Breast cancer

أشراف الدكتور: مشتاق قحطان

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Abstract

Background: Local recurrence of breast cancer after treatment remains a major challenge that affects survival and quality of life.

Aim of the Study: To identify the risk factors associated with high rate of local recurrence of early breast cancer and its impaction on time of recurrence. **Materials and Methods**: In this retrospective study, we evaluated 50 patients during their visit for treatment. With a mean age of 49 years and a median of 50 years, who treated by surgery and adjuvant treatment (chemotherapy and/or hormonal therapy) without radiotherapy in oncology cancer treatment center from 11/April/ 2022 to 14/May/2022. We collected data to identify the risk factors; we used files from archive and follow-up program in this center. **Results**: From a total of 50 patients, the mean age was 49. years and the median was 50 years. We found that 52% of patients were of age group (51-70) .54% were at stage T2. 7.56% were at stage N1.34%were at stage II. 62% were at grade II. 98% had CINV. 64% of luminal A type .64% had bone metastasis.

Conclusion :Breast cancer is the second leading cause of cancer deaths among women. The development of breast cancer is a multi-step process involving multiple cell types, and its prevention remains challenging in the world. Early diagnosis of breast cancer is one of the best approaches to prevent this disease. We will summarize key studies of pathogenesis, related genes, risk factors of breast cancer over the past years. These findings represent a small step in the long fight against breast cancer.

Keywords: breast cancer, pathogenesis, risk factor

Introduction

Epidemiology

Breast cancer is the most commonly diagnosed cancer among US women, with an estimated 268,600 newly diagnosed women with invasive disease (48,100 cases of ductal carcinoma in situ [DCIS]) in 2019, accounting for approximately 15.2%-30% of all new cancer cases among women, depending on the data sources. [13] (In men, the 2019 estimate is 2,670 new cases of breast cancer, accounting for < 1% of all new cancer cases among men. Each year, nearly 42,000 women die of breast cancer, making it the second-leading cause of cancer deaths among US women after lung cancer.The lifetime risk of dying of breast cancer is approximately 2.6%.

Genetic predisposition

Approximately 10% of breast cancers are inherited and associated with a family history , although this varies frequently by ethnicity and across countries in the con-text of early- onset, bilateral and/or TNBC. Individuals with a first- degree relative who had breast cancer have an elevated relative risk (RR) of 3 of early- onset breast cancer (before 35 years of age) . However, a family history of breast cancer is associated with an 'erratic' individual risk of breast cancer composed of different variables, including the size of the family and environ-mental factors. To determine the family's risk, models such as the family history score have been developed.Mutations in two high- penetrance tumour suppressors genes, BRCA1 (17q21) and BRCA2 (13q13), whose proteins are involved in DNA repair through homologous repair, show an autosomal- dominant inheritance pattern (loss of function > missense)].

Symptoms

Different people have different symptoms of breast cancer. Some people do not have any signs or symptoms at all.

Some warning signs of breast cancer are—

New lump in the breast or underarm (armpit). Thickening or swelling of part of the breast. Irritation or dimpling of breast skin. Redness or

flaky skin in the nipple area or the breast. Pulling in of the nipple or pain in the nipple area. Nipple discharge other than breast milk, including blood. Any change in the size or the shape of the breast. Pain in any area of the breast. Keep in mind that these symptoms can happen with other conditions that are not cancer.

Constant breast or nipple **pain**

Nipple is **inverted** (turning inward)

Rash or **color** on skin around nipple

Change in **size** or **shape** of breast

Dimpling or change in skin texture

Lump or **thickening** in breast or underarm

Swelling of all or part of breast area

Unusual **discharge** from nipple

Image source

Screening

Population screening aims at finding early disease for which there is effective treatment, using a test that is non- invasive, accurate and acceptable to end- users. Population screening for breast cancer using mammography is a secondary prevention strategy aimed at detecting the disease at an early stage to enable effective treatment. Collectively, mammography) andomized con-trolled trials have provided high- level evidence that population screening significantly reduces mortality from breast cancer by a relative risk of 20% for those invited to screening.

