Research Article

Clinical Investigation and Cancer Grades among Patients with Breast Cancer in Basrah City- Iraq

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Abstract:

Clinical investigation and determine of breast cancer grade in females with breast cancer in Basrah city were carried in this investigation . the minimum number of breast cancer females was found within the age groups 20-29 yrs (2.5%),followed by age group 30-39 yrs (12.5% ,above 40-49yrs (31.25%), the age group 50-59 yrs (32.5%) and >60 yrs (21.25%). P-value <0.0163. various clinical factors effecting patients with breast cancer such as the patients do the surgery 72(90.0%) and who don't the surgery 8(10.0%) , with P-value = 0.001. Then comes the other factor the Chemotherapy, the patients with breast cancer who take the chemotherapy 77(96.25%) and who don't take chemotherapy 3 (3.75%) with P-value = 0.089, and the last factor metastasis the patients who have metastasis 23 (28.75%) and the patients not have metastasis 57 (71.25%) with P-value = 0.0247.The majority of our patients with breast cancer belong to overweight group 36(45.0%) followed by obese patients 14(17.5%) . P-value = 0.0150 .The data recorded in regard to the stages of the breast cancer is given in table (4). Stage IIA was (25.00%) appeared in 22 breast cancer patient, followed by stage IIB was (23.86%), stages IA and IIIC were 2(2.27%) for each, and they are followed by stage IB 1(1.14%) , stage IIIA 19(21.59%), stage IIIB 3(3.41%) and stage IV 10 (11.36%) there were significant difference (P<0.001).

Introduction

Cancer develops when cells in a part of the body begin to grow out of control. Although there are many kinds of cancer, they all start because of DNA damage in certain cells [1] . Breast cancer is a malignant tumor that has developed from cells of the breast. A malignant tumor is a group of cancer cells that may invade surrounding tissues or spread to distant areas of the body. Breast cancer occurs almost in women, but men can get it, too [2] . The breast or mammary gland is the largest skin gland. That is modified sweat gland. It exists in the male as well as in the female, but in the former only in the rudimentary state [3] .The recorded history of breast cancer traces back thousands of years. It is no surprise that from the dawn of history, scientists and physicians have written about cancer. Incidents of breast cancer have been documented back to the early Egyptians when the popular treatment was cautery of the diseased tissue [4] . The disease occurs mostly in women, but does occur rarely in men. Breast cancer continues to be one of the most common cancers and a major cause of death among women worldwide; an estimated 1,301,867 new breast cancers were diagnosed and 464,854 people were die from the disease in 2007 [5] . In Iraq, according to the latest Iraqi Cancer Registry reports, cancer of the breast is the commonest type of malignancy in females and there is a general trend towards an increase in the frequency and incidence of breast cancer in

younger age group. The most common histo-pathological types were invasive ductal carcinoma (IDC) (77.2%), and invasive lobular carcinoma (ILC) (9.8%). Patients less than 30 years old age formed about 5% of cases, whereas about 75% of the cases occurred in women older than 40 years. The highest number of cases is between 40-50 years old age groups [6,7&8] . Breast cancer can be classified by different methods and this can affect treatment options and prognosis . classification include staging by TNM system , grading , receptor status and genotyping [9] . There are many classifications of breast carcinoma; one of them is the world health organization (WHO) classification (2003)[10] . There are two main types of noninvasive breast cancers: the ductal carcinoma in situ (DCIS) and the lobular neoplasia (also called lobular carcinoma in situ, LCIS). The cancer cells of these forms are either located inside the ducts (DCIS) or inside the lobules (LCIS). Both types are so-called "in-situ" because they do not invade the surrounding fat tissue, nor spread through other organs in the body [11] . Most of the invasive breast cancers (about 80%) are infiltrating (or invasive) ductal carcinomas (IDCs). These tumors start in the duct of the breast, brake through the wall of the duct and invade the surrounding fat tissue, from where they can spread through the lymphatic system or bloodstream. The other main type of invasive breast cancers (about 10-15%) is the infiltrating (or

