

Evaluation of types, stages and treatment of breast cancer among Palestinian women[†]

Rowa' Al-Ramahi*, Dalia Nazzal, Dalal Mustafa, Eman Halabi, Samah Gnimat, Sara Gayada

Department of Pharmacy, Faculty of Medicine and Health Sciences, An-Najah National University, Nablus, Palestine.

*Corresponding author: rawa_ramahi@najah.edu

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ABSTRACT

Breast cancer is the leading cause of cancer deaths among females. The aims of this study were to find the most common histological types of the breast cancer in the West Bank/Palestine, their stages, receptor status and the strategies of treatment. This was a retrospective study that was conducted in two major outpatient clinics for oncology. The data collection form was completed by reviewing patients' medical records. SPSS program was used for data analysis. The study included 400 women; their average of age was 52.16 ± 11.56 years. Ductal carcinoma was the most common 317 (79.3%), then lobular in 60 (15.0%). The highest number of patients 106 (26.5%) were diagnosed in stage three, 100 (25.0%) in stage two, 95 (23.8%) in stage four, and 81 (20.3%) stage one. About potential predictive biomarkers, it was found that most patients 353 (88.3%) did not test BRCA1/BRCA2, among the rest who had the test 21 (5.3%) were positive. Regarding Estrogen Receptor (ER), 249 out of 386 (64.5%) for whom the data was available in files had positive test, whereas Progesterone Receptor (PR) test was positive in 225 (58.34%) women out of 385. For HER2 receptor, most patients had negative results 306 (80.3%). The most common type of breast cancer among Palestinian women was invasive ductal carcinoma. Around half of the patients were diagnosed in stage three and four, so better awareness regarding this disease is recommended. A high percentage of patients had positive ER and PR, this makes hormone therapy an important part of treatment.

Keywords: Breast Cancer, Stages, Receptors, Palestine.

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INTRODUCTION

Cancer is one of the major causes of morbidity and mortality in Palestine, with lung cancer as the most common type in males and breast cancer in females, in 2015, breast cancer accounted for 33.7% of cancer types reported among females and the incidence rate was 33.1 per 100000 [1]. Breast cancer is the most common cancer in women around the world and is the leading cause of cancer deaths among females [2]. It is very important to discover breast cancer as early as possible because this will increase the cure rate, so screening is recommended especially after the age of 40 years. Mamography, clinical and self- breast examination can identify tumors at early stages and small size which reduces morbidity and mortality [3].

Breast cancer differs from other types of cancer as it is affected by female sex hormones for development and growth [4]. Estrogen and progesterone help regulate growth and differentiation of normal breast tissue, and they are considered important in the development and progression of breast cancer [5]. Clinically, estrogen receptors (ER) and progesterone receptors (PR) levels in breast cancer tissue have been used as prognostic indicators to predict a patient's course of disease and response to adjuvant hormonal therapy. In general, women whose tumors are positive for both ER and PR survive longer and respond better to endocrine therapy [6].

In addition, about 1 of 5 breast cancers have an increased growth-promoting protein called human epidermal growth factor receptor 2 (HER2/neu). The HER2/neu gene

induces the cells to make this protein. Tumors with high levels of HER2/neu are referred to as HER2- positive. . Such cancers tend to grow and spread in an aggressive way. All newly diagnosed invasive breast cancers should be tested for HER2/neu and the positive ones may benefit from treatment with drugs that target the HER2/neu protein [7].

A small proportion of women has a particularly strong family history of breast cancer and are at very high risk. Mutations in the breast cancer susceptibility genes BRCA1 and BRCA2 account for the majority of families with four or more affected members and 2-5% of all breast cancers [8]. Families with this mutation require more tests at earlier ages due to high risk of breast and ovarian cancers. Breast cancer is related to many environmental, reproductive, and lifestyle factors, some of which are potentially modifiable [9]. So, it is important to consider these risk factors to give more attention to women with some of them.

There are various treatment plans for cancer patient depending on the type and the stage at diagnosis. Surgical treatment for breast cancer includes breast-conserving surgery or mastectomy, in addition to chemotherapy; radiation therapy and hormonal therapy [10, 11].

Cancer in the West Bank is a public health problem. The most common cause of death out of all cancer types was breast cancer among females, so by knowing the risk factors associated with breast cancer, the most common histological types, the types of receptors and the stages among Palestinian women, suitable planning and recommendations for screening and treatment can be given. To the best of our knowledge, this is the first study in Palestine with these objectives.

The aims of this study are to find the most common histological types of breast cancer in the west bank, their stages, receptor status and the strategies of treatment.

METHODS

Study design and selection criteria

The study was a retrospective cohort study that was conducted in two major outpa-

tient clinics for oncology patients in Palestine; (Al-Watani Governmental Hospital / Nablus and Al-Hussein Governmental Hospital/ Beit Jala).