Diagnosis

Doctors often use additional tests to find or diagnose breast cancer. They may refer women to a breast specialist or a surgeon. This does not mean that she has cancer or that she needs surgery. These doctors are experts in diagnosing breast problems.

 • Breast ultrasound. A machine that uses sound waves to make pictures, called sonograms, of areas inside the breast.

 • Diagnostic mammogram. This is a more detailed X-ray of the breast.

 • Breast magnetic resonance imaging (MRI). A kind of body scan that uses a magnet linked to a computer.

 • Biopsy. This is a test that removes tissue or fluid from the breast to be looked at under a microscope and do more testing.

Staging

If breast cancer is diagnosed, other tests are done to find out if cancer cells have spread within the breast or to other parts of the body. This process is called staging.

Patients and methods

This was a retrospective study, we analytic 50 patients, have been taken from oncology cancer treatment center, from 11/April/ 2022 to 14/May/2022. The age was divided into four groups (<30 ,30-50 , 51-70 ,>70) as well as the stage was divided into four stages, also the grades divided into four groups. The luminal type was listed (A,B,Her-2new,TNBC). The information was taken from patients during there usuall visit for treatment. The usual visit of chemotherapy receive was in morning at 8 a:m and the information we taken from patients themselves these information involved the following **:**

We asked the patients about the type of surgery if done (modified radical mastectomy, lumpectomy, axillary clearance) ,type of chemotherapy (neoadjuvant chemotherapy , adjuvant chemo-therapy) , complications of therapy (chemotherapy induced nausea and vomiting ,fever and neutropenia, hair loss ,frequent bowl motion, hypotension, cachexia), if the disease metastatic and site of

metastasis (bone, lung, liver, brain, local recurrence) . We asked about covid-19 infection, time before chemotherapy or after, severity of symptoms and duration. Also asked about acceptance of patient to medical services,any complains or opinions to develop the services. We used files from archive and follow-up program in this center.

<mark>Results</mark>

Most breast cancers are found in women who are 51_70 years old (52%), 30_50 years (34%), >70 years (12%),while at<30 years (2%) this indicated to the chances increase slightly as girls move through their teenage years and risk of breast cancer increase with age reach to the pick in post menopause(Figure 1).
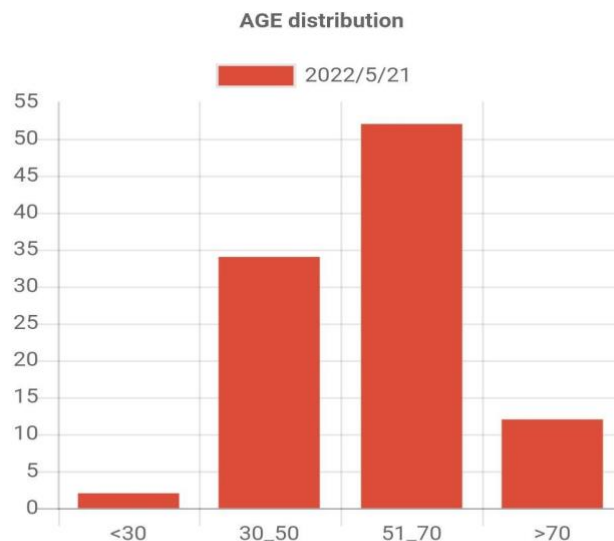
Figure 1 : Age distribution of breast cancer

The stages of breast cancer among 50 women as below T1 about 7(14%),T2 about 27(54%),T3 about 12(24%),T4 about 4(8%),N1 about 18(7.56%),N2 about 16(6.72%).N3 about 8(3.36%) From this results we conclude that most women with breast cancer is T2 and N1 (Figure 2).
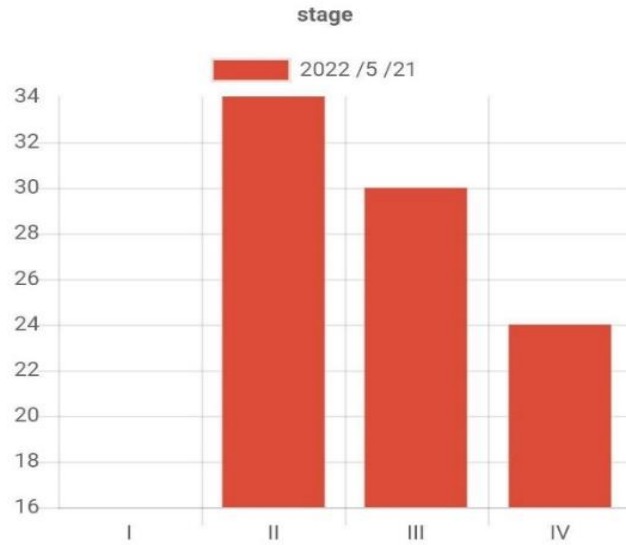
Figure 2: Incidence of stages of breast cancer

