Breast Cancer: An Analytic Study

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Abstract:
Objectives: To find the relation between the duration of symptoms at presentation and the size of the mass at diagnosis of breast cancer.
Design: Retrospective study
Setting: Al-Yarmouk Teaching Hospital and Private Hospitals in Baghdad.
Patients: The records of 60 patients {personal series} with breast cancer were reviewed; the required data were recovered and analyzed
Results: The mean size of the mass at diagnosis was 3.3 cm. The mean duration at presentation was 9.7 weeks. Also it shows the mean number of lymph nodes involved was 2.64 and the mean age of patients was 43 years. Most of our patients 37 (61.7%) presented in stage 2.
Conclusion: There is a delay in presentation of patients with breast cancer, which necessitates an intensive campaign of health education and to consider the place of screening program.

Key Words: Breast cancer, Size of the mass, Duration at presentation.

Introduction

The importance of knowing the size of the mass in breast cancer cannot be underestimated; the size can be measured clinically by physical examination. Staging of cancer (Manchester and TNM system) depends on the size of the mass, lymph nodes involvement and metastasis. The pathological classification of TNM system depends partly on measuring the size of the mass and identifying the number of lymph nodes involved, and their size [1]. Staging will dictate the type of treatment and will predict prognosis [2]. Doctors cannot palpate a mass smaller than 8-10 mm, so a lesion T1a (5 mm or less) will be detected by mammogram [3]. Screening is an attempt to detect breast cancer early; by the time tumor is clinically apparent (1 cm in diameter) it has probably been growing for 5-10 years. The average doubling time is approximately 100-180 days [4, 5]; it would take 20 doublings for one cell to grow into 1 million cells (a mass approximately 1 mm in diameter). The larger the size of the tumor the greater the likelihood that it had produced metastasis [6]. It is well established that prognosis is directly related to the size of cancer, its histological grade and whether a tumor has spread to axillary lymph nodes [6]. This shows the importance of early detection of the disease. In the absence of proper screening program, it would be justifiable to instruct people to seek medical advice as early as possible when they have symptoms of breast disease.

Since this is the first literature in our country to cover such aspect, this study was conducted in trial to find a relation between the mean duration at presentation and the mean size of the mass at diagnosis, to throw a light on the size of the problem in our country.

Patients & Methods

The records of 60 patients (personal series) with carcinoma of the breast were reviewed; full clinical presentation and management were documented. The duration represents the time interval in weeks between the day the patient discovered a mass or had any symptoms related to the breast and the day the patient presents to the doctor. The size of the mass represents a measure of the tumor in its greatest dimension in centimeters in a pathological specimen. All investigations and the histopathological findings related to the type of the tumor, grade and the number of lymph nodes involved by metastasis were also recorded. Staging of the tumor depends on the TNM system.

The analysis of data collected was done with computer using the available statistical software packages of SPSS-11.5 (Statistical Packages for Social Sciences-version 11.5). Data were presented in simple measures of frequency, percentage, mean, standard deviation, and range. The relation between the size of the mass and the duration was analyzed, and their relation to other parameters like lymph nodes, age, type of the tumor and the stage were also studied. T- Test and ANOVA (F-test) were used for testing the significance of difference of different means with $P<0.05$ was used as the limit of significance.

Results

There were 60 female patients with breast cancer, the age range was 25-70 years, and the mean age was 43.14 years. The mean size of the mass was 3.3 cm and the mean duration was 9.7 weeks. The relation between the size of the mass and the means of duration in weeks, number of lymph nodes involved by metastasis, and age is shown in table1. While table 2 shows the relation between the duration in weeks and the means of the size of the mass measured in centimeters, the

number of lymph nodes involved by metastasis, and the age of the patients.

. There was a statistically significant relation between the size of the mass and the duration .there was also a statistically significant relation between the stage of the disease and size of the mass, duration in weeks, and lymph nodes involved by metastasis, but it was not significant in relation to the age of patients. Other parameters were also studied like type of the malignant tumor, the location and site of the tumor, and family history of malignant disease

Table 1: The relation of the size of the mass to the means of duration, lymph node, and age

Size	No of pt.	Duration (week) Mean±SD	Lymph node Mean±SD	Age (year) Mean±SD
1 cm.	6	4.0±0.0	0.4±0.98	40.6±6.27
2 cm.	21	5.53±4.61	1.89±3.30	42.37±11.76
3 cm.	15	7.87±6.31	2.60±3.62	41.93±8.30
4 cm.	7	18.0±4.20	4.84±6.31	41.33±7.11
5 cm.	6	16.0±8.0	4.0±3.03	47.66±15.06
6 cm.	4	20.0±5.67	4.50±5.20	43.75±13.77
10 cm.	1	20	0	70
Total	60	9.77±7.59 Range 1-24	2.64±3.83 Range 0-17	43.14±10.87 Range 25-70
P value		0.0001*	0.368	0.247

