



EGYPTIAN ACADEMIC JOURNAL OF
BIOLOGICAL SCIENCES
ZOOLOGY

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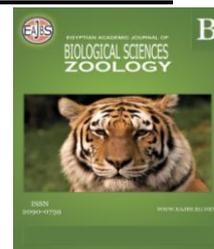


ISSN
2090-0759

WWW.EAJBS.EG.NET

Vol. 14 No. 1 (2022)

www.eajbs.eg.net



Breast Cancer: Hormonal Changes, Symptoms, Treatment and Factors Acting During Intrauterine Life.

Shaima R. Ibraheem¹ and Zina Lafta Hassan²

1-Department of Biotechnology, College of Science, University of Baghdad

2- College of Applied Sciences, University of Samarra /Iraq

E.mail*: Shaima.ibraheem@sc.uobaghdad.edu.iq

REVIEW INFO

Review History

Received:1/3/2022

Accepted:16/4/2022

Available:18/4/2022

Keywords:

Breast cancer, growth of cells, hormone therapy, mammography, premenopausal women, aromatase enzyme.

ABSTRACT

Breast cancer fatalities are falling, and the survival rate of those diagnosed with the disease is improving. Early identification of breast cancer, a thorough understanding of the illness, and the availability of several treatment options so that the most appropriate option is selected based on the individual's circumstances. For cancer that has spread to other parts of the body, hormonal medications are frequently combined with targeted therapy (metastatic breast cancer) Different abnormalities in cancer cells are exploited by guided treatment medicines. Combining them might improve the efficacy of hormone treatment.

INTRODUCTION

Breast cancer is one of the types of cancer that forms in the breast as a result of the inability to control the growth of cells. Every year there are about 1.38 million new cases of breast cancer and 458,000 deaths from breast cancer. Low- and middle-income countries are recommended to adopt early detection strategies for symptoms. Breast cancer is a kind of cancer that affects the tissue of the breast (Saldanha *et al.*, 2012). Breast cancer, obesity and lack of exercise, consuming alcohol, hormone replacement treatment after menopause, and ionizing radiation are all more common in women than they are in males early puberty in girls, having children later in life or not at all, and getting older are all factors to consider. An alteration in the gene, whether from the father or the mother, such as BRCA1, BRCA2, usually arises in 5-10 percent of genetic cases (B. D. Lehmann *et al.*, 2011).

History of Breast Cancer:

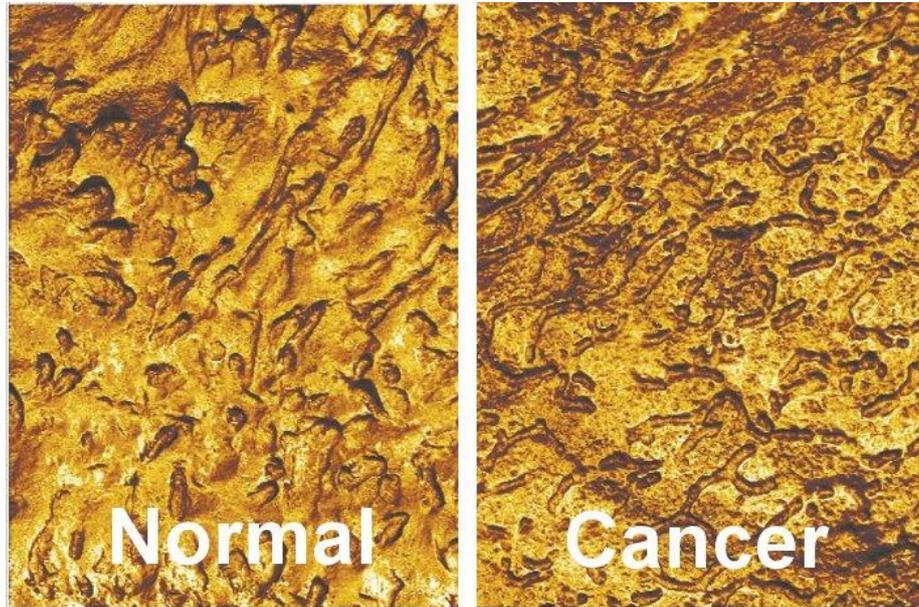


Fig. 1: Micrograph of one breast with cancer and the other healthy (Nagini, 2017).

