

Scientific Facts and Research Studies About Breast Cancer

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ABSTRACT

Statistics were obtained from the Middle Euphrates Oncology Center in Najaf in 2021, because breast cancer is the most common type of cancer, with more than 2.2 million cases in 2020. To know the factors that increase the risk of breast cancer and its progression, we can take steps to reduce the risk of developing breast cancer. The number of breast cancer patients was (533), representing 24.73% of the total cancer cases (2155). According to age, the number of patients under the age of fifty was (237), with a rate of 44%, while the number was (296) for patients over fifty, with a rate of 56%. Improved outcomes are the result of a combination of early detection and effective treatment using a combination of surgery, radiotherapy and medical treatments. Factors that increase the risk of breast cancer: gender; Women are more likely than men to develop breast cancer, obesity, lack of exercise, drinking alcohol, hormone replacement therapy during menopause, exposure to ionizing radiation, early puberty for girls, late or no children, and advancing age. Medical history factors that increase risk include a personal or family history of breast or ovarian cancer. Inherited mutations (genetic changes) in BRCA1, BRCA2, or other breast cancer predisposing gene

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INTRODUCTION

Breast cancer is cancer that develops from breast tissue. Worldwide, breast cancer is the leading type of cancer in women, accounting for 25% of all cases. It is more common in developed countries and is more than 100 times more common in women than in men. In this review, we briefly highlight some important topics related to this disease.

Anatomy and histological structure of breast

The breast is an organ that sits on top of the upper ribs and chest muscles. There is a left and right breast and each one has mainly glands, ducts, and fatty tissue .The breast has different parts: Lobules: are the glands that make breast milk ,Ducts: are small canals that come out from the lobules and carry the milk to the nipple, the nipple: is the opening in the skin of the breast where the ducts come together and turn into larger ducts so the milk can leave the breast, the nipple is surrounded by slightly darker thicker skin called the areola, The fat and connective tissue (stroma) surround the ducts and lobules and help keep them in place , Blood and lymph vessels: are also found in each breast (1).

Function of breast

In women, the breast makes and delivers milk to feed newborns and infants. The amount of fatty tissue in the breast determines the size of each breast (1). During pregnancy, the hormone prolactin stimulates milk production, while the hormone oxytocin stimulates the release of milk from the glands (2).

Breast cancer

Cancer is a group of diseases characterized by the uncontrolled growth and spread of abnormal cells Breast cancer is a type of cancer that starts in the breast. It can start in one or both breasts. It's important to understand that most breast lumps are benign and not cancer (malignant) (3).

Non-cancer breast tumors are abnormal growths, but they do not spread outside of the breast. They are not life threatening, but some types of benign breast lumps can increase a woman's risk of getting breast cancer. Any breast lump or change needs to be checked by a health care professional to find out if it is benign or malignant (cancer) and if it might affect yours future cancer risk (4).

Epidemiology of breast cancer

Between 1980 and the late 1990s, breast cancer incidence rates rose approximately 30% in westernized countries because of changes in reproductive patterns, increased screening, and postmenopausal hormone use (5). In contrast, breast cancer incidence rates have been rising rapidly in historically lower-risk areas, such as countries of Latin America, Africa, and Asia. This trend likely reflects increased obesity and physical inactivity, delayed childbearing, fewer childbirths, earlier age at menarche, and shorter duration of breastfeeding, as well as increases in breast cancer screening and awareness (6). There was a steady rise in number of cancers in Iraq in the last years. According to Iraq Cancer Board (ICB), the proportion of new cases of the disease in Iraq increased from 1994 (39.91 per 100,000 population) to 2018 (82.62 per 100,000 population). It has been shown that breast cancer is the most common among women and contributes about 19.70% for both genders, from all other cancer recorded in Iraq in 2018 (7).

