ORIGINAL ARTICLE

Pattern of Malignant Breast Disease on FNAC

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ABSTRACT

Background: Fine needle aspiration cytology (FNAC) is an important part of triple assessment in the diagnosis of malignant breast lesions.
Aim: To study the pattern of breast malignancy on FNAC in a tertiary care center of District Gujrat, Punjab.
Methods: It was a retrospective, cross-sectional study of the malignant lesions reported with fine needle aspiration cytology of breast lesions conducted in the Department of Pathology, Nawaz Sharif Medical College, University of Gujrat, Pakistan. The sampling was done in Aziz Bhatti Shaheed Teaching Hospital and a private hospital in Gujrat from January 1, 2015 to September 30, 2018 (3 years and 9 months). FNAC of 1409 breast lumps were done by standard procedure; smears were prepared and stained with H&E, Giemsa and pap for evaluation.
Results: Mean age of the patients is 50.4 years. A total of 462 (32.8%) cases were diagnosed of having malignancy. Fifth decade was on top of all with 27.7% of the cases with malignancy. Sixth decade was next in frequency with 24.5% of cases. Ductal carcinoma was the most frequently reported malignancy comprising 68% of the patients. Ipsilateral axillary lymph node metastasis was observed in 92 (19.9%) of our patients.
Conclusion: There is a high incidence for breast cancer in our region with ductal carcinoma being the most common one. Significant no of cases presented with axillary lymph node metastasis. So there is a need for awareness about this cancer among the people as early detection leads to good prognosis.
Keywords: FNAC, ductal carcinoma, breast malignancies

INTRODUCTION

Cancer of the breast is the most common malignancy in females.[1] Fine needle aspiration cytology is a commonly used technique for reliable diagnosis in most of the breast lesions.[2] The commonly used methods other than surgery to diagnose the breast cancer include history, physical examination, mammography, ultrasonography, fine needle aspiration cytology and core needle biopsy. Each of these has its own advantages and limitations[3,4,5].

The surgical biopsy provides a definitive diagnosis of breast cancer but increases the cost for patients. Most patients in developing countries cannot afford this thereby delaying their diagnosis and initiation of management at a higher stage of disease resulting in poor prognosis[6].

FNAC is cost effective method for diagnosis of breast cancer. It is also simple as it can be performed as an outdoor procedure in the office, rapid as the report may be obtained on the same day and safe as it is least traumatic and has very low chances of complications[3].

In preoperative workup for cancer of breast, FNAC used in a multidisciplinary approach like triple assessment can further increase accuracy of diagnosis before planning for definite surgical or non surgical management.[5,7]

Breast cancer is mainly a disease of females but also occurs in males with a markedly lower frequency.[8] Most cases of the disease are seen in fourth, fifth and sixth decades.[9] Unilateral tumors are slightly more common on left or right side in any particular study. A few cases of bilateral malignancy are also seen[10].

Ductal carcinoma is the commonest type of malignancy in almost all studies. Other types of malignancy THE lobular carcinoma, mucinous carcinoma, medullary carcinoma, sarcoma, apocrine carcinoma and lymphoma etc have been reported in far lower frequencies[2,11,12].

In developing countries the patients of breast cancer present late in the course of their disease. The findings in the late cases include large size of mass, peude e orange, generalized edema of breast, fungating lesions, ulceration, more than one lump, nipple retraction or inversion, fixation to the skin, fixation to the underlying structures, spread to adjacent areas of chest, axillary and supraclavicular lymphadenopathy[3,6,12].

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MATERIALS AND METHODS

This was a retrospective, cross-sectional laboratory-based analysis of the malignant lesions of breast reported with fine needle aspiration cytology. It was conducted in the Department of Pathology, Nawaz Sharif Medical College, University of Gujrat, Pakistan. The sampling was done in Aziz Bhatti Shaheed Teaching Hospital and a private hospital in Gujrat from January 1, 2015 to September 30, 2018 (3 years and 9 months). Aziz Bhatti Shaheed Teaching Hospital is the largest public sector medical facility available in Gujrat district. It is affiliated with Nawaz Sharif Medical College, University of Gujrat. During the time frame of the study, 1409 breast lesion samples from both males and females were taken and reported. The patients already diagnosed with breast malignancy were excluded from the study.

Sampling was primarily done with 23 G needles and 5 cc disposable syringes. Suction was used wherever required. If needed, 21 G and 22 G needles and 10cc, 20 cc and 50 cc syringes were used. Samples were also taken from accessible axillary lymph nodes and rarely from supraclavicular nodes. In most cases, a single aspirate yielded adequate representative material. In the remaining

cases, two or three attempts were made. For cystic lesions, we tried to aspirate as much fluid as possible in order to assess the presence of any residual solid part of the lesion. If present, the residual solid parts of the lesions were sampled again. R-O-S-E (Rapid On Site Evaluation) concept was applied to assess the adequacy of samples. Air dried smears were stained with hematoxylin & eosin (H&E) and May Grunwald Giemsa stains while wet fixed aspirates were stained with Pap stain. Microscopy of all the cases was done by the author. The data was retrieved, compiled and analyzed with the help of Microsoft Excel software and was compared with other studies.