The consequences of breast cancer differ depending on a number of circumstances, including the kind of cancer, the extent of the disease's spread throughout the body, and the patient's age. Europe has a high survival rate among industrialized nations, with a five-year survival rate of 75-90 percent. Survival rates are lower in underdeveloped countries than they are in developed countries. According to the Cochrane Foundation, it's still unclear if the risks of utilizing a mammogram to check the breast outweigh the advantages.

The risk of developing additional malignancies is increased in the families of women diagnosed with breast cancer before the age of 35. Researchers were taken aback by the findings, which they believe might herald the emergence of a new hereditary cancer condition. There might be unidentified genes that link breast cancer to other cancers in families (Herschkowitz *et al.*, 2007).

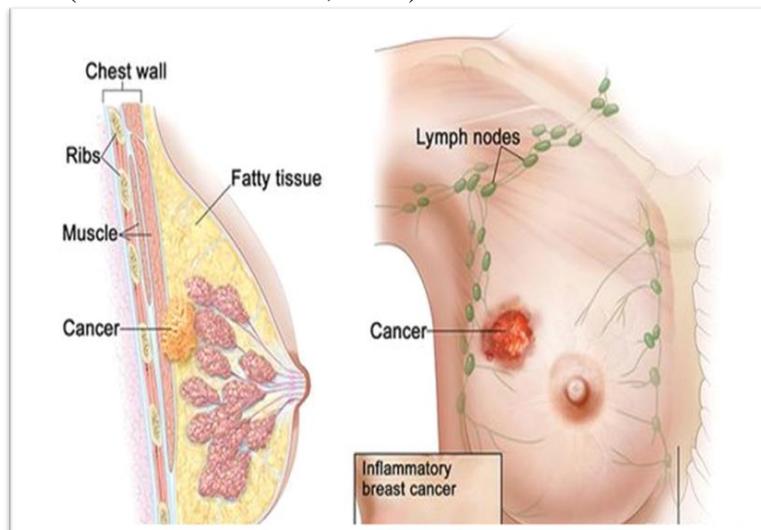


Fig. 2: inflammatory breast cancer (Mitra, 2017).

By the age of 35, the review had examined 2,200 parents, religion, and 350 brothers and sisters. They discovered that relatives of women who developed breast cancer at a young age had a higher chance of developing not just breast cancer, but also kidney, liver, and brain cancers. The risk of prostate cancer is five times higher in dads and siblings. A three-fold increase in the chance of developing brain cancer was discovered. The researchers wanted to discover what causes an unexpected appearance of the disease in the relatives of these women who were diagnosed before the age of 35 (Hortobagyi,1998).

Population and Incidence:

In the future, post-menopausal women's hormone use risks will be very relevant. Study Iceland (36.8%), Denmark (29.2%), Malta (28.4%), the Netherlands (27.8%), and the UK (27.8%) have the highest age-standardized breast cancer mortality rates (26.8). Study The average death rate in industrialized nations is 18.6 per 100,000, whereas the rate in poor countries is 9.1 per 100,000. Because breast cancer is the most common cancer among women, determining its probable link with other diseases is crucial (Mitra,2017).

Prevalence of Hormonal Steroid Use:

In 2001, the global usage of steroidal contraception, including oral, injectable, and implantable techniques, topped 8%, with 17 percent in the more industrialized nations. Hormone preparation use in menopausal and postmenopausal women is less well researched and less definite. In 1997, it was projected that 12 percent of women aged 45–64 years accepted menopausal hormone therapy globally.

Heterogeneity:

Breast cancer risk is higher when estrogen and progestogens are combined than when estrogen is used alone. Sulphurylation at position 3, conversion of 17d estradiol to 17d ethinyl-estradiol, and micronization can all be used to make estrogen more accessible. Oral, injectable, and topical progestogens are available. pharmacological characteristics, as well as transdermal and transvaginal routes. The effects of different progestogens used in contraceptive or menopausal hormone therapy formulations might be quite varied.