MATERIAL AND METHODS

Breast cancer detection

Breast biopsy

During a breast biopsy, a small piece of breast tissue is removed and checked for cancer under a microscope. Even if you need a biopsy, it doesn't mean you have cancer. Most biopsy results are not cancer, but a biopsy is the only way to find out. During a biopsy, a doctor will remove small pieces from the suspicious area so they can be looked at in the lab to see if they contain cancer cells (14).

Imaging tests

If you have been diagnosed with breast cancer, you might need more imaging tests. Your doctor will talk with you about which of these tests you may need. Imaging tests use x-rays, magnetic fields, sound waves, or radioactive substances to create pictures of the inside of your body.

Imaging tests might be done for a number of reasons including:

1. To look at suspicious areas that might be cancer
2. To learn how far cancer might have spread
3. To help determine if treatment is working
4. To look for possible signs of cancer coming back after treatment (4).

Blood tests

Blood tests are not used to diagnose breast cancer, but they can help to get a sense of a person's overall health. For example, they can be used to help determine if a person is healthy enough to have surgery or certain types of chemotherapy.

A complete blood count (CBC) looks at whether your blood has normal numbers of different types of blood cells. For example, it can show if you are anemic (have a low number of red blood cells), if you could have trouble with bleeding (due to a low number of blood platelets), or if you are at increased risk for infections (because of a low number of white blood cells). This test could be repeated regularly during treatment, as many cancer drugs can affect blood-forming cells of the bone marrow.

Blood chemistry tests can help find if some of your organs, such as the liver or kidneys are not working as well. For example, if cancer has spread to the bones, it might cause higher than normal levels of calcium and alkaline phosphatase. If breast cancer spreads to the liver, it can sometimes cause high levels of liver function tests, such as aspartate aminotransferase (AST) or alanine aminotransferase (ALT). Breast cancer does not spread to the kidneys, but if your bloodwork shows your kidneys are not working well, certain chemo drugs, like cisplatin, might not be used.

Breast cancer cells sometimes make substances called tumor markers that can be found in the blood. For breast cancer that has spread to other organs, tumor markers that might be checked include carcinoembryonic antigen (CEA), cancer antigen 15-3 (CA 15-3), and cancer antigen 27-29 (CA 27-29). Blood tests for these tumor markers are not used by themselves to diagnose or follow breast cancer (4).

RESULTS

Demographic characteristics of breast cancer in Najaf

Statistically, the number of breast cancer patients who attended the Middle Euphrates Oncology Center in Najaf in 2021 reached (533) of the total number of cancer cases (2155). According to age, the number of patients under 50 years old was (237), while the number was (296) for patients over 50 years old. Table (1) and Figures (2-3).

Table (1): Demographic features of breast cancer in Najaf in 2021.

Features	Number	Percentage %
Total number of cancers	2155	-
Breast cancer	533	24.73%