N.B Size 1cm means up to 1.9, size of 2cm. means 2 up to 2.9 etc... *Significant difference

Table 2: The relation of duration in weeks to the means of size of the mass, lymph nodes, and age

Duration (week)	No of Patients	Size (cm) Mean±SD	Lymph node Mean±SD	Age (year) Mean±SD
1	3	2.67±0.29	4.0±5.29	55.33±10.12
2	2	2.5±0.71	0	40.50±14.84
3	2	2.75±0.36	0	47±12.73
4	21	2.3±0.89	1.6±2.7	39.30±7.22
6	2	2.6±0.0	1.0±0.0	36.0±0.0
8	7	2.92±0.49	2.17±3.49	40.5±10.65
12	6	4.18±1.45	3.17±2.93	42.0±14.13
16	4	3.5±0.58	3.0±6.0	38.0±8.69
20	7	5.28±2.63	4.0±6.51	50.67±16.08
24	6	4.92±1.02	5.83±3.25	49.83±7.22
Total	60	3.30±1.58 Range 1-10	2.64±3.38 Range 0-17	43.14±10.86 Range 25-70
P value		0.0001*	0.441	0.135

*Significant difference

Table 3: The relation of the stage to the means of size, duration in weeks, lymph node, and age.

Stage	No of Patients	Size (cm) Mean±SD	Duration (week) Mean±SD	LN Mean±SD	Age (year) Mean±SD
1	11	1.7±0.422	4.2±1.47	0	40.4±9.477
2A	19	2.91±0.78	7.42±5.74	0.63±2.31	42.1±10.9
2B	18	3.86±1.82	12.24±8.45	4.18±3.13	44.0±11.113
3A	10	4.83±1.25	16.0±7.09	6.0±5.10	46.75±13.59
3B	1	6±0.0	24.0±0.0	12.0±0.0	50±0.0
4	1	2.5±0.0	4.0±0.0	5.0±0.0	40±0.0
Total	60	3.30±1.58 Range 1-10	9.77±7.59 Range 1-24	2.64±3.83 Range 0-17	43.14±10.86 Range 25-70
P value		0.0001*	0.001*	0.0001*	0.823

*Significant difference

Discussion

The relation between the size of the mass and the means of duration in weeks, number of lymph nodes involved by metastasis and age are shown in table 1, from this table, we find there are 6 (8.3%) patients had a size of the mass about 1cm., while the mean duration was 4 weeks, the mean number of lymph nodes involved was 0.4 and the mean age of the patients was 40.6. There were 21 (35%) patients had a size of the mass about 2 cm, while the mean duration was 5.5 weeks, the mean number of lymph nodes involved was 1.89 and the mean age of the patients was 42years. There were 15 (25%) patients had a size of the mass about 3 cm., while the mean duration was 7.8 weeks, the mean number of lymph nodes involved was 2.6 and the mean age of the patients was 41.9. There were 7 (11.7%) patients had a size of the mass about 4 cm. while the mean duration was 18 weeks, the mean number of lymph nodes involved was 4.8 and the mean age of the patients was 41.3. There were 6 (10%) patients had a size of the mass about 5cm. while the mean duration was 16 weeks, the mean number of lymph nodes involved was 4 and the mean age of the patients was 47.6 There were 4 (6.67%) patients had a size of the mass about 6cm. while the mean duration was 20 weeks, the mean number of lymph nodes involved was 4.5 and the mean age of the patients was 43.7. There was 1 (1.7%) patient had a size of the mass about 10cm. while the mean duration was 20 weeks ,the mean number of lymph nodes involved was 0.0 and the mean age of the patient was 70.

For the sixty patients the mean duration was 9.77 weeks, mean number of lymph nodes involved was 2.64, and the mean age was 43 years. The increase in the size of the mass was related to the increase in the duration and this was statistically significant *P* value <0.05.While the size has no statistically significant relation to the number of neither lymph nodes involved nor the age.

Regarding the relation of the duration to the mean size of the mass, mean number of lymph nodes involved by metastasis and the mean age of the patients, there were 3 (5%) patients who present within a week, the mean size of the mass was 2.6 cm. the mean number of lymph nodes involved was 4 and the mean age was 55 years. There were 2 (3.3%) patients who had duration of presentation of 2 weeks; the mean size of the mass was 2.5 cm. No lymph nodes involved while the mean age of patients was 40 years. And so, there were 2 (3.3%), 21 (35%), 2 (3.3%), 7 (11.7%), 6 (10%), 4 (6.67%), 6 (10%), and 6 (10%) patients who had duration of presentation of 3, 4, 6, 8, 12, 16, 20, and 24 weeks. These patients had mean size of a mass of 2.7, 2.3, 2.6, 2.9, 4.1, 3.5, 5.2, and 4.9 cm. The mean number of lymph nodes involved was 0.0, 1.6, 1, 2.1, 3.1, 3, 4, and 5.8 and mean age was 47, 39, 36, 40, 42, 38, 50, and 49 years respectively.