Medical records of breast cancer patients who visited the included clinics were reviewed for types of breast cancer, stages, receptor types and treatment.

Inclusion criteria included breast cancer women who were diagnosed with the disease and were treated for this at the time of the study. Men with breast cancer were excluded.

Sample size

The number of current breast cancer patients in Palestine is not available. However, the new reported cases in the west bank in 2015 were 427 [1] and in 2014, they were 387, the unofficial estimate from the working oncologists was around 2000 patients. Using Roasoft sample size calculator, the minimum sample size for this study was calculated to be 323 patients. So, the target was 400 patients.

Data collection

Patient's medical records were reviewed. Patient's age, medical conditions, cancer type and stage, laboratory and other diagnostic tests, in addition to all breast cancer prescribed medications and other treatment modalities were documented from the patient's files.

The study protocol was authorized by An-Najah National University Institutional Review Boards (IRB) and the Ministry of Health before initiation of this study.

Statistical analysis

Statistical analysis was performed using Statistical Package for Social Sciences (SPSS version 21). Mean \pm standard deviation (SD) was computed for continuous data. Frequencies and percentages were calculated for categorical variables. Chi-square test was used to compare categorical variables, a p value <0.05 was considered statistically significant.

RESULTS

Socio-demographic characteristics of the patients

During the study period, a total of 400 medical records were reviewed. The average age (\pm SD) of patients was 52.16 ± 11.56 years, and the maximum age was 82 years while the minimum age was 25 years. The majority 295 (73.8%) were married, 166

(41.5%) of them were pregnant before. Seventy (17.5%) patients were smokers and 61 (15.3%) used contraceptive before. Regarding breast feeding 118 (29.5%) had never been breast feeding before, 275 (68.8%) of them were diagnosed before one to five years, whereas 20 (5.0%) suffered from recurrence of cancer. Table 1 shows sociodemographic characteristics of the patients.

Table (1): Sociodemographic characteristics of the patients (N=400).

Characteristic	Frequency	Percentage (%)
Marital status		
Married	295	73.7
Single	53	13.3
No Information	52	13.0
Being pregnant before		
Yes	166	41.5
No	69	17.3
No Information	165	41.2
Breast feeding before		
Yes	75	18.8
No	118	29.5
No Information	207	51.8
Family history of cancer		
Yes	120	30.0
No	208	52.0
No Information	72	18.0
Time since diagnosis		
Less than one year	117	29.3
1-5 years	275	68.8
5-10 years	7	1.8
More than ten years	1	0.3
Recurrence of the cancer		
Yes	20	5.0
No	105	26.3
No Information	275	68.7

Other comorbid diseases

The 400 patients had 0-4 diseases (excluding breast cancer). About 148 (37.0%) of them had no co morbid diseases. The most common diseases were hypertension 82 (32.5%) and diabetes mellitus (DM) 72 (28.0%) (Type 1 and 2). Other diseases that were found included hyperlipidemia 13 (5.0%), thyroid disease 10 (3.9%), uterine fibrosis 10 (3.9%), ovarian cancer 12 (4.7%), liver disease 13 (6.3%), lung disease 10 (3.9%), kidney disease 11(4.3%), and coronary heart disease which was the least common 3 (1.0%).

Cancer types and stages

Four types of breast cancer were identified in the patients; ductal carcinoma was the most common 317 (79.3%), then lobular 60 (15.0%), invasive 18 (4.5%) and inflammatory 5 (1.3%) which was the least common. The average duration of cancer was 24.84 ± 31.84 months.

Regarding laterality, half patients 200 (50.0%) had left breast cancer, 186 (46.5%) had right breast cancer and the rest had cancer in both sides.

There are five stages of breast cancer, from stage zero to stage four, the highest number of patients 106 (26.5%) were in stage three, and 100 (25.0%) in stage two, 95 (23.8%) in stage four, 81 (20.3%) in stage one and 17 (4.3%) in stage zero (Figure 1).

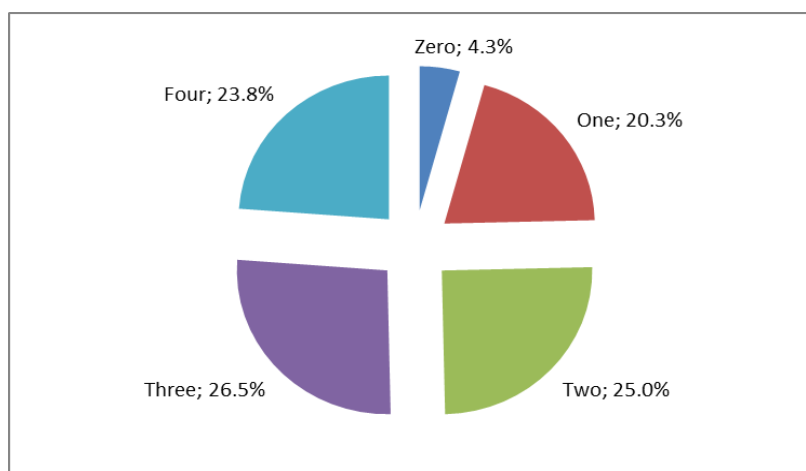


Figure (1): Stages of breast cancer at the time of diagnosis.