Age (year)		
≤ 50	237	44%
	296	56%

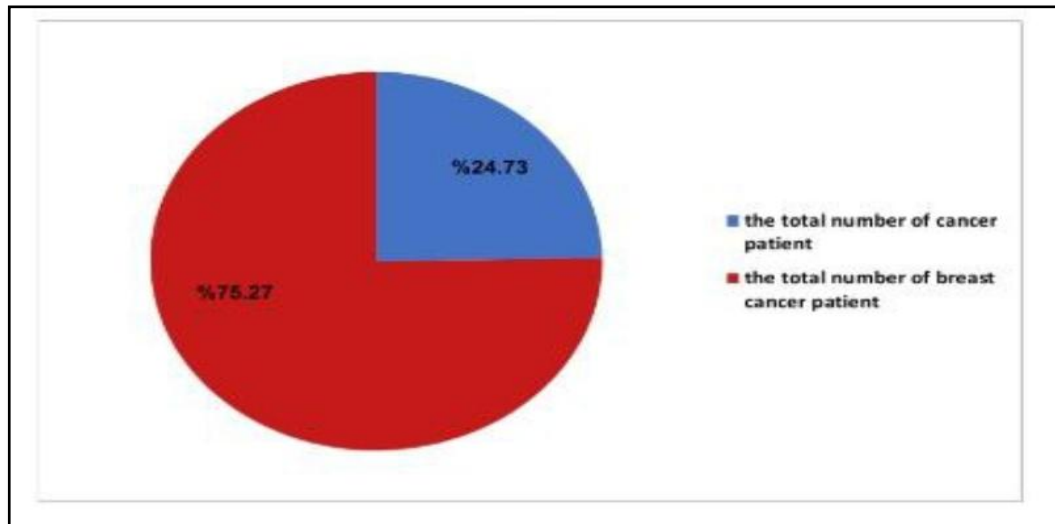


Figure 1: The percentage of breast cancer compared to other types of cancers in Najaf in 2021.

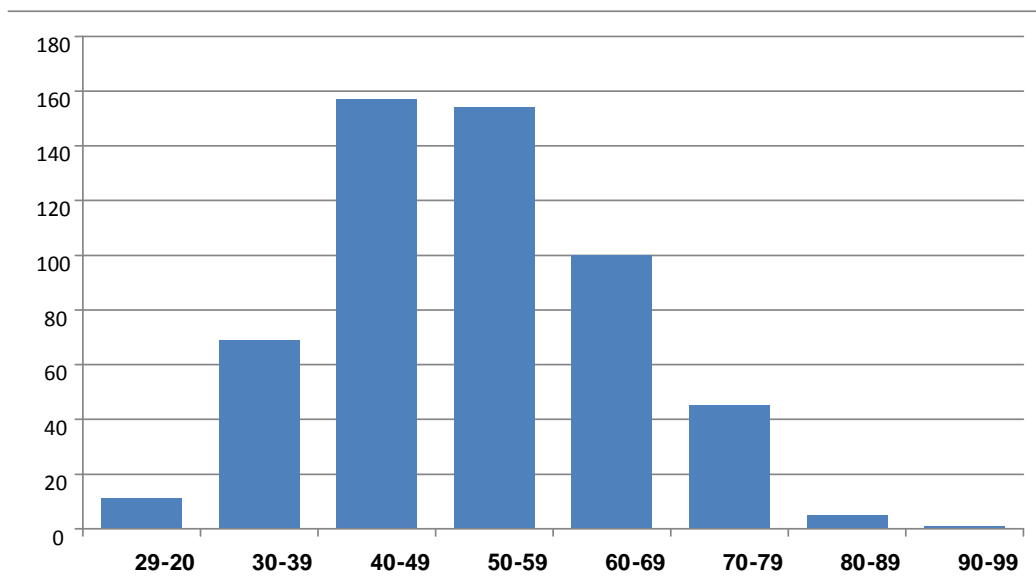


Figure 2: The numbers of breast cancer patients by age groups in Najaf in 2021.

