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Breast Cancer in Young Women: A Clinicopathological Hospital-based Descriptive Study from Kurdistan, Iraq

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Abstract

Background: Young women with breast cancer have been reported to present more aggressive clinical and pathological features, requiring more treatment options compared with older patients. Our objective was to investigate the clinicopathological features of breast cancer in our local young women.

Method: We conducted an observational descriptive study on 100 young women (age ≤ 40) with breast cancer. The subjects were taken care of, at a single tertiary cancer facility, from mid-2007 to mid-2014. We reviewed the clinicopathological profiles and therapeutic strategies.

Results: Ratio of breast cancer in young women was about 13% of all breast cancer patients. The mean age of the patients was 35 years ± 4SD. 56% of the patients had grade III tumors and 46% were in stage III. Hormonal receptors were positive in 70%, while HER2 was positive in 26%. 70% of the patients underwent modified radical mastectomy, 96% received chemotherapy, and 70% received radiotherapy and required hormonal therapy.

Conclusion: This review showed that breast cancer in our local young women was largely diagnosed at advanced stages with more aggressive clinico-pathological features. Moreover, most of the patients received more aggressive treatment options. Therefore, physicians should pay a close attention to breast lumps in young women.

Keywords: Breast cancer, Young women, Kurdistan, Iraq

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Introduction

Breast cancer is the most prevalent cancer among women and the principal cause of cancer-related mortality among women in both developing and developed countries.[1]

In Iraq, breast cancer is the most frequent cancer among women and

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accounts for approximately one-third of the registered female cancers. Among Iraqi women, the incidence rate of breast cancer increased from 26.6 per 100,000 in 2000 to 31.5 per 100,000 in 2009, and it is still inflicting the young age group.[2, 3]

Worldwide, approximately 7% of all breast cancer cases are diagnosed in women less than 40 years of age.[4, 5] Breast cancer in young women is an important topic for manifold reasons. First of all, breast cancer prevalence in young women has been steadily rising in several countries over the past years.[6, 7] Moreover, breast cancer management in young patients requires an integrated approach considering relevant issues such as fertility preservation, pregnancy, and long-life expectancy. Overall, breast cancer in young patients has been reported to be associated with an increased risk of recurrence and death along with more aggressive clinical and biological characteristics in comparison with older patients.[8-13]

The main objective of this study was to review and evaluate the clinicopathological characteristics of breast carcinoma in our local women ≤40 years and compare the data with Middle-Eastern, western, and Asian countries to determine the extent and behavior of breast cancer in our locality. This will eventually broaden our insight into dealing with breast cancer and discovering the conflicts for the community in facing that disease.

Patients and Methods

This was an observational descriptive study carried out at Hiwa Cancer Hospital (HCH) in Sulaimani, Iraqi Kurdistan, covering a period of seven years from July 2007 to July 2014. The project was launched after obtaining the ethical approval from both the Department of Health (DOH) in Sulaimani and HCH to access the patients' data. Verbal consent was approved by the Institutional Review Board (IRB) at HCH, because the present study is merely observing and not interfering with the treatment plans. The patients were phoned and asked for their verbal consent, prior to data collection. General information was obtained from the patient database in the registry unit. Afterwards, the patients were once again contacted for personal interrogation. The collected patients' data included the following:

Age and clinicopathological features

These features comprised: clinical presentation at primary diagnosis, tumor size, histological type, histological grade (Nottingham grading system), axillary lymph node status, and the presence or absence of lymphovascular invasion. The used staging system was the pathological stage according to the AJCC 7th edition in 2010 (Tumor, Node, Metastasis).

Immunohistochemistry (IHC)-based subtypes

Breast cancers were classified into four IHC-based subtypes according to the expression of the hormonal receptors (HR) and the human epidermal growth factor receptor 2 (HER2): Luminal A (HR +ve / HER2 -ve), Luminal B (HR +ve / HER2 +ve), HER2 overexpression (HR -ve / HER2 +ve), and basal-like (HR -ve / HER2 -ve).

Treatment modalities

They included: types of the surgery, and neoadjuvant and adjuvant therapies were given to the patients (chemotherapy, radiotherapy, and hormonal therapy).

The inclusion criteria were female patients, who were 40 years or younger at the time of diagnosis and had been diagnosed by histopathology-proved breast carcinoma.

The exclusion criteria were dead patients, females > 40 years, and male subjects.

The data of the patients were entered and analyzed using the SPSS version 17th statistical software (SPSS Inc., Chicago, IL, USA).

Results

A convenient sample of 100 patients (with a mean age of 35 years ± 4 standard deviation (SD)) fulfilled the inclusion criteria. The age distribution showed a peak at 36-40 years of age. The ratio of breast cancer in young women was 13% of all patients diagnosed with breast cancer over the period of seven years. The mean tumor