For the sixty patients the mean size of the mass was 3.3 cm, the mean number of lymph nodes involved was 2.64 and the mean age was 43 years. The increase in the duration from one week to 24 weeks and over was related to the increase in the size of the mass and this was statistically significant (P=0.0001) while the duration has no statistically significant relation to the number of lymph nodes involved nor to the age of the patients.

The relation between the stage of the disease and size of the mass, the duration in weeks, the number of lymph nodes involved and the age of the patients can be seen in table 3, there were 11 (18.3%) patients in stage 1 (T1N0M0), the mean

size of the mass was 1.7 cm, the mean duration was 4.2 weeks, there were no involved lymph nodes, and the mean age was 40.4 years. In stage 2A (T1N1M0,T2N0M0) there were 19 (31.7%) patients, the mean size of the mass was 2.9 cm, the mean duration was 7.4 weeks, the mean number of lymph nodes involved was 0.63, and the mean age was 42.1. In stage 2B (T2N1M0,T3N0M0) there were 18 (30%) patients, the mean size of the mass was 3.85 cm, the mean duration was 12.2 weeks, the mean number of lymph nodes involved was 4.18, and the mean age was 44 years. In stage 3A (T1N2M0,T2N2M0,T3N1M0) there were 10 (16.7%) patients, the mean size of the mass was 4.8 cm, the mean duration was 16 weeks, the mean number of lymph nodes involved was 6,and the mean age was 46 years. In stage 3B (T4 N2,M0) there was 1 (1.7%) patient, the mean size of the mass was 6 cm., the mean duration was 24 weeks, the mean number of lymph nodes involved was 12, and the mean age was 50 years. In stage 4 (T2 N2 M1) there was 1 (1.7%) patient, the mean size of the mass was 2.5 cm, the mean duration was 4 weeks, the mean number of lymph nodes involved was 5, and the mean age was 40 years. The relation of the stage of the disease to the size of the mass was statistically significant ($P<0.05$). Also there was a significant relation between the duration ,the number of lymph nodes involved and the stage of the disease ,in both situations ($P<0.05$), the relation entails upstaging with increase in size, duration and number of lymph nodes involved by metastasis. There was no significant relation of the stage to the age of the patients.

The above results show the mean size of the mass at diagnosis was 3.3 cm. the mean duration at presentation was 9.7 weeks. Also it shows the mean number of lymph nodes involved was 2.64 and the mean age of patients was 43 years. Most of our patients 36/60 (60%) were presented in stage 2. The mean size of the mass at diagnosis was 3.3 cm. which is considered large indicating late presentation, if we know that early detection is aiming at detecting a mass of less than 1cm...It is well known that a clinically detectable mass of 1 cm. has probably going for 5-10 years[4,5] The mamographic detection of breast cancer that is not yet clinically evident appear to advance the time of detection by few years. It is also possible to estimate the interval between mamographic detectability and clinical detectability from data obtained from mamographic screening programs[7]Using the data from the Health Insurance Plan of Greater New York study, the mean interval was estimated to be 1.7 years. Other estimates of the interval that used different mathematical models vary from 1.3 to 2.4 years [8, 9].

In general the longer the time a tumor has been present the greater the likelihood that it has produced metastatic lesion. The size of cancer at the time of diagnosis is an important prognostic indicator [6].

Although the traditional staging of breast cancer uses 2cm. as the cut off for stage 1 infiltrating cancer, even with stage 1 lesion there is a significant difference in prognosis that improve with the diminishing diameter of the tumor[10] Gallagher & Martin demonstrated the benefit of finding infiltrating cancer of 5 mm or smaller[11] A number of studies have shown that finding infiltrating cancer equal or less than 1cm. has a survival benefit that is almost as high as 5 mm threshold[12-14] The detection of invasive cancer at 1cm. or smaller is an achievable goal. The size of cancer is also directly related to the probability of involvement of axillary lymph nodes and thus to prognosis [11] prognosis worsen with the number of nodes involved [15] when nodes are involved the tumor has demonstrated its ability to survive outside the breast & it must be considered systemic, so treatment with chemotherapy or hormone therapy is likely beneficial. The mean duration at presentation was 9.7 weeks so there is a delay in presentation to the doctor, this delay is added to the already present delay manifested by the size of the mass at diagnosis which is 3.3 cm where normally an early detection aims at finding a mass of less than 1 cm.

In conclusion, there is a delay in discovering a mass by the patient and when breast mass is discovered, there is further delay in presentation to the doctor The mean size of the mass at diagnosis was 3.3 cm and the mean duration at presentation was 9.7 weeks.

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