

A STUDY OF HISTOPATHOLOGICAL ASSESSMENT OF MASTECTOMY SPECIMEN

Sunita Mistry¹, Minesh Gandhi², Piyush Patel³, CK Shah², NR Shah²

¹ Department of Pathology, GMERS Medical College, Valsad, Gujarat, India

² Department of Pathology, Smt. NHL Municipal Medical College, Ahmedabad, Gujarat, India

³ Department of Surgery, Government Medical College, Surat, Gujarat, India

Correspondence to: Sunita Mistry (drsunitamistry@gmail.com)

DOI: 10.5455/ijmsph.2013.2.501-506

Received Date: 21.01.2013

Accepted Date: 21.02.2013

ABSTRACT

Background: Carcinoma of the breast is the most common malignancy in adult women and the second leading cause of cancer death in women. There is an uncertainty over natural history and factors leading to emergence of cancer of breast in women as well as in men.

Aims & Objective: To study the various morphological types of malignant lesions and their age distribution, from Mastectomy and Post lumpectomy Mastectomy received from in and around Ahmadabad district, at Department of Pathology, Smt NHL MMC and Sheth VS Hospital, Ahmedabad.

Material and Methods: Out of the specimens of breast which presented as mastectomy and post lumpectomy mastectomy specimens of breast to the Department of Pathology, Smt NHL MMC and Sheth VS Hospital, Ahmedabad for histopathological examination, 100 cases were taken up for this study. Detailed clinical data were noted as per the proforma with emphasis on history, gross examination and microscopic examination.

Results: Majority of cases were carcinoma (87%). Majority of women (63%) were of age 41-60. Painless lump (77%) was found as most common symptoms, while nipple retraction was found in 3% cases and Peaude orange skin was found in 1% cases. Majority of patients had lump in the left breast (53%) followed by right breast (47%). 40% of patients presented with lump in the upper outer quadrant and 11% in lower outer quadrant. Out of the total 88 carcinomas of breast encountered, 85.2%, were Infiltrating Duct Carcinoma [IDC (NOS)], 1.1% were Ductal Carcinoma in Situ (DCIS), 1.1% each of mucinous carcinoma, invasive papillary carcinoma and acinic cell carcinoma, 2.2% were metaplastic carcinoma and 6.8% were invasive lobular carcinoma. Most of tumour was T3 (53.48%) followed by T2 (29.06%). In the case of pathological staging The majority of patients were present in stage IIIA (25.58%), stage IIB (24.41%) and stage IIIC (22.09%), followed by Stage IIA (18.60%). Vascular invasion was 21.3% in the case of IDC, 66.6% in the case of ILC and 25% in the case of stromal carcinoma.

Conclusion: This study highlights the importance of histopathological examination in breast lumps not only in establishing the final diagnosis, but also in predicting the prognosis by typing, staging and grading malignant neoplasm of breast.

KEY-WORDS: Carcinoma of Breast; Histological Examination; Vascular Invasion

Introduction

Breast, an anatomical site which is constantly under the varying influence of sex hormones, is one of the frequent sites of neoplasm in the human body. During adolescent and reproductive ages, major hormonal changes produce alterations in mammary tissue. This directly or indirectly affects the disease patterns. Neoplasms of the breast constitute the most important, but not the most common lesions of the female breast. This includes neoplasm arising from stratified squamous epithelium, glandular structures and mesenchymal connective tissue. Carcinoma of the breast is the most common malignancy in adult

women and the second leading cause of cancer death in women, the first being carcinoma of cervix.^[1-3]

The natural history of breast cancer continues to baffle both the surgeons and pathologists. In a given population, the factors like age at menarche, marriage, child bearing, breast feeding, socio-economic status and knowledge regarding the cancer growth largely influence the true incidence of the cancer. But there is no uniform pattern of study regarding the incidence, different types and biology of the breast tumours in different parts of India.

An attempt has been made to study the various morphological types of malignant lesions and their age distribution, from Mastectomy and Post lumpectomy Mastectomy received from in and around Ahmadabad district, at Department