invasive) lobular carcinoma (ILC)[12]. These cancers begin in the lobules of the breast and act then similarly to the IDCs. Less frequent than the ILCs are the medullary carcinomas. The proportion described in the literature ranges between 5% and 10%. This special type of invasive breast cancer was named in this way for its similarity in color to brain tissue (medulla). Nevertheless, they are difficult to distinguish from IDC and are therefore often treated the same way, although the prognosis for medullary breast carcinomas is better than for other types of invasive breast cancer [13]. The breast microenvironment is composed of extracellular matrix (ECM) and numerous stromal cell types, including endothelial and immune cells, fibroblasts, and adipocytes. Early work investigating epithelial-mesenchymal interactions in tissue differentiation demonstrated that embryonic mesenchyme strongly influences the terminal differentiation of both embryonic and adult epithelia [14]. Breast cancer is generally diagnosed through either screening or a symptom (e.g., pain or a palpable mass) that prompts a diagnostic exam. Screening of healthy women is associated with the detection of tumors that are smaller, have lower odds of metastasis, are more amenable to breast-conserving and limited axillary surgery, and are less likely to require chemotherapy [15,16,17,18]. This scenario translates to reduced treatment-related morbidity and improved survival [19].

The present study aimed to illustrated clinical properties and cancer grade among females with breast cancer.

Materials and methods

Breast cancer Cases

Breast cancer cases in this study (case\control study) have been collected in Basra province particularly from Basra oncology center, period time of this study was extended from January 2021 to May 2021. During samples collection process all medical information for all patients which involved in the study were recorded in questionnaire paper Breast Cancer females who are in the early stages , the second stages, and the last stages after taking all the treatments, Both patients and control samples that investigated in this study have age ranged between 20 to 80 year. All informations were collected from patients after the accurate diagnosis by the oncologist which confirmed by other findings (Cystoscopy, biopsy, ultra sound and CT scan).   All controls that involved in this study (80 individual) were checked to be sure that they were free from any urological disease, tumor, allergies and other infectious disease (according to exclusion criteria).

Control group and cases number was calculated according to minimum sampling size equation based on the prevalence rate of the disease which about 5% according to (WHO , 2006).

$$N = \frac{Z_2 \, P(1-P)}{D_2} \text{ where}$$

N = sample size
P = prevalence rate in the target population
D = The desired precision, taken to be 0.05 (Naing , *et al.*,2006).
Z = 1.96 standard error (95% confidence level of the standard

deviation from the mean).

Exclusion Criteria

1. Other cancer.
2. Allergies.
3. Infectious disease.
4. Pregnancy.
5. Diabetes mellitus and other.

BMI (It is defined as weight in kilograms divided by the square of the height in meters (kg/m) as shown below: (Powers,*et al.,*2007)).

$$BMI = \frac{weight(kg)}{(hiegth\,(m\ ))^2}$$

Clinical examination

1- clinical breast examination (CBE):

is a physical examination of the breast done by a health professional. Clinical breast examinations are used along with mammograms to check women for breast cancer. Clinical breast examinations are also used to check for other breast problems a clinical breast examination may be part of your regular checkup. Talk with your health professional about how often you need a breast examination   Women with breast implants should also have regular clinical breast examination.

2- Computed tomography (CT scan):

This technique using x-rays to take pictures from different angles, a computer combines these pictures into a detailed 3-diamensional image that shows the tumor.

The Results

According to minimum sampling size equation that depend on the disease ratio, the total number of breast cancer patients involved in this study are (80) individual were taken from Basrah oncology center in Basrah province, the age of patients range from 27-76 yrs and (80) individuals considered as control group after they were checked and confirmed to be free from any chest or any other health problems . Microsoft Excel version 2010 and JMP Pro version 13.5.2 were used to analyzed statistical differences between variants; the data of all patients were used to build a general classification model for breast cancer. The system offers an effect summary that examines each demographic factor that have an importance across multiple responses.

1- Distribution of patients within various age groups.

20 -29 year	2	2.5	2	2.5	
30 -39 year	10	12.5	8	10.00	
40 -49 year	25	31.25	23	28.75	0.0163
50-59 year	26	32.5	24	30.00	
>60 year	17	21.25	23	28.75	
Total	80	100%	80	100%	

Table (1) show the minimum number of breast cancer females was found within the age groups 20-29 yrs (2.5%),followed by age group 30-39 yrs (12.5% ,above 40-49yrs (31.25%), the age group 50-59 yrs (32.5%) and >60 yrs (21.25%). P-value <0.0163.

P = 0.0163, x^2 = 20.50 , Df = 1

Table (1): The number and percentages of patient with breast cancer and control group according to age groups.