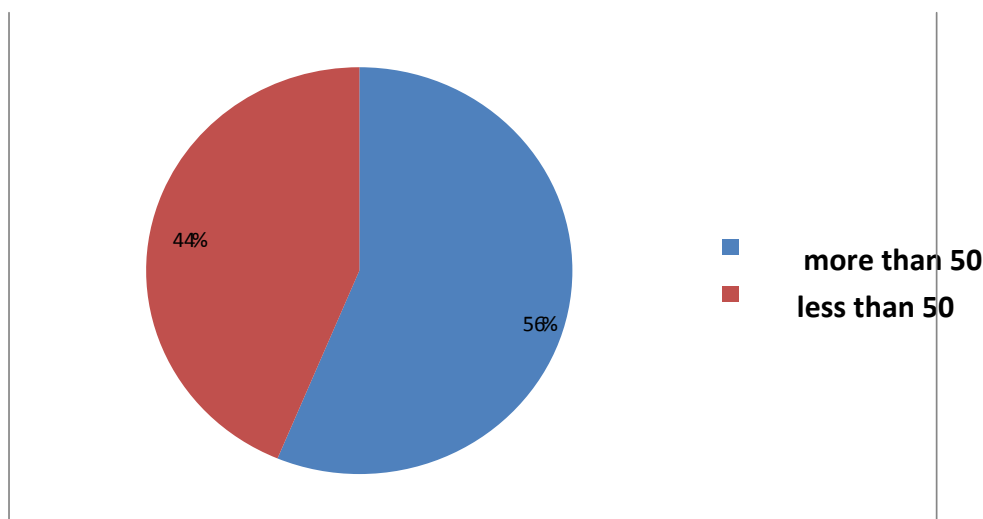


Figure 3: Percentages of patients by age groups (≤ 50 and > 50) in Najaf in 2021

DISCUSSION

The statistics of the Middle Euphrates Oncology Center were presented for the year 2021_2022. The number of patients with breast cancer reached 533 out of the total number of cancers 2155, and according to the ages of patients under the age of 50 years ... 237 while the age of more than 50 years ... 296 is shown in the first figure. As for the second figure, it shows the number of injuries according to age groups. The injuries are registered from the age of 90 - 20. We note that patients are over 50, their number is 56%, and their age is less than 50, their number is 44% (7). There are factors that increase your chances of developing breast cancer that you can control, such as weight gain after age 18 Postmenopausal women and hormonal changes, especially (estrogen and progestin), physical inactivity and alcohol consumption. As for the factors that cannot be controlled, they are factors related to a family medical history of breast and ovarian cancer, inherited genetic mutations ... and that the most important steps to reduce the incidence of breast cancer is breastfeeding. physical activity, avoiding alcohol, achieving a healthy ideal weight (8,9)

Risk factors

A risk factor is anything that increases your chances of getting a disease, such as cancer. But having a risk factor, or even many, does not mean that you are sure to get the disease. While you can't change some breast cancer risk factors-family history and aging, for example-there are some risk factors that you can control (8). Like most cancers, older age is the strongest risk factor for breast cancer. Many other factors that influence risk modify exposure of breast tissue to reproductive hormones (9). Some of these are potentially modifiable, such as weight gain after the age of 18 and/or being overweight or obese (for postmenopausal breast cancer), postmenopausal hormone use (combined estrogen and progestin), physical inactivity, and alcohol consumption; breastfeeding decreases risk (9,10). Additional reproductive factors associated with increased risk include a long menstrual history (menstrual periods that start early and/or end later in life), never having children, having one's first child after age 30, high natural levels of female sex hormones, and recent use of oral contraceptives (11).

Factors related to medical history that increase risk include a personal or family history of breast or ovarian cancer; inherited mutations (genetic alterations) in BRCA1, BRCA2, or other breast cancer susceptibility genes

(12). Mutations in the cancer susceptibility genes BRCA1 and BRCA2 are more common in women of Ashkenazi (Eastern European) Jewish descent (about 2% versus less than 1% in the general population (13).

Can I Lower My Risk of Breast Cancer?

There is no sure way to prevent breast cancer. But there are things you can do that might lower your risk. For women who are known to be at increased risk for breast cancer, there are additional steps that might reduce the risk of developing breast cancer, as following:

1. Get to and stay at a healthy weight:

Both increased body weight and weight gain as an adult are linked with a higher risk of breast cancer after menopause. The American Cancer Society recommends you stay at a healthy weight throughout your life and avoid excess weight gain by balancing your food intake with physical activity.

2. Be physically active:

Many studies have shown that moderate to vigorous physical activity is linked with lower breast cancer risk, so it's important to get regular physical activity. The American Cancer Society recommends that adults get at least 150 to 300 minutes of moderate intensity or 75 to 150 minutes of vigorous intensity activity each week (or a combination of these), preferably spread throughout the week. Getting to or exceeding the upper limit of 300 minutes is ideal.

3. Avoid alcohol:

Alcohol increases risk of breast cancer. Even drinking small amounts of alcohol has been linked with an increase in risk. It is best not to drink alcohol at all.

4. Other factors that might lower risk:

Women who choose to breastfeed for at least several months after childbirth may also get an added benefit of reducing their breast cancer risk (8).

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