Among 50 women, 17 (34%) were at stage II ,15 (30%) at stage III,

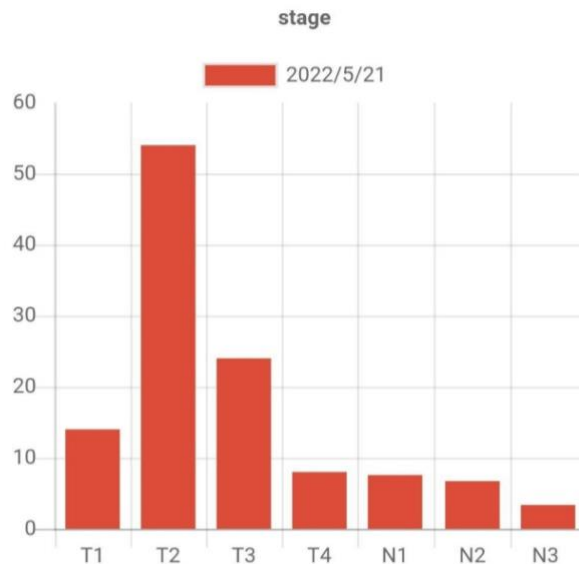12 (24%) at stage IV, 8 (16%) at stage I. Stage II and III are more common (Figure 3).

Figure 3: incidence of clinical stages of breast cancer

Among 50 women, 31 (62%) were at grade II ,15 (30%) at grade I, 4 (8%) at grade III , no patient at stage IV . This indicates that grade II is the most common, while grade IV is relatively rare(Figure 4)
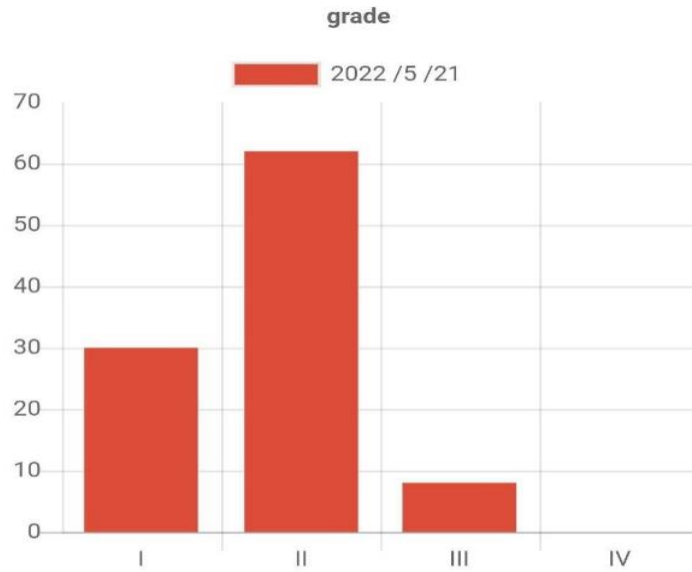
Figure 4 : incidence of grades of breast cancer