Clinical features of Breast Cancer

Table (2) show various clinical factors effecting patients with breast cancer such as the patients do the surgery 72(90.0%) and who don't the surgery 8(10.0%) , with P-value = 0.001. Then comes the other factor the Chemotherapy , the patients with breast cancer who take the chemotherapy 77(96.25%) and who don't take chemotherapy 3 (3.75%) with P-value = 0.089, and the last factor metastasis the patients who have metastasis 23 (28.75%) and the patients not have metastasis 57 (71.25%) with P-value = 0.0247.

Table (2): clinical factor affected patients with breast cancer and control group.

Demographic Factors	Category	Breast Cancer		p-value
		No.	%	
Surgery	yes	72	90	0.001
	No	8	10	
Chemotherapy	Yes	77	96.25	0.089
	No	3	3.75	
Metastasis	Metastasis	23	28.75	0.0247
	Non Meta	57	71.25	

x^2 = 31.43 , DF = 1

Body Mass Index
The majority of our patients with breast cancer belong to overweight group 36(45.0%) followed by obese patients 14(17.5%) . P-value = 0.0150as seen in the following table (3).

Table (3): The numbers and percentages of patients with breast cancer and control group according to weighting state.

Body Mass Index	Breast C		Control		Total		P-value
	No	%	No	%	No	%	
Underweight	3	3.75	5	6.25	8	10.0	
Normal	27	33.75	24	30.0	51	31.87	0.0150
Overweight	36	45.0	33	41.25	69	43.12	
Obese	14	17.5	18	22.5	32	20.0	
Total	80	100%	80	100%	160	100%	

Breast cancer grades (stages)

The data recorded in regard to the stages of the breast cancer is given in table (4). Stage IIA was (25.00%) appeared in 22 breast cancer patient, followed by stage IIB was (23.86%), stages IA and IIIC were 2(2.27%) for each, and they are followed by stage IB 1(1.14%) , stage IIIA 19(21.59%), stage IIIB 3(3.41%) and stage IV 10 (11.36%) there were significant difference (P<0.001).

Table (4): Breast Cancer grades among patients.

Stages of Breast Cancer	Breast Cancer	
	No	%
Normal	0	0.00
IA	2	2.27
IB	1	1.14
IIA	22	25.00
IIB	21	23.86
IIIA	19	21.59
IIIB	3	3.41
IIIC	2	2.27
IV	10	11.36

DF= 8 , x^2 =53.61 , P-value = <0.001

Discussion

Breast cancer is the second leading cause of cancer deaths among women [1,20]. 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[21] . In some developed countries, the 5-year relative survival rate of breast cancer patients is above 80% due to early prevention. In the recent decade, great progress has been made in the understanding of breast cancer as well as in the development of preventative methods. The pathogenesis and tumor drug-resistant mechanisms are revealed by discovering

breast cancer stem cells, and many genes are found related to breast cancer[22]. Currently, people have more drug options for the chemoprevention of breast cancer, while biological prevention has been recently developed to improve patients' quality of life. In this review, we will summarize key studies of pathogenesis, related genes, risk factors and preventative methods on breast cancer over the past years. These findings represent a small step in the long fight against breast cancer [23]. The present study of clinical factor show the patients who underwent surgery 72 (90.0%) and who have not undergone surgery 8 (10.0%) with (P = 0.001). This results compatible with [24] . The second factor that chemotherapy is show patient who take chemo. 77 (96.25%) , and who do not take chemo 3 (3.75%)with significant differences (P=0.089). And the last metastasis factor that show patients who metastasis 23 (28.75%) and non-metastasis 57 (71.25%) with (P=0.0247). this results agree with opinion

The present study elevated that the patients whose breast cancer (36) were included with overweight (BMI > 25) which agreement with (Mshimesh,.2010) These results may be attributed to the fact that over weigh has been found to be a breast cancer risk. Similar studies by [12,13] which found a significant positive effect between overweight (BMI > 27), obese with prostates cancer and disagree with [11,14] which reported no significant between BMI, and prostate cancer .

Breast cancer regarded as pathological staging depended on pathologists study of tumor tissue and lymph nodes that removed at surgery. Breast cancer stage will describe the range of the cancer with in body , help to plan the treatment so , is important factor to prognosis [25]. In current study found the highest breast cancer stage was in IIA (22), followed by IIB (21) while the lowest IA and IIIC (2) with significant difference (P = 0.001)while [26] found the most of patients cases with breast cancer were in stage I.

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