Breast Cancer in An Ageing Population:

By 2050, there will be 1.9 109 old individuals over the age of 60, and this growth is inescapable because these people are currently with us as teens or young adults. Because the rising number of elderly people will be accompanied by a steep drop in the number of children, the demographic composition will be even more diverse.

Hormones and Breast Cancer Development:

Hormones and other hormones that impact mammary gland development are possible breast cancer risk factors. Hormonal variables that impact breast cancer risk can act in adulthood and/or during pregnancy. The first pregnancy causes breast epithelial terminal differentiation, which lowers the chance of breast cancer.

Factors During Adult Life:

The significant influence played by female reproductive variables. Gender does, in fact, influence the occurrence of breast cancer. The second line of evidence is based on animal experiments that show estrogen and progesterone increase certain forms of breast tumors. Exogenous estrogens and progestin in hormonal contraceptives are linked to the third line, according to research. Breast cancer risk is increased by hormone therapy during menopause. Analytic epidemiological research, particularly cohort studies, that links different hormones and hormone receptor expression to the incidence of breast cancer is the fourth line of evidence.

Factors Acting During Intrauterine Life:

The idea that intrauterine component causes may have a role in breast cancer development is based on a few well-known hypotheses. Estrogen and progesterone hasten the division of breast epithelial cells, raising the chance of important mutations. Estrogen can also hasten the development of pre-clinical tumors, allowing for earlier detection. Despite the fact that pregnancy estrogens play an essential role in determining these variables, the relationship between perinatal factors and breast cancer risk in children does not inevitably or entirely implicate them.

Breast Cancer Risk in Relation to Childbearing and Breastfeeding:

The effect has proven difficult to identify. Because nursing is intertwined with other elements of childbirth, little research has been done on it. Women, for example, only breastfeed after live birth, and the earlier they start having children, the more children they have and the longer they breastfeed. Only a few of the 40 studies that have been conducted so far have had enough power to identify modest to moderate effects (Zheng *et al.*, 2016).

The Relative Contributions Of Childbearing And Breastfeeding To Breast Cancer Risk:

For women who have never nursed, each baby decreases the risk by 7% (SEM 1.0%). There is a greater risk drop when adjusting for childbearing history. The link between the number of children breastfed and the overall duration of breastfeeding appears to be secondary to the relationship between the number of children breastfed and the total duration of breastfeeding (Zhou *et al.*, 2016).

Impact on Different Populations:

Breastfeeding may have been responsible for about two-thirds of the decrease in breast cancer incidence in industrialized nations since 1990 (Maughan, *et al.*, 2010).

Types of Breast Cancer:

Breast cancer can originate in one of the following sections of the breast: milk ducts, milk-producing lobules, or connective tissues, and there are many various methods to determine the kind of breast cancer and the treatment strategy most suited to the person's situation (Liao *et al.*, 2015). The d is used to characterize the many kinds of breast cancer and to diagnose the illness. the doctor may encounter confusion and confusion about it, and in general, the most prominent types of breast cancer come as follows:

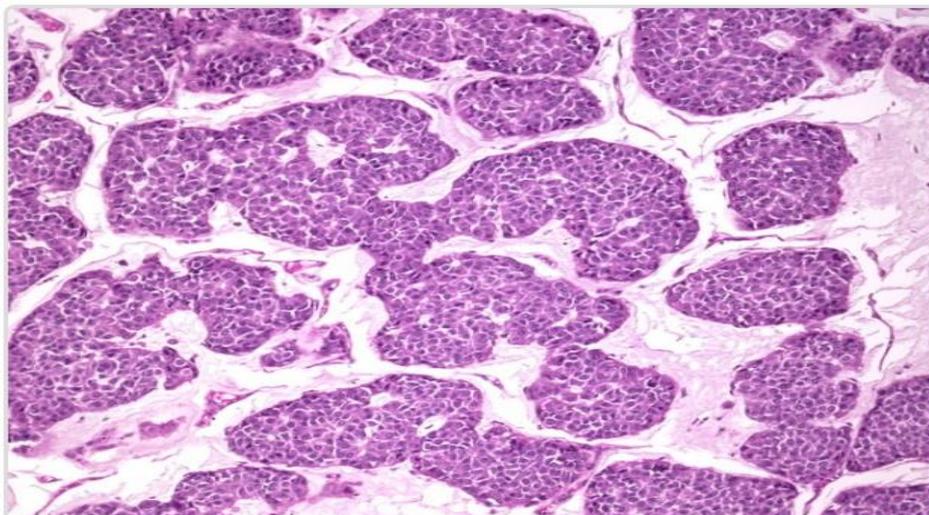


Fig. 3: Sample Mucinous Carcinoma of Breast (Maughan, *et al.*, 2010).

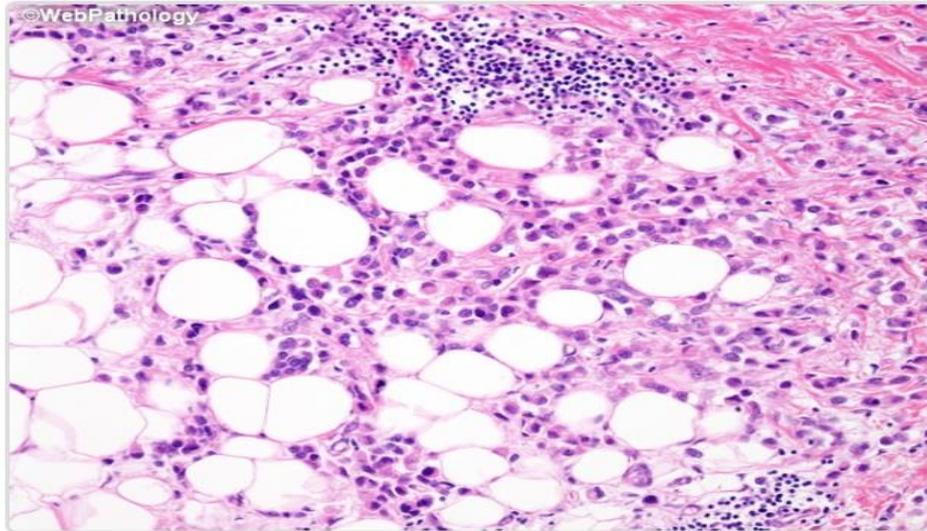


Fig. 4: Sample Infiltrating Lobular Carcinoma (Pierce *et al.*, 1992).

- Non-invasive breast cancer, also known as precancerous breast cancer, produces cancer cells that are contained and do not exit the milk ducts or lobules of the breast, and the following are the most common subtypes (Jiang *et al.*, 2007).

- The most prevalent kind of non-invasive breast cancer is ductal carcinoma in situ. It accounts for around 90% of it, and cancer is thought that local ductal carcinoma originates in the milk ducts and stays put, implying that it does not spread outside of them, the development of abnormal cells inside the lining of the inner lobules is known as lobular carcinoma in situ (Fumoleau *et al.*, 2004). People with localized lobular carcinoma can develop invasive breast cancer in either breast, however, most people with this kind do not get the invasive variety. DCIS is a kind of breast cancer that is in its early stages and does not represent a life-threatening hazard. The most common subtypes of invasive duct cancer are Medullary Ductal Carcinoma and Papillary Carcinoma. Women over the age of 60 are disproportionately affected by this kind. Mucinous ductal carcinoma is a kind of breast cancer that occurs when cancer cells leak mucous material (Rivera *et al.*, 2010).

This kind of cancer seldom spreads and reaches the lymph nodes. A solitary tumor developed in a person's body may be found in invasive breast cancer. In all cases, the patient does not feel the presence of a lump, but rather the emergence of sponge-like alterations in the breast tissue (Gottesman, *et al.*, 2002).

Breast Cancer and Its Relationship to Hormonal Change (Hormonal Imbalance):

Hormone imbalance occurs when the body produces too much or too little of a certain hormone. Hormone levels in our bodies change throughout our lives, depending on the phases of our development. Hormone treatment is only utilized for breast cancer if estrogen or progesterone receptors are present naturally. It can also be used to reduce the tumor before therapy, making it easier to remove (Grosso *et al.*, 2017).

