

Breast Cancer in Fallujah District (Iraq), A Comparative Pathological Study

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Abstract

Background: The most common cancer in the world is breast cancer. For Iraq, this tumor is the number one cancer in women, but unfortunately there is a dearth of academic studies covering this tumor, despite some studies have indicated a general increase in cancer in Iraq, especially in Fallujah, and these studies attributed the reason to the possible use of carcinogenic weapons in repeated wars in this region.

The aim of this study is to determine the average age of breast cancer patients at diagnosis, and also the type, side, pathological stage and grade of tumor, in order to do statistical assessment with different studies in the Arab region and the world as well as the other Iraqi region.

Materials and Method: This is a retrospective descriptive study of breast cancer, cases of breast cancer were collected over two periods, the first extended from 1st February 2011 to 30 December 2014, and the second between 1st June 2017 and 31 October 2019, and 342 cases had been recorded in this study.

Results: The average female-age at time of diagnosis: 47.59 (SD: 13.11), cases with age <50 y: 66.4%, patients in early TNM stage (pT0 & pT1 categories) forming only 4.68%. concerning the types of tumor: infiltrative ductal carcinoma of no special type: 86.26%, medullary type: 7.02% mucinous: 2.05 & invasive lobular: 4.09%, malignant phyllodes: 0.29%, and metaplastic carcinoma: 0.29%. Left (185)/Right (157) = 1.157 and the percent of both sides involvement was 2.6%.

Conclusion: The average age of breast cancer in Fallujah is earlier than other Arab and Western countries and even in certain areas of Iraq, and it comes with late stage and higher grade.

Keywords: Breast Cancer, Iraq, Fallujah.

Introduction

Breast cancer is the most common cancer in the world and it is also the leading cause of cancer deaths

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in women^(1,2,3,4) approximately 25% of all cancers and 15% of cancer deaths are caused by breast cancer^(5,6). In low- & middle-income countries, the survival of those patients tends to be short because of late diagnosis, and lack of medical care & availability of standard treatment⁽⁵⁾. The incidence rate of breast cancer in the Arab countries is much lower than in Western countries, and the prevailing expectations among Arab doctors that breast cancer has a tendency to affect the early age group and comes at a later stage⁽⁷⁾.

In Iraq, one third of cancers are caused by breast cancer, accounting for the most recorded cancer^(8,9,10,11).

In Western countries there is an increase in the incidence of breast cancer with constant or decreasing mortality^(1,12) but in the Middle East, there is still a noticeable rise in the incidence particularly in young females, with late stages and diagnosis and eventually with poor survival rate⁽¹¹⁾ Statistics in Iraq showed an increase in incidence of breast cancer between 2000 and 2009 from 26.6 per 100,000 to 31.5 per 100,000, such incidence sets Iraq in the low-risk region, but unfortunately it affects the young age group^(9,6). There is a lack of official records of Iraqi hospitals in terms of documenting the clinical aspects including tumor size, grade, stage in presentation, hormonal (estrogen and progesterone receptors), Her2neu status, and lymph nodes status.⁽¹¹⁾ This inevitably applies to hospitals in Fallujah, which necessitates scientific research provides important statistical information, especially as this region has been subjected to frequent wars and the use of weapons that some articles suggested that these weapons may be the cause of increasing the rate of cancer and birth defects in this region⁽¹³⁾.

Materials and Method

This study is designed as a retrospective descriptive study, the cases had been collected over two periods, the first extending from 1st February 2011 to 30 December 2014, and the second between 1st June 2017 and 31 October 2019, the interruption interval from 31 December 2014 to 30 May 2017, was due to military operations in the region against armed groups that led to a mass migration of the populace and the disruption of health services and lack of records. Breast cancer cases n=403 cases (314 cases in the first period and 89 cases in the second period) were collected from pathology laboratories that cover Fallujah and its sectors, and histological diagnosis was confirmed by two pathologists. The variables included in the study were the age & sex of the patient, the type & size of the tumor, degree of differentiation, the side of the tumor, and the condition of the lymph node.