Table 1. Age and clinicopathological features

	No. (Total=100)	(%)
Age at Diagnosis		
25-30	14	14.0
31-35	30	30.0
36-40	56	56.0
Clinical Presentation		
Painless lump	73	73.0
Painful lump	20	20.0
Nipple discharge	3	3.0
Incidental diagnosis	2	2.0
Fungating breast mass	1	1.0
Inflammatory breast cancer	1	1.0
Tumor Stage		
Tx	1	1.0
Tis	4	4.0
T1	19	19.0
T2	62	62.0
T3	13	13.0
T4	1	1.0
Histological Type		
IDC	94	94.0
ILC	2	2.0
DCIS only	4	4.0
Histological Grade		
Grade I	4	4.0
Grade II	40	40.0
Grade III	56	56.0
Axillary Lymph Node Status		
Positive	69	69.0
Negative	26	26.0
No dissection	5	5.0
Lympho-Vascular Invasion		
Positive	45	45.0
Negative	55	55.0
Pathological Stage (AJCC)		
Stage 0	4	4.0
Stage I	8	8.0
Stage II	36	36.0
Stage III	46	46.0
Stage IV	6	6.0

T: tumor. Tx: primary tumor cannot be assessed. Tis: tumor in situ. IDC: invasive ductal carcinoma. ILC: invasive lobular carcinoma. DCIS: ductal carcinoma in situ. AJCC: American Joint Committee on Cancer.

size was 3.4 cm (SD= 1.6). The higher histological subtype was invasive ductal carcinoma (94%) followed by the ductal carcinoma in-situ (without invasive carcinoma), and then, the invasive lobular carcinoma. Regarding the Nottingham grading system, grade II and grade III were found in 40% and 56%, respectively. Positive axillary lymph node was observed in 69%. Lymphovascular invasion was present in 45% of the tumors. Pathological stage showed that stage III was the predominant stage at the time of diagnosis (46% of the studied patients). Stage IV existed in 6% at primary diagnosis and another 20% had distant metastases in different periods after the primary diagnosis. Table 1 shows the clinicopathological features of the patients.

The results of IHC-based subtypes are as follows: accounting for 59% of the patients, luminal A was the most prevalent type, followed by luminal B (HER2 +ve), HER2 overexpression,

Table 2. Immunohistochemistry-based subtypes

	No. (Total=100)	(%)
Luminal A (HR +ve, HER2 -ve)	59	59.0
Luminal B (HR +ve, HER2 +ve)	11	11.0
HER2 overexpression (HR -ve, HER2 +ve)	15	15.0
Basal-like (HR -ve, HER2 -ve)	15	15.0

HR: hormone receptor. HER2: human epidermal growth factor receptor 2

and basal-like subtypes found in 11%, 15% and 15%, respectively (Table 2).

Table 3 reviews the treatment modalities of the patients. The most common type of surgery was modified radical mastectomy (mastectomy with axillary lymph node dissection) conducted on 70% of the patients; whereas, breast conserving surgery (BCS) was performed on only 29%. Chemotherapy was administered to 96% of the patients and 70% of the cases received adjuvant radiotherapy and required hormonal therapy.

Discussion

Our study showed that the ratio of breast cancer in young women was 13% of all breast cancer cases. We designated 40 years as the cut-off age limit for our study as most articles referring to women under the age of 35 or 40 years as "young".[10]

According to the Iraqi Cancer Registry Center, the ratio of breast cancer in Iraqi women younger than 40 years was 15.7% in 2015. In the United States, about 7% of breast cancer cases were diagnosed among women younger than 40.[10,14] This relatively higher ratio (in comparison with the United States) could be attributed to certain biological factors in our region. Examples of these factors are: 1) early menarche which implies a longer lifetime exposure of the breast to the female sex steroid, where more than a half of the Iraqi females have menarche starts at 10-12 years of age;[15] and 2) the females in the Middle-Eastern countries (including Iraq) most get breast cancer at a relatively earlier age (nearly 10 years earlier) compared with the women in the western countries.[2] Moreover, the Asian population might have a genetic tendency towards developing early breast cancer. A study concluded that breast cancer in Arab women has different characteristics from those reported in European and American populations. These disparities are not merely limited to clinicopathological features; they also exist at a molecular level, as shown by the findings of genome-wide association studies and expression profiling.[16] Multifactorial studies are required to investigate these factors.

Late-stage diagnosis in our young women might be explained by the fact that the breast tissue of younger women is denser; therefore, it is more difficult to detect breast cancer by physical examination and mammography. Infrequent screening due to lack of awareness on breast cancer and its risks might further contribute to delayed diagnosis.[2, 14] Breast cancer in our young women expressed more hormonal receptors with less HER2 overexpression, although this result was comparable to both local and non-local studies.[17, 18] According to the 1998 St. Gallen guidelines, age ≤ 35 is a poor prognostic factor and all younger patients must undergo more aggressive systemic therapies such as chemotherapy. Our patients in this study required and received more aggressive treatment, which is in line to the studies done on young patients.[5, 19] For validation, these findings require more studies with larger number of patients and controls.

This was an observational and descriptive study, so there was difficulty in contacting the diagnosed and cured patients to get full information.

In conclusion, this study showed that compared with the developed countries, breast cancer in young women (≤ 40 years) in Iraq had a relatively higher proportion, with most of the patients diagnosed at advanced stages of the disease and their tumors showing more aggressive clinicopathological features. More studies with larger number of patients and case-controls are recommended to validate

Table 3. Treatment modalities

	No. (Total=100)	(%)
Surgery		
Mastectomy	70	70.0
BCS	29	29
No surgery	1	1.0
Chemotherapy	96	96.0
Radiotherapy	70	70.0
Hormonal therapy	70	70.0

BCS: breast conserving surgery

these initial findings. The increase in breast cancer education at our secondary and higher institutions can help raise the awareness on breast cancer among this population.

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Conflict of Interest

None declared.

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