RESULTS

The study consisted of 462 diagnosis of malignancy reported with fine needle aspiration cytology of breast lesions in 1409 patients comprising 32.8% of cases. As expected, most patients were females (458, 99.1%) and a few were males (4, 0.9%). Left breast was affected more commonly with 52.8% cases (n=244) as compared with right breast with 46.5% (n=215) of cases. Malignancy was detected in both the breasts of 3 patients (0.6%).

Mean age of the patients was 50.4 years. Age ranged from 20 to 90 years. Malignancy was most commonly seen in three decades namely fourth, fifth and sixth. (Table 1) These three decades contained more than 75% of the cases.

Table 1: Age distribution of the cases

Age (Years)	n	%age
11-20.	1	0.2
21-30	26	5.6
31-40	107	23.2
41-50	128	27.7
51-60	113	24.5
61-70	64	13.9
71-80	21	4.5
81-90	2	0.4
Total	462	100

Table 2: Frequency of malignant categories.

Type of malignancy	n	%age
Ductal Carcinoma	316	68.4
Carcinoma	119	25.8
Mucinous carcinoma	11	2.4
Medullary carcinoma	4	0.9
Lobular carcinoma	2	0.4
Malignant	8	1.7
Sarcoma	2	0.4
Total	462	100

Fifth decade was on top of all with 27.7% of the cases. Sixth decade was next in frequency with 24.5% of cases and it was followed closely by fourth decade with 23.2% of case. Ductal carcinoma (fig 1) was the most frequently reported malignancy comprising 68% of the patients. Mucinous (fig 2), Medullary and Lobular carcinoma(fig 3) accounted for 2.4%, 0.9% and 0.4% of the cases respectively. About a quarter of malignant cases were reported simply as carcinomas because these could not be put into any specific entity based on the cytological features. Other entities found in smaller proportion are given in Table 2.

The cases of malignant category in Table 2 containing 1.7% cases could not be categorized into any type but contained carcinoma, lymphoma and sarcoma in differential diagnosis. Ipsilateral axillary lymph node metastasis (Fig 4) was observed in 92(19.9%) of our patients. One of these patients also revealed metastasis to an ipsilateral supraclavicular lymph node. Touch smears from the nipple were positive for malignant cells in one of the patients.

Table 3:

Study	Year	n	Malignant cases (%)
Challa [14]	2013	812	55.5
Singh [15]	2015	100	39
Kujur [4]	2015	106	38.7
Naz [2]	2017	92	36.9
Madubogwu[16]	2017	180	34.6
Present	2018	1409	32.8
Waghmere [17]	2016	134	31.5
Panjvani [18]	2013	222	31.1
Bukhari [9]	2011	425	31
Shah [3]	2013	102	30.4
Elmadhoun [6]	2015	232	28
Ibikunle [19]	2017	161	25.5
Hamdani[20]	2015	73	22
Yusuf[21]	2014	200	22
Joshi[22]	2016	200	21.5
Kosthi [11]	2017	500	17.4
Pradhan[8]	2008	2246	15.5
Rahman [10]	2013	1778	14.2
Likhar [23]	2013	302	13.9
Poudal [24]	2016	61	13.1
Kamra [12]	2017	1376	11.2
Kumari [25]	2017	178	11.2
Chaudhary [26]	2015	771	5.6

Figure 1: Features of ductal carcinoma including duct formation and a mitotic figure.

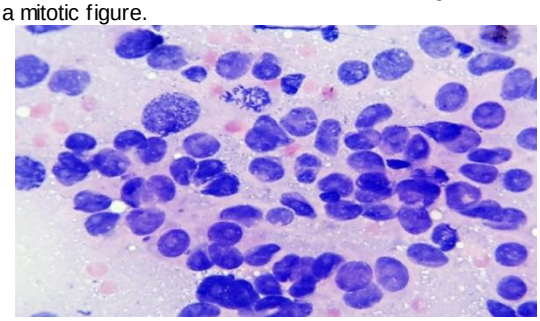


Figure 2: Mucinous carcinoma showing abundant mucinous material and cells.

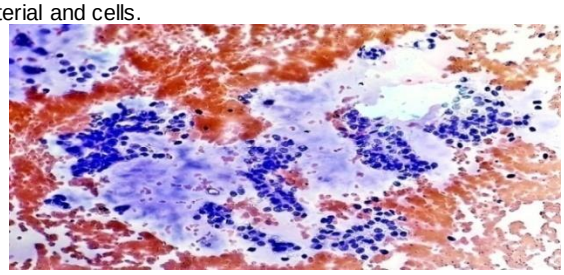


Figure 3: Lobular carcinoma showing a cord of cells (Indian file pattern).