In any case that did not contain any of the previously established variables as well the cases from outside Fallujah and its sectors were excluded. The excluded cases = 44 cases, and the enrolled case = 342 cases.

For staging, the seventh's edition of American Joint's Committee was applied⁽¹⁴⁾, and Nottingham Histologic Score system was used for grading⁽¹⁵⁾.

Scientific Committee in the College of Medicine - University of Anbar agreed to act in accordance with the laws in force.

Results

The patient age at diagnosis: 47.59 (+ 13.11): The frequency distribution of age is shown in (Table-1).

Table-1 Frequency distribution of age at diagnosis of breast cancer

Age group	Frequency	Percent	Cumulative Percent
<30	21	6.1	6.1
31-40	87	25.4	31.6
41-50	119	34.8	66.4
51-60	60	17.5	83.9
61-70	39	11.4	95.3
71-80	12	3.5	98.8
>80	4	1.2	100.0
Total	342	100.0	

Tumor Stage at Presentation (T category of TNM system): Figure-1

T0 is 2/342 = 0.58 %.

T1 is 12/342 = 4.10%.

T2 is 212/342 = 61.98%.

T3 is 109/342 = 31.78%.

T4 is 7/342 = 2.04%.

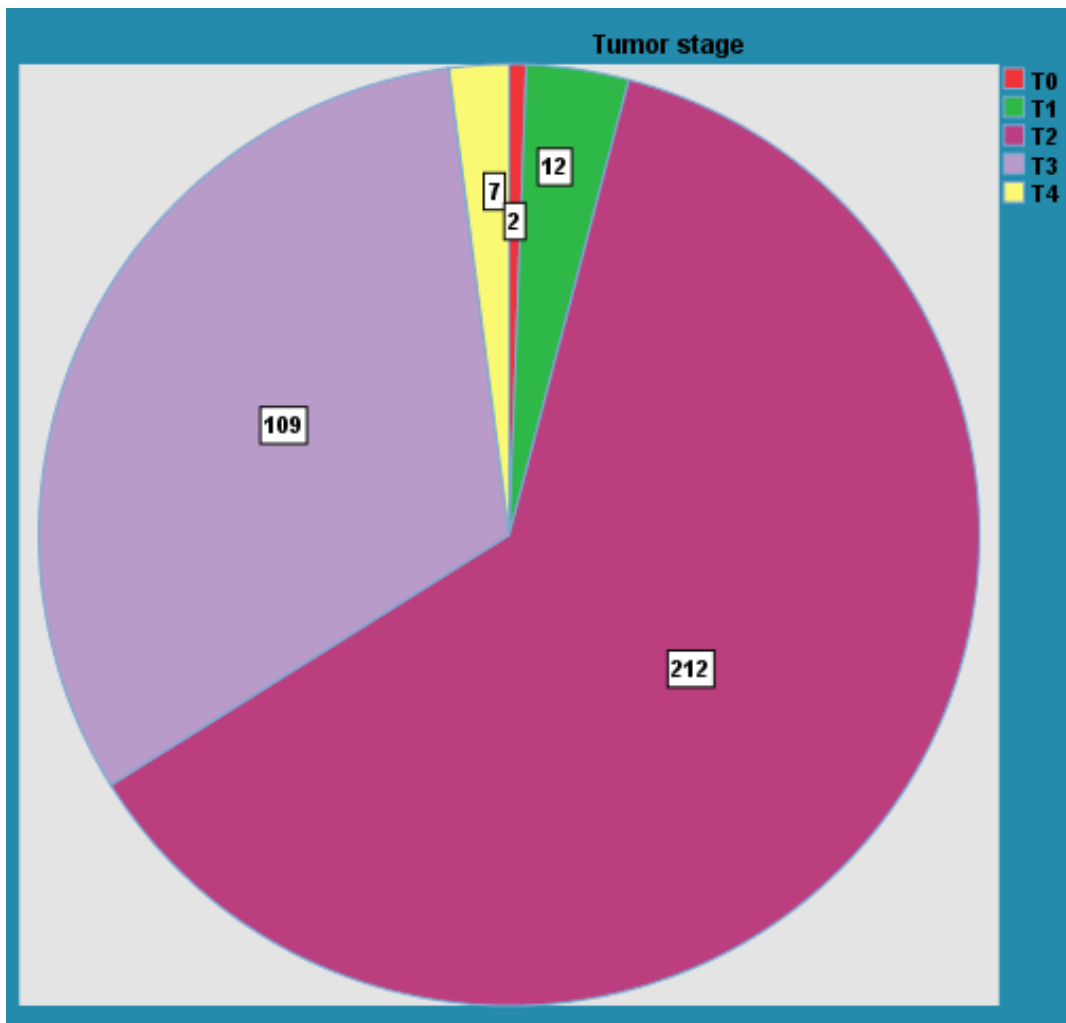


Figure-1. Showing tumor stage of breast cancer at presentation.

Tumor Grades:

I = 53/342 (15.49%).

II = 161/342(47.08%).

III = 128/342 (37.42%).

Tumor Types: (Figure 2)

- Invasive ductal carcinoma not otherwise specified, NOS: 295/342 = 86.26%.

- Medullary: 24/342 (7.02%).
- Invasive lobular: 14/342 (4.09%).
- Mucinous: 7/342 (2.05%).
- Metaplastic carcinoma: 1/342 (0.29%).
- Malignant phyllodes: 1/342 (0.29%).

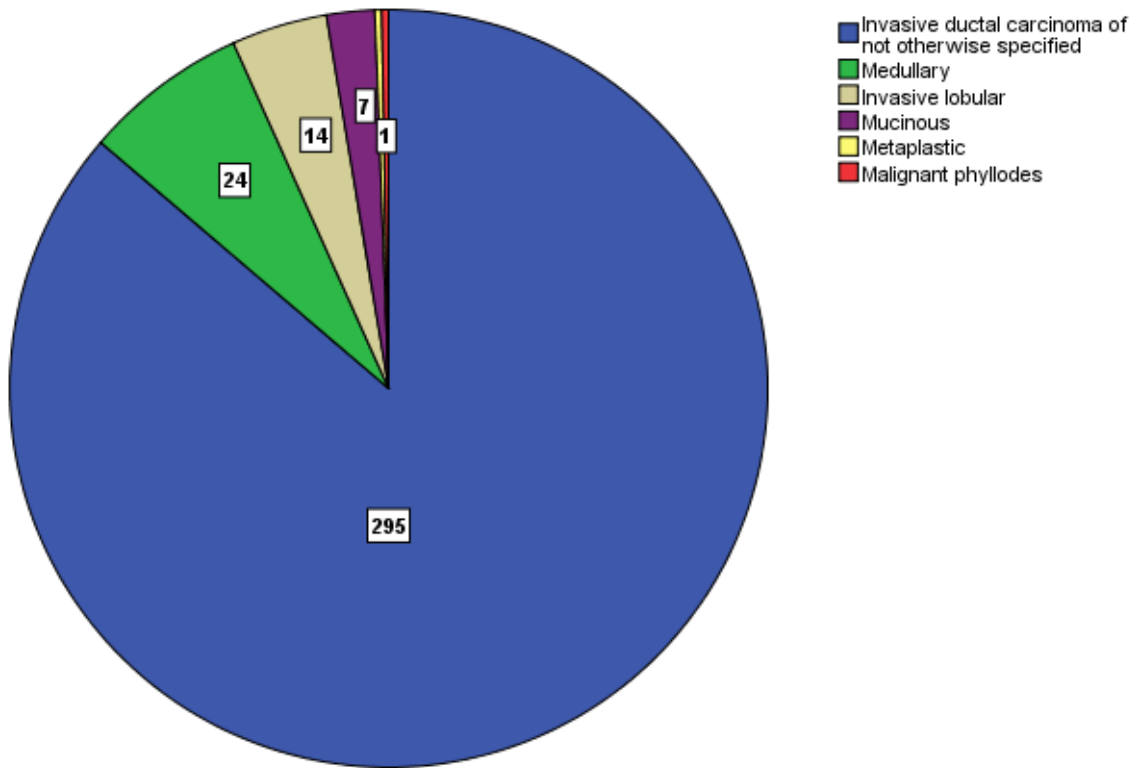


Figure 2: Showing tumor types of breast cancer at presentation

Tumor side: Left breast side (185)/Right breast (157) = 1.17.