Genetic and receptor status tests

About potential predictive biomarkers, it was found that most patients 353 (88.3%) did not test BRCA1/BRCA2, among the rest who had the test 21 (5.2%) were positive and 26 (6.5%) were negative. Regarding Estrogen Receptor (ER), 249 out of 386 (64.5%) for whom the data was available in files had positive test, ER positive test was more among women <40 years but it did not reach a significant level (69.8% vs 63.7%; P value =

0.385). Progesterone Receptor (PR) test was positive in 225 (58.34%) women out of 385, the test was positive in women <40 years but the difference was not significant also (64.2% vs 57.5%; p value = 0.364). The files that included data about HER2 receptors were 381 files; most patients had negative results 306 (80.3%) while 75 (19.7%) of 381 had positive results. Table 2 shows tests which were available in patients' files.

Table (2): Results of genetic and receptor status tests related to breast cancer.

Test	Number of patients for whom the data was available	Frequency	Percentage (%)
BRCA1/BRCA2	400		
Positive		21	5.3
Negative		26	6.5
No information		353	88.3
Estrogen Receptors	386		
Positive		249	64.5
Negative		137	35.5
Progesterone Receptor	385		
Positive		225	58.4
Negative		160	41.6
HER2 Receptor	381		
Positive		75	19.7
Negative		306	80.3

Treatments and medications

There were three major treatment types (chemotherapy, radiotherapy and hormonal therapy) for patients, 366 (91.5%) patients received chemotherapy, whereas 185 (46.3%) underwent radiotherapy. Moreover, treatment intent for most patients 305 (76.2%) was curative while for the others 95 (23.8%) who were in stage four, it was palliative.

A total of 33 different medications were used by the patients. The patients were prescribed 1 to 10 medications with a median of 5. Cyclophosphamide was the most common medication, being used by 277 (69.3%) patients. Followed by adriamycin, paclitaxel and tamoxifen which were used by 202 (50.5%), 140 (35.0%) and 128 (32.0%) patients respectively.

DISCUSSION

In this study, the highest percentages of patients were diagnosed in stage two and three (25% and 26% respectively). Compared to another study in Turkey, stage one and two were the highest 27.0% and 44.0% respectively [12]. Around half of the patients in this study were diagnosed in stage three or four; this indicates the need for more self-examination and mammography as the discovery of the disease in earlier stages increases the possibility of cure.

Regarding genetic and receptor tests, this study shows that ER was positive in 64.5% and PR was positive in 58.4% cases, it is approximately similar to another study in Japan where ER was positive in 75.8% and PR in 62.1% [13]. About HER2, we found that 19.7% had positive results, but in a study from Turkey that was 8.5% [12].

The most common histological type was invasive ductal carcinoma in 79.3%, in a study in Morocco, it was 80.7% of cases [14]. Invasive lobular carcinoma was the second most common type in 15% patients. It is the second most common type of breast cancer after invasive ductal carcinoma in other parts of world accounting for 5%–15% of all the breast cancer cases [15]. The results confirm that inflammatory breast cancer is the least common type of cancer among women [16].

Regarding laterality, it was found that half cancer cases were in the left side 50%, then the right 46.6% and bilateral was the in 2.5% cases. This is the same in Shiraz study which showed that half of the sample had the cancer in the left side [17]. Also in Casablanca study which showed that bilateral breast cancer represents a small percentage of all breast cancers (2.4%) [18].

In our study, the most common chemotherapy was cyclophosphamide 69.25%, adriamycin was the next common 50.5% and then paclitaxel 35%. About hormonal therapy, we found that tamoxifen had the highest percentage with 32% and letrozol 13%. These medications are among the most commonly used medications for breast cancer in international protocols, so this is expected.

The limitations of this study include the sampling method which was convenient, that limits our ability to make wider generalizations from the results. The second limitation was that the study was performed in two governmental hospitals only. Although these hospitals have the two major oncology centers in the West Bank, they might not be representative to the whole West Bank. Also, not all the required data was available in some files. However, these results can give baseline data that can be useful in planning policies.

CONCLUSIONS

The most common type of breast cancer among Palestinian women is invasive ductal carcinoma. Around half of the patients were diagnosed in stage three and four, so better awareness regarding this disease is recommended to diagnose it earlier. A high percentage of patients have estrogen and progesterone positive receptors, this makes hormone therapy an important part of treatment. The results of this study can help clinician make treatment choice and policy makers implement programs against this disease.

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Conflict of interest: none

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