Among 50 women with breast cancer on chemotherapy, 49(98%) had CINV(chemotherapy induced nausea and vomiting), ,hair loss 45(90%),cachexia 43(86%),febrile neutropenia occurred in 30(60%),diarrhea 5(10%). Nausea and vomiting affect most patients on chemotherapy.(Figure 5)
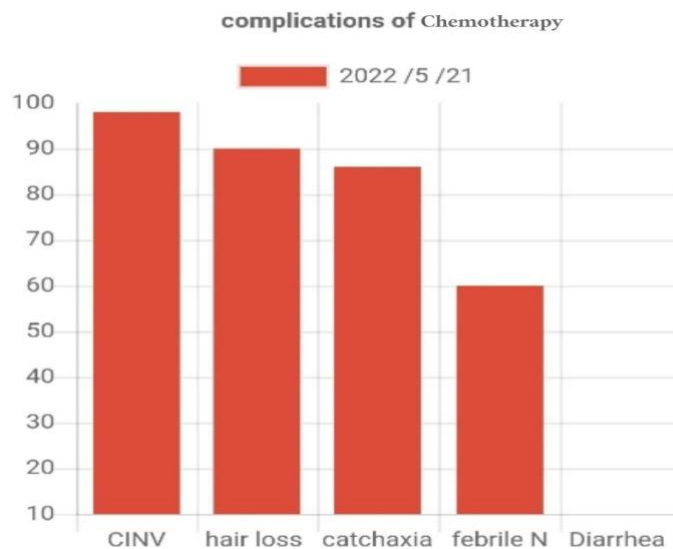
Figure 5: Incidence of complications of breast cancer

The results of luminal subtypes among 50 women with breast cancer are:

A :equal to(32) 64%

B:equal to (9) 18%

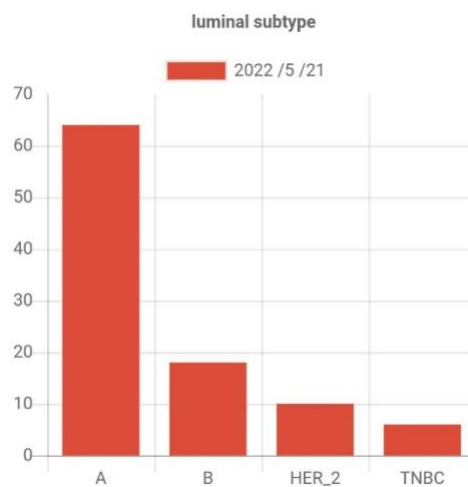HER-2 : equal to (5) 10%

TNBC:equal to (3) 6% (Figure 6)

Figure 6 : Incidence of luminal type of breast cancer

The results of the site of metastasis in 50 women is :

8(4%) had liver metastasis and 12 (6%)has bone metastasis and4 (2%)has brain metastasis and 10 (5%)lung metastasis, and this indicate the bone most site of metastasis ,followed by lung, liver and brain.
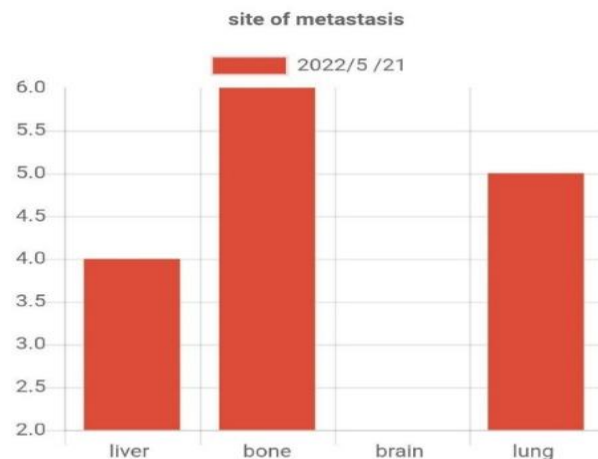
Figure 7: Incidence of site of metastasis

When we asked the patients about medical services, most of them (96%) accept doctor services, (74%) accept nurse services, (12%) accept hospital services.

	Yes	No
Medical service acceptance:		
Doctor	48 (96%)	2 (4%)
Nurse	37 (74%)	13 (26%)
Hospital	12 (24%)	38 (76%)
Delay in treatment	43 (86%)	7 (14%)
Accept the idea of treatment	44 (88%)	6 (12%)
Accept the idea of increase number of doses	4 (8%)	46 (92%)
Ideas of developing medical services:		
Increase number of beds	29 (58%)	21 (42%)
Increase number of rooms	17 (34%)	33 (66%)
Availablity of equipment	4 (8%)	46 (92%)

	Yes	No
* **Patient developed covid-19 infection**	42 (84%)	8 (16%)

Samples collected from Merjan Teaching Hospital Oncology Cancer Center – Iraq - Babylon

There was a delay in treatment in (86%) of cases.