Symptoms And Causes of Its Occurrence:

Paget's disease of the breast is a form of breast cancer characterized by symptoms that are comparable to eczema. Scratching, pain, swelling, redness, and warmth of the breast, as well as retraction of the nipple and skin that feels like an orange peel, are all symptoms of mastitis. Gender is the most important factor in getting breast cancer. (Women are more vulnerable than males), aging (the risk increases with age), lack of or loss of reproduction, lack of breastfeeding, an increase in the body's

percentage of certain hormones, certain foods, obesity, and heredity are all factors (Ambudkar *et al.*, 2001)

Breast Cancer Treatment:

Chemotherapy is most commonly used for stage 2-4 breast cancer, and it is highly beneficial for estrogen receptor-negative cancer. Chemotherapy is generally given in conjunction with other therapies and lasts for three to six months. Chemotherapy medicines are designed to kill cancer cells that are quickly developing and proliferating. These drugs, on the other hand, kill quickly dividing human cells, which can lead to serious health problems (Li *et al.*, 2013), or by removing it surgically, or by using hormones for cancer that has progressed to other parts of the body, hormone therapy is frequently combined with targeted therapy (metastatic breast cancer) (König *et al.*, 2005). Selective treatment drugs target specific vulnerabilities in cancer cells. Combining them might improve the efficacy of hormone therapy. Some breast cancers require the hormone estrogen to continue to grow (Basse *et al.*, 2015).

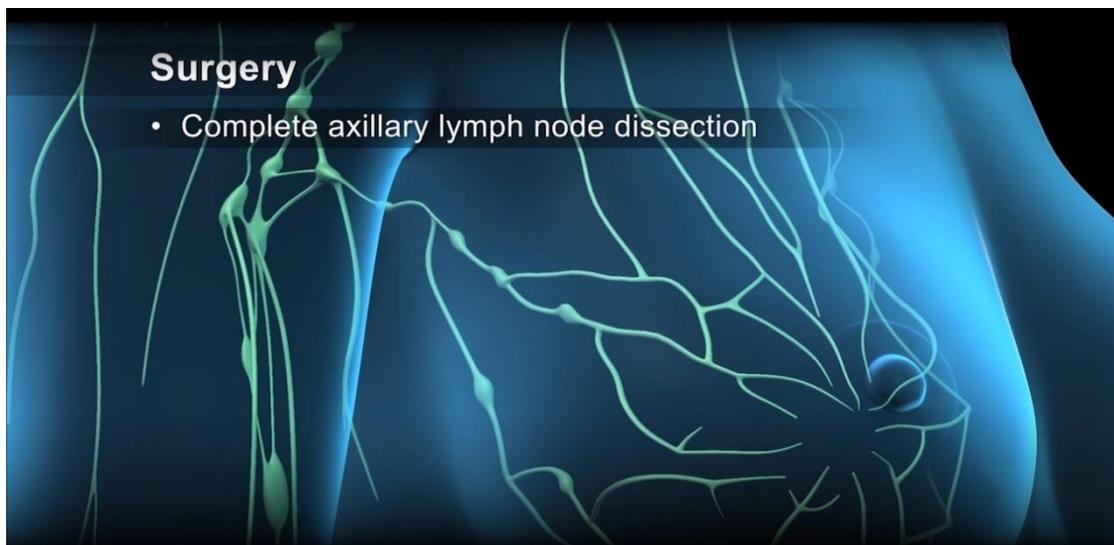


Fig. 5: Surgery - breast cancer treatments (Rivera *et al.*, 2010).

CONCLUSION

Breast cancer demands more financing and treatment than other cancers. A third of individuals who have been diagnosed with breast cancer will have spontaneous remission. Breast cancer screening can harm a patient through exposure to radiation, biopsies, and surgery. Non-life-threatening tumors can be detected with the use of a mammography machine. Early symptoms of infection and a clinical evaluation of the breast's visible areas.

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