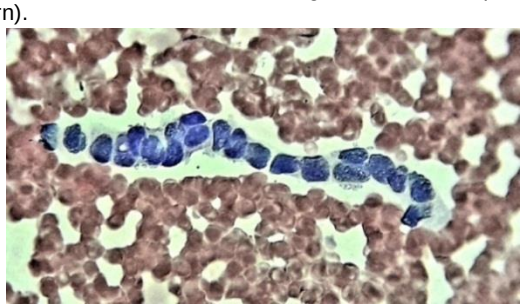
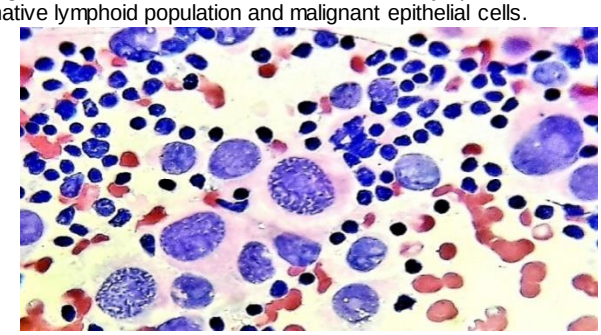


Figure 4: Metastatic carcinoma: Smear from a lymph node showing native lymphoid population and malignant epithelial cells.



DISCUSSION

Breast cancer is one of the most frequently diagnosed malignancies in the world. Our study is based on the presurgical cytological diagnoses of 462 cases of breast cancer in our setup.

These cases comprised 32.8% of all patients (462/1409) that underwent fine needle aspiration cytology of breast lesions (Table 3). In Table 3, the frequency of malignant cases in 23 studies has been compiled in descending order. Our study falls at number 6 in this sequence. Only five studies show higher frequency of malignant cases than our study. The remaining 17 studies show lower frequency than our study. The findings imply that our region is a high incidence for breast cancer.

The high frequency of malignant cases in the study of Challa appears to be out of proportion with all other studies.[14] A truly high frequency of this magnitude seems to be very alarming. Similarly on the lower side, the frequency of malignant cases is prominently lower in the study of Chaudhary et al.[26] Such a low incidence of breast cancer is a highly pleasing finding. Both these studies appear to be significant as these are not based on very small number of cases. Epidemiological studies in areas with such differences in frequency may give some insight into the etiology of the disease. Left breast was slightly more commonly involved than right breast in our study in contrast with Hamdani and Rahman. [10, 20]

Mean age of our patients were 50.4 years which is higher than the studies of Hamdani (43 years), Rahman (44.48) and Naz (47 years) respectively.[2,10,20]

Age range of our patients with malignancy was 20 to 90 years. Other authors have mentioned relatively narrower ranges like Poudal: 50-70 years, Kujur: 29-75 years and Singh: 22-70 years [4,15,24].

Most cases in our study were seen in fifth decade followed by sixth decade. Shah and Singh have described most of their cases in these two decades. [3,15] While Punjvani and Joshi have described most of their cases in fourth and fifth decades. [18,22] It appears that the decades with maximum number of cases are 4th, 5th and 6th in ours as well as others studies[9].

Overwhelming majority of malignant cases in our study were carcinomas. Ductal carcinoma was the most commonly diagnosed entity among the carcinomas. The frequency of ductal carcinoma reported by our study was 68.4% which is in concordance with that of Yousaf (69.9%) but the other authors has reported higher frequencies like Likhar 78.6%, Shah 87.1%, Punjvani 942% and Naz 94.1% respectively. [2,3,18,23] Other entities with smaller frequencies in our study like lobular carcinoma, mucinous carcinoma and medullary carcinoma have been described similarly by Punjvani, Naz and Pradhan [2,8,18]

The axillay lymph nodes of 92 of our patients revealed malignant cells meaning thereby that 19.9% of patients harbored metastatic axillary disease. The patients of malignancy in the studies of Rahman, Challa and Elmadhoun revealed metastatic axillary disease in 10.3% (26/252), 37.7% (170/451) and 50.8% (33/65) of the cases respectively.[6,10,14] This shows wide variation in the reported frequency of the metastatic axillary deposits. One of the possible reasons for this variation may be the difficulty of sampling from the axilla. In some of the patients, it is difficult to hold and immobilize the axillary nodes for good sampling. Moreover, once the malignancy has been diagnosed from the breast lump smears, it is not necessary to take samples from difficult axillary nodes.

CONCLUSION

From our study we can conclude that in our region there is a high incidence for breast cancer with ductal carcinoma being the most common one. Significant no of cases presented late with axillary lymph node metastasis and poor outcome. So there is a need for awareness about this cancer among the people as early detection leads to good prognosis. General population should be encouraged to undergo routine examination. Mammography should be done after age of 40 years in every female.

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