnosed with breast cancer during their lives—a claim that depends on the unrealistic assumption that no woman will die of any other disease before the age of 95. By 2010 the breast cancer survival rate in Europe was 91% at one years and 65% at five years. In the USA the five-year survival rate for localized breast

cancer was 96.8%, while in cases of metastases it was only 20.6%. Because the prognosis for breast cancer was at this stage relatively favorable, compared to the prognosis for other cancers, breast cancer as cause of death among women was 13.9% of all cancer deaths. The second most common cause of death from cancer in women was lung cancer, the most common cancer worldwide for men and women. The improved survival rate made breast cancer the most prevalent cancer in the world. In 2010 an estimated 3.6 million women worldwide have had a breast cancer diagnosis in the past five years, while only 1.4 million male or female survivors from lung cancer were alive.

Racial differences in Breast Cancer Incidence/Mortality: There are racial disparities in the mortality rates for breast cancer as well as in breast cancer treatment. Breast cancer is the most prevalent cancer affecting women of every ethnic group in the United States. Breast cancer incidence among black women aged 45 and older is higher than that of white women in the same age group. White women aged 60-84 have higher incidence rates of breast cancer than Black women. Despite this, Black women at every age are more likely to succumb to breast cancer.

Breast cancer treatment has improved greatly in recent years, but black women are still less likely to obtain treatment compared to white women. Risk factors such as socioeconomic status, late-stage, or breast cancer at diagnosis, genetic differences in tumor subtypes, differences in health care access all contribute to these disparities. Socioeconomic determinants affecting the disparity in breast cancer illness include poverty, culture, as well as social injustice. In Hispanic women, the incidence of breast cancer is lower than in non-Hispanic women but is often diagnosed at a later stage than white women with larger tumors.

Black women are usually diagnosed with breast cancer at a younger age than white women. The median age of diagnosis for Black women is 59, in comparison to 62 in White women. The incidence of breast cancer in Black women has increased by 0.4% per year since 1975 and 1.5% per year among Asian/Pacific Islander women since 1992. Incidence rates were stable for non-Hispanic White, Hispanics, and Native women. The five-year survival rate is noted to be 81% in Black women and 92% in White women. Chinese and Japanese women have the highest survival rates.

Poverty is a major driver for disparities related to breast cancer. Low-income women are less likely to undergo breast cancer screening and thus are more likely to have a late-stage diagnosis. Ensuring women of all racial and ethnic groups receive equitable health care can positively affect these disparities.

Pregnancy: Pregnancy at an early age decreases the risk of developing breast cancer later in life. The risk of breast cancer also declines with the number of children a woman has. Breast cancer then becomes more common in the 5- or 10-years following pregnancy but then becomes less common than among the general population. These cancers are known as postpartum breast cancer and have worse outcomes including an increased risk of distant spread of disease and mortality. Other cancers found during or shortly after pregnancy appear at approximately the same rate as other cancers in women of a similar age.

Diagnosing new cancer in a pregnant woman is difficult, in part because any symptoms are commonly assumed to be a normal discomfort associated with pregnancy. As a result, cancer is typically discovered at a somewhat later stage than average in many pregnant or recently pregnant women. Some imaging procedures, such as MRIs (magnetic resonance imaging), CT scans, ultrasounds, and mammograms with fetal shielding are considered safe during pregnancy; some others, such as PET scans are not.

Treatment is generally the same as for non-pregnant women. However, radiation is normally avoided during pregnancy, especially if the fetal dose might exceed 100 cGy. In some cases, some or all treatments are postponed until after birth if the cancer is diagnosed late in the pregnancy. Early deliveries to speed the start of treatment are not uncommon. Surgery is generally considered safe during pregnancy, but some other treatments, especially certain chemotherapy drugs given during the first trimester, increase the risk of birth defects and pregnancy loss (spontaneous abortions and stillbirths). Elective abortions are not required and do not improve the likelihood of the mother surviving or being cured.

Radiation treatments may interfere with the mother's ability to breastfeed her baby because it reduces the ability of that breast to produce milk and increases the risk of mastitis. Also, when chemotherapy is being given after birth, many of the drugs pass through breast milk to the baby, which could harm the baby.

Regarding future pregnancy among breast cancer survivors, there is often fear of cancer recurrence. On the other hand, many still regard pregnancy and parenthood to represent normalcy, happiness and life fulfillment.

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