

RESEARCH ARTICLE

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Breast Cancer in Basra Oncology Center: A Clinico-Epidemiological Analysis

Rafid A Abood^{1,2*}

Abstract

Background: Breast cancer is the most common cancer affecting women, and the leading cause of cancer-related deaths. **Objective:** This study was performed to evaluate clinico-epidemiological features of breast cancer from Iraq during a five-year period. **Methodology:** This is a retrospective descriptive study. Medical notes and histopathological reports of patients with confirmed diagnosis of breast cancer between January 2011 and December 2015 were reviewed for age, gender, site, laterality, histopathological type, grade of differentiation and TNM stage at diagnosis. **Results:** A total of 1,000 patients were included in the study. Mean age at diagnosis was 50 years (range 22-85 years), and females constituted 99.2% of cases. Most cases (98.7%) were unilateral and most common (85.5%) histological subtype was invasive ductal carcinoma. Majority of the cases (58%) were moderately differentiated (grade II), wherein 45% belonged to stage II in TNM system, and nearly half (49%) of patients had locally advanced or metastatic cancer. **Conclusion:** Breast cancer presents at least a decade earlier and at a more advanced stage in Iraqi women when compared to the Western World. Steps for early detection are essential for initiation of prompt therapy and reduction of mortality.

Keywords: Breast cancer- TNM staging- NGS histological grading- epidemiology- Iraq

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Introduction

Breast cancer is estimated to be the most common cancer affecting women globally, and also to be the leading cause of death due to cancer (Shah et al., 2014). The survival rates for breast cancer vary significantly around the world, with the estimated 5-year survival rates ranging from as low as 40% in low-income countries to as high as 80% in high-income countries (Coleman et al., 2008).

Even in the countries in the Arab region, breast cancer occupies the number one position in terms of prevalence (Salim et al., 2009). Breast was the site of cancer accounted for as many as 17.6% in patients registered in Basra, Iraq (Habib et al., 2007). The incidence of breast cancer has been reported to be higher in developed countries than in the developing countries, but this difference might be due to the availability of better detection methods in the developed countries. In fact, a recent epidemiological study from Iraq concluded that the incidence of breast cancer is quite high in Iraq, and has been increasing over the past few years (Habib et al., 2016).

Availability of clinical and pathological tools to accurately grade the tumor stage are the cornerstone for the effective management of breast cancer. In early-stage breast cancer, the use of systemic therapy depends upon

three main determinants, namely tumour size, lymph node status, and histological grade. The most popularly used system for histological grading of breast cancer is the Nottingham Grading System (NGS), which uses tubule formation, nuclear polymorphism, and mitotic activity for categorizing breast carcinomas into three different grades: well-differentiated (grade 1), moderately differentiated (grade 2), and poorly differentiated (grade 3) (Elston and Ellis, 1991). There is also the TNM classification of breast cancer which takes into account the tumor size, lymph node involvement, and metastasis, which determines the treatment approach of the patient (Veronesi et al., 2009).

While the clinico-epidemiological characteristics of breast cancer have been described across the world in many populations, there is a dearth of similar data on the patterns of breast cancer in Iraq. Basra Oncology Center (BOC) is a tertiary referral unit located in Basra, South Iraq, and most of the breast cancer cases from southern Iraq are referred to this center. Hence, this retrospective, observational study was planned with an objective to analyse the epidemiological, pathological and clinical characteristics of breast cancer patients who were registered in BOC during a five years period.

¹Basra College of Medicine, ²Basra Oncology Center, Basra, Iraq. *For Correspondence: rafidalkhalidy79@gmail.com

Materials and Methods

The study was an observational, retrospective study analysing the records of breast cancer patients registered in BOC between January 2011 and December 2015. Since this was a retrospective study, a waiver of informed consent was sought and obtained from the institutional ethics committee. All the cases with confirmed diagnosis of breast cancer and histopathological results were included in the study, while recurrent cases were excluded. Demographic data (age, gender) and tumor-related data (site, laterality, histopathological type, grade of differentiation, tumor stage at diagnosis) were collected from the patient record.

All data was described as numbers and percentages. Microsoft excel was used to compile the data. Since this was a descriptive study, no statistical tests were applied.