(88%) of patient accept the idea of treatment, but only (8%) accept the idea of increasing number of doses.

(58%) of patients suggest increasing number of beds , (34%) suggest increasing number of rooms, (4%) availability of equipments.

* (84%) of patients developed covid-19 infection, (16%) didn't.

Discussion

There's factors may affect recurrence and decrease survival in breast cancer, so identifying of these factors considered important to highlights risk patients for recurrence to put a perfect plan for treatment to overcome serious events.

In figure 1 the chances of breast increase slightly as girls move through their teenage years and risk of breast cancer increase with age reach to the pick in post menopause, this identical to study in SEER 2014-2018 [11] which show The older a woman is, the more likely she is to get breast cancer.

Rates of breast cancer are low in women under 40. About 4 percent of women diagnosed with breast cancer in the U.S. are younger than 40, Rates begin to increase after age 40 and are highest in women over age 70. The age is related to breast cancer risk because at The older we are, the more likely abnormal changes will occur in our cells. When many of these changes occur, cancer can develop.

In figure 2 Our study showed that most women with breast cancer is T2 and N1, there's study on cleveland clinic website [7] show Infiltrating (invasive) ductal carcinoma. Starting in your milk ducts of 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.

Study Breastcancer.org.[10] show Invasive ductal carcinoma (IDC), also called infiltrating ductal carcinoma, is the most common type of breast cancer. About 80% of all breast cancers are IDC

Generally, the stage of invasive ductal carcinoma is described as a number on a scale of I through IV. Stages I, II, and III describe early-stage cancers, and stage IV describes cancers that have spread outside the breast to other parts of the body, such as the bones or liver .

Our study show the most common complications of chemotherapy that chemotherapy induced nausea and vomiting,hair loss, cachexia, febrile neutropenia and diarrhea

We found study on american cancer society website [8] show the most common possible side effects include:Hair loss, Nail changes, Mouth sores, Loss of appetite or weight changes, Nausea and vomiting, Diarrhea, Fatigue and Hot flashes and/or vaginal dryness from menopause caused by chemo (see Menstrual changes and fertility issues below) .

According to our study the most common site of metastasis is bone then lung and liver

This identical to study on verywell health website [9] the most common ones being the bones, lungs, liver, and brain. The areas to which breast cancer spreads, and the extent to which it does, are important as metastasis is responsible for most deaths from the disease.

Likewise, Many studies show disappointed results due to many causes, like taking a data from single center with limited number of patients and escaping of patients from follow-up. Our study face these challenges, we evaluated 50 patents and it's really an intermediate sample but we do our best to evaluate those patients thoroughly and we touch the result of most important depended studies.

Conclusion

1. Breast cancer is the most frequently diagnosed cancer in women across 140 countries Approximately 1 in 8 women worldwide have a lifetime risk of developing breast cancer (13)

2. We conclued from this study one of the most Important risk factor stage and size of cancer and the family history

3. Nearly a quarter of all breast cancer cases are related to family history 65. Women, whose mother or sister has a breast cancer, are prone to this disease.

4. Breast cancer is a preventable disease, and there are adequate medical resources available in developed countries, which can protect against this disease, such as annual mammography screening or the daily use of chemopreventative drugs .

5. If women are educated about breast cancer, breast self-examination may be a simple, economical and motivated method to prevent this disease(13)

6. Risk factors should be taken more seriously either in normal or high-risk women. Environmental factors such as the exogenous estrogen intake, alcohol abuse and excess dietary fat consumption could be avoided to minimize breast cancer risk (13)

7. Reducing risk factors and taking chemoprevention are two main measures to prevent breast cancer. However, there's a long way to go in creating public breast cancer awareness. Only 4.1% of high-risk women are willing to take chemoprevention drugs 142. The fear of adverse effects and lack of understanding of breast cancer might be attributable for this unwillingness (13)

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