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Correlation of Primary Tumor Size with Lymph Nodal State and Histologic Grade as Prognostic Factors in Breast Carcinoma in Iraqi Patients

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ABSTRACT— This research aims to study the histological grade of breast adenocarcinoma and state of lymph node involvement, and correlating them with primary tumor size to assess if the latter can aid as guideline in deciding surgical option for treatment. This study was implemented immunohistochemistry laboratories of Al-Sadder Teaching Medical City in Al Najaf during the period from September 2020-september 2021, forty-four women with breast carcinoma who undergone modified radical mastectomy were involved in this study, aged between 29 -81 years, mean age being 47.3 years. we divided study group into two categories; depending on tumor size, with cutoff point of 2 cm. Histological grade and lymph nodes metastases were assessed and comparison done between these two groups. Majority of cases in our study were histologically grade 3(68.18%), each of grade 1 and 2 constituted 15.9%. Lymph node metastases noticed in 63.63%. Our results showed a significant difference between the two patient groups regarding axillary lymph node metastasis ($P<0.05$), but no statistically significant difference found between the two patient groups regarding histological grade ($P>0.05$). Many of the tumors in Iraqi patients are rapidly progressive, and therefore need a modern approach in their treatment and that tumor size can't be considered as dependable parameter in determining the type of surgical operation.

KEYWORDS: breast cancer, breast size, lymph nodes

1. INTRODUCTION

Breast cancer ranks the first among all cancers regarding incidence and cancer related death among Iraqi population in 2020 according to WHO international agency for research cancer, the most common form of breast cancer is adenocarcinoma, and because of its particularity in female body, surgeons often tend to choose the least extensive resection techniques when dealing with malignant tumors, mainly early stage. Minimal invasive surgery and deescalating approach is recently highly focused discussed in Techniques such as sentinel lymph node biopsy were used to remove primary tumor. histological grade is an important prognostic marker and linked to biological behavior of breast cancer, and hence its progression and lymph nodal metastasis. Breast carcinoma is the most common malignant tumor and the leading cause of carcinoma death in women [1]. Several factors are candidate to play a role in predicting possibility of distant metastasis and advanced clinical stage. In developing countries, analysis of subsets of the patient population using tumor size as a surrogate represents an indirect way to observe long-term effects of prevention [2].

2. Materials and methods

We accomplished this research in the histopathology and immunohistochemistry laboratories of Al-Sadder Teaching Medical City in Al Najaf during the period from September 2014-September 2015.

2.1 Sampling of cases

Researchers collected formalin- fixed blocks of already confirmed cases of breast cancers from 44 ladies, who undergone modified radical mastectomy, aged between 29 -81 years, mean age being 47.3yr. Total sample was classified into following groups:

(a) Study group: 24 cases whom tumor size was ≤ 2cm.

(b) comparative group: 20 cases with tumor size >2 cm.

lymph nodal status was assessed and compared in two groups

2.2 Statistical Analysis

Statistical analyses of all results were performed by the help of SPSS software statistical package (version 15) using Chi Square test, P value at level of significance < 0.05.

3. Results and Discussion

3.1 Pathological Parameters

We studied histological grade, and number of lymph nodes involved and compared between the 2 groups of patients depending on tumor size. Our results were consistent with those of [3], [4] and with those of [5] who compared clinicopathological features of breast carcinoma between immigrant Arab/Moroccan patients with those of European women and observed that Arab women had higher grade (grade III) at diagnosis. These results were inconsistent with those of [6] from India and those of [7] from Saudi Arabia who found that most of cases were of grade II. Genetic and interobserver variation could be the reason why such differences were noted. Our results showed no statistically significant difference found between the two patient groups regarding histological grade (P >0.05), these results are consistent with those of [8] who illustrated that neither grade nor size were found to be independent prognostic parameters and with those of [9] who stated that "Histological grade continues to be of prognostic importance for overall survival despite tumor size", and with [10] whose study didn't support a suggestion of progression in histological grade with increasing size, but inconsistent with [11], [12] who found positive correlation between histologic grade and tumor size. These differences in conclusion may arise the thought that other biological parameters away from tumor size may play a role in determining the behavior of tumor. Tables (1 & 2), figures (1 & 2)