Both breasts: 9/292 = 2.6%.

Discussion

Age of patient at presentation: The average of patients' age in this study is 47.59 (SD: 12.15), which is statistically lower than the following comparative studies:

- Al-Hashemi study that achieved in Iraq- 2009, where the average age of breast cancer patients was 52 years, $p < 0.0001$ ⁽⁹⁾.
- Mullah Karim *et al.*'s study conducted in northern cities of Iraq in 2015, this study included 536 cases and the average age was 49.42 (+ 11.6), $p < 0.025$ ⁽⁴⁾.
- Divya A.*et al.* study, that performed the united states in 2015 and the median age was 59 (+ 13.07, $p < 0.0001$)⁽¹⁶⁾.
- Najjar and Esson study, which covered 12 Arab countries in 2010, where the average age was 48 (+ 2.8), $p < 0.04$ ⁽⁷⁾. Worldwide, the percentage of breast cancer in females under the age of 40 years is 6.6% of total breast cancers.⁽³⁾, and in United States

and industrialized countries, the percentage of those under 50y is less than 27%. In Arabic studies, they found that 50% of breast cancer cases had impacted those less than 50 years⁽¹⁷⁾.

In the current study, 108 patients out of 342 (31.6%) were under the age 40 years, and 227 cases/342 (66.4%) were under the age 50 years and this is clearly greater than the global averages, the United States, industrialized countries and Arab countries Referred to above.

In conclusion, the average age of breast cancer in Fallujah in this study is earlier than other Arab and developed countries and even certain areas of Iraq, and the same conclusion for incidence rate where the incidence rate of those under 50 years is also greater than the mentioned above areas.

Tumor Stage: A minority of cases i.e. only 14 cases out of 432 (4.68%) were discovered in early stage (pT0-pT, according to TNM system), while 321/432 (93%) were diagnosed beyond the early stages. In the united states, about 60% of cases were discovered at early stage⁽¹²⁾.

This result of late diagnosis of breast cancer in Fallujah is in agreement with other studies that conducted

in developing countries and concluded that most cases of breast cancer are discovered in advanced stage. ^(1,7,10,12).

Tumor Grades: 15.49% of the cases were grade-I, 47.08%, cases were grade-II, and 37.42 cases were grade-III.

These results are analogous to Nada Alwan's study that achieved in Iraq in 2014, where she found about 40% of the cases are of high-grade type, confirming the high incidence of a high grade tumor in this region. ⁽¹¹⁾.

Tumor types: The rates of mucinous carcinoma and medullary carcinoma in this study were comparable to Inhye P. *et al.* & Kelli Y. *et al.*'s studies ^(18,19), in a comparison to Laure D. and Patrick R. Benusiglio & S. E. Singletary *et al* studies, current study reveals a lower rate of invasive lobular carcinoma ^(20,21), the reason for this low rate of this tumor may be explained by the fact that invasive lobular carcinoma is usually affected the old age with use of hormone replacement therapy (HRT). Therefore, the high incidence rate of cancer in the young ages that shown in this study as well as the lack of HRT, may be the cause of the low incidence rate of this tumor.

Tumor Side:

Left breast side preponderance and the rate bilateral cases of breast cancer in this study were in alignment with other studies ⁽²²⁻²⁶⁾.

Conclusion

In Fallujah and its sectors, cancer of breast is comparatively low, but unfortunately affects a young age group with later stage and higher grade.

Ethical Clearance: The Research Ethical Committee at scientific research by ethical approval of both environmental and health and higher education and scientific research ministries in Iraq

Conflict of Interest: The authors declare that they have no conflict of interest.

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