Results

A total of 1,128 patients were found to be registered for breast cancer in BOC during the selected duration, out of which 1,000 were eligible and considered for the present study. The demographic data is summarised in Table 1. The mean age at the time of diagnosis was 50 years (ranging from 22 to 85 years), and 608/1,000 (60.8%) cases belonged to the age group 40 to 59 years. Majority (992/1,000, 99.2%) of the cases were females.

Most cases (987/1,000, 98.7%) were unilateral, and right and left sides were equally affected (right breast: 490/1,000, 49%; left breast: 497/1,000, 49.75). The histopathological subtype of the cases at the time of presentation is detailed in Table 2; the most common subtypes was ductal carcinoma (855/1,000 cases, 85.5%). Most cases belonged to differentiation grade II (580/1000, 58%), followed by grade III (360/1,000, 36%) and grade I (60/1,000, 6%). The TNM staging at the time of presentation is detailed in Table 3; the most common stages were T2N0M0 (stage II-A; 194/1,000, 19.4%), followed by T2N1M0 (stage II-B; 184/1,000 (18.4%).

Table 1. Age and Sex Distribution of Patients with Breast Cancer

Age distribution	
Age group	No (%)
20-29 years	11 (1.1)
30-39 years	165 (6.5)
40-49 years	347 (34.7)
50-59 years	261 (26.1)
60-69 years	168 (16.8)
70-79 years	36 (3.6%)
≥ 80 years	12 (1.2)
Total	1000 (100.0)
Sex distribution	
Sex	No (%)
Female	992 (99.2)
Male	8 (0.8)
Total	1000 (100.0)

Table 2. Histopathological Subtypes at Presentation of Patients with Breast Cancer

Subtype	No (%)
Ductal carcinoma	855 (85.5)
Lobular carcinoma	67 (6.7)
Medullary	16 (1.6)
Tubular	13 (1.3)
Mucinous (colloid)	10 (1.0)
Ductal in situ	4 (0.4)
Papillary	2 (0.2)
Other rare types	33 (3.3)

When all sub-stages were combined, the most number of patients belonged to stage II (450/1,000, 45%), followed by stage III (330/1,000, 33%). Lymph node involvement at any stage was observed in 561/1,000 (56.1%) of the patients, excluding those with metastatic disease.

Table 3. TNM Staging at Presentation of Patients with Breast Cancer

TNM Stage	No (%)
Stage 0	
T ₀ N ₀ M ₀	4 (0.4)
Stage I-A	
T ₁ N ₀ M ₀	50 (5)
Stage I-B	
T ₁ N ₁ (mi)M ₀	4 (0.4)
T ₀ N ₁ (mi)M ₀	2 (0.2)
Stage I combined	56 (5.6)
Stage II-A	
T ₀ N ₁ M ₀	3 (0.3)
T ₁ N ₁ M ₀	41 (4.1)
T ₂ N ₀ M ₀	194 (19.4)
Stage II-B	
T ₂ N ₁ M ₀	184 (18.4%)
T ₃ N ₀ M ₀	28 (2.8%)
Stage II combined	450 (45.0)
Stage III-A	
T ₀ N ₂ M ₀	3 (0.3)
T ₁ N ₂ M ₀	4 (0.4)
T ₂ N ₂ M ₀	126 (12.6)
T ₃ N ₁ M ₀	52 (5.2)
T ₃ N ₂ M ₀	61 (6.1)
Stage III-B	
T ₄ N ₀ M ₀	3 (0.3)
T ₄ N ₁ M ₀	8 (0.8)
T ₄ N ₂ M ₀	19 (1.9)
Stage III-C	
T _{any} N ₃ M ₀	54 (5.4)
Stage III combined	330 (33)
Stage IV	
T _{any} N _{any} M ₁	160 (16.0)

Stage III and stage IV, representing locally advanced or metastatic cancer, made up nearly half of all the cases (stage III and stage IV combined: 490/1,000; 49%).

Discussion

The present study was undertaken to analyse the epidemiological and clinico-pathological pattern of breast cancer patients registered in a tertiary care oncological centre in Basra, Southern Iraq over a period of 5 years. To the best of our knowledge, this is the first study to describe the pattern of breast cancer patients from Southern Iraq.

It has been reported that the average age at presentation of breast cancer in patients from the Arabian region is around a decade earlier than the Western world (Albeshan et al., 2018). Reflecting this trend, the mean age at the time of diagnosis in our study was 50 years, and it is almost similar to studies reported from countries of the Arab region, such as Yemen (El-Zaemey et al., 2012), Bahrain (Hamadeh et al., 2014), Jordan (Arkoob et al., 2010), Oman (Mehdi et al., 2014), and Lebanon (Chahine et al., 2015). However the mean age at diagnosis of breast cancer is much higher in countries like the USA (61 years) and Western Europe (63 years) (Lakkis et al., 2010). This indicates that women from Iraq and neighbouring regions present with breast cancer at an earlier age than women from US and Western Europe. This also points towards the necessity of implementing screening programmes for Iraqi women of younger age group, although to ascertain a high risk at younger age, there is further need to conduct studies to understand age-specific incidence rates.

In our study, 8/1,000 (0.8%) patients with breast cancer were males. Breast cancer in males is a rarer entity than females, and is estimated to account for <1% of all breast cancers (Abdelwahab, 2017). It has been reported that the incidence of male breast cancer is rising, and a 2015 study from Iran reported an incidence of 2.8% of breast cancer in males over a period of 10 years (Jazayeri et al., 2015). A further focussed study is required to investigate whether male breast cancer is also increasing in Iraq or not.

According to the WHO classification, there are up to 21 distinct histological types of breast cancer, depending upon the cell morphology, growth and pattern (Dieci et al., 2014). In our study the most frequent histological subtype was invasive ductal carcinoma, which accounted for 85.5% of all cases. Invasive ductal carcinoma of the breast is by far the most common histological subtype of breast cancer. However, the proportion of patients affected by invasive ductal carcinoma varies across the world: in the US, invasive ductal carcinoma comprises 70-80% (Li et al., 2005), whereas in Africa it is much lower at 64.9% (Balekouzou et al., 2016). Previous studies from Iraq have reported both lower (67%) (Alwan, 2016) and higher (92.8%) (Runnak et al., 2012) proportions of patients having invasive ductal carcinoma.

In addition to the histological subtype, the grade of differentiation helps to further fine-tune therapy for patients.

The NGS, which divides breast cancer patients into three grades based on degree of differentiation, is endorsed by various professional bodies across the world, including the World Health Organization, the Royal College of Pathologists, European Union, and the American Joint Committee on Cancer (Rakha et al., 2010). In our study, grade II and grade III cancers comprised respectively of 58% and 36% cases. A study from Jordan also suggested that most breast cancer cases belonged to grade II followed by grade III, but they represented 43.5% and 39.9% cases respectively (Shomaf et al., 2013). Studies involving larger populations are required to determine the distribution of histological subtype and grading of differentiation in patients with breast population in this geographic region.

Initially proposed by the American Joint Committee on Cancer (AJCC), the TNM staging system has been the main tool for determining the prognosis and the need for adjuvant treatment in breast cancer patients (Jung et al., 2015). However, TNM system faces the disadvantage that it is purely based on anatomy, and with the advances in molecular biology, markers such as ER (estrogen receptor), PR (progesterone receptor) and HER2 (epidermal growth factor receptor) are being increasingly used to predict prognosis in breast cancer (Orucevic et al., 2015). Despite this, TNM staging continues to be an important component in breast cancer management. In fact, TNM staging combined with age offers a reliable predictor for overall survival in breast cancer (Orucevic et al., 2015). In our study, the majority of the patients belonged to stage II, followed by stage III. Such a trend is also reported previously from studies from the Arab region (Ezzat et al., 1999). However, in the Western countries, the trend is reversed: maximum number of cases belong to stage I, followed by stage II, III and IV (Orucevic et al., 2015). The stage of breast cancer in Arab women has been shown to be more advanced in every age group when compared to Jewish women (Tarabeia et al., 2007). This also points towards the necessity of early screening and detection of breast cancer among women and the need for early treatment initiation. In light of the findings of this retrospective study, further prospective studies are warranted to explore the interrelationship between TNM staging, histological grading, biological markers positivity, age at incidence, and survival rates of breast cancer in Arab women when compared to women from other ethnicities.

In conclusion, breast cancer presents at least a decade earlier in women from southern Iraq (and Arab region in general) when compared to the western world, and about 60% of cases are from the age group of 40-59 years. Ductal carcinoma is the most common histopathological type followed by lobular carcinoma. Most women belong to stage II and stage III of breast cancer, and about 49% of cases are locally advanced or metastatic at the time of diagnosis. Early screening and detection of breast cancer is the need of the hour to facilitate prompt treatment and reduction of mortality associated with breast cancer in Iraqi women.

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