3.2 State of Axillary Lymph Node Involvement

Our study showed that larger number of cases had lymph node involvement which is consistent with studies from Asia and Arabic regions [7], [13- 15]. on the contrary of similar studies in developed countries where majority of cases were without lymph nodal metastasis (Taucher et al.) In the first group (tumor size ≤2 cm), half of the cases (50%) showed nodal involvement compared to the second group (tumor size >2 cm) in which 16 cases (80%) showed nodal metastasis and the remaining 4(20%) cases were negative for nodal involvement, (Table 2) and (Figure 2). There is a significant difference between the two patient groups regarding axillary lymph node metastasis (P<0.05), which may indicate that patients diagnosed with large size primary tumor of breast carcinoma may have rapidly growing tumor with higher tendency for spread. Definitely, the involvement of the lymph nodes suggests a higher aggressiveness, more than a just later period of the tumor progression [16], [17]. These results are consistent with those of [18- 22] who found a correlation between tumor size and axillary lymph node involvement, and with those of [23] who found that higher T stage in breast carcinoma to be independent risk factor for axillary lymph node positivity (P<0.0000). [24] found a correlation between axillary nodal involvement and tumor size, and suggested that physicians can get use of lymph node status in decision making and determining the extent of excision before surgical procedures. [25] found in their study that tumor size of 3 cm was the cutoff point which associated with increased possibility of local and distal lymph node metastases, which was a poor

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prognostic indicator of other types of recurrences. The results are inconsistent with [26] who found no correlation between tumor size and axillary metastasis (p>0.05,). [27] found that tumor size was of borderline significance in determining axillary nodal metastasis. This difference in results may be due to presence of larger proportion of tumors larger than 2 cm in [26] study. Most of the patients in their study measured more than 2 cm. Only 27.23% cases were of T1 (<2 cm) tumor size as compared to samples of our study, the cases of tumor size ≤2 cm were 24 which is close to that of cases with tumor size 2 cm which is 20 cases. In the study done by [27] they sampled only cases with clinically negative axillary nodes.

Table 1: Histopathological grades in the two groups of patients

Tumor Size (cm)	Number of Patients	GI		GII		GIII		P Value
		No.	%	No.	%	No.	%	P>0.05
T≤2cm	24	5	20.83	2	8.33	17	70.83	
T>2cm	20	2	10	5	25	13	65	
Total	44	7	15.9	7	15.9	30	68.18	

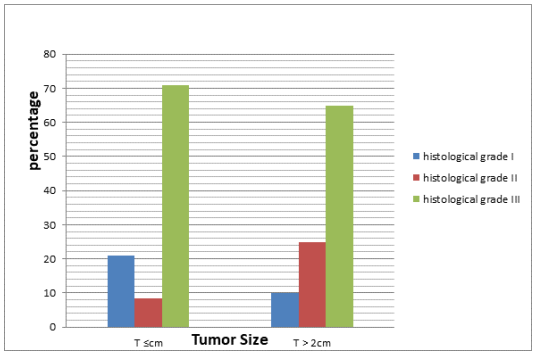

Figure 1: Histopathological grades in the two groups of patients

Table 2: Axillary Lymph Node Involvement in the Two Patient Groups

Tumor Size (cm)	Number of Patients	LN negative		LN positive		P Value
		No.	(%)	No.	%	
T≤2cm	24	12	(50)	12	50	P<0.05
T>2cm	20	4	(20)	16	80	
Total	44	16	(36.36)	28	63.63	

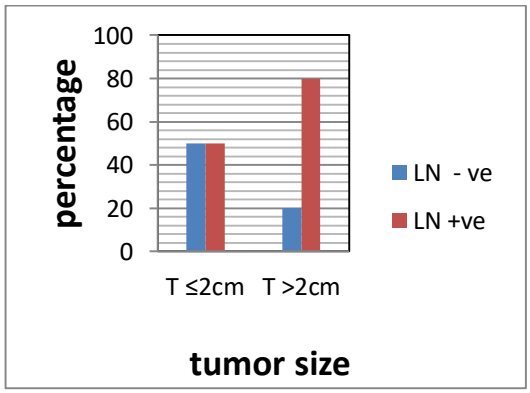

Figure 2: Axillary Lymph Node Involvement in the two groups of patients

4. Conclusions

1. there was a remarkable prevalence of grade III and positive lymph nodes breast cancer suggesting that many of the tumors in Iraqi patients are rapidly progressive, and therefore need a modern approach in their treatment.
2. Breast carcinoma tumor size showed no significant correlation regarding histological grade.

5. Recommendations

We suggest more research to study the relation between tumor size and possibility or recurrence and its impact on survival with larger samples and patient follow up to confirm our results and better understanding of the impact of tumor size of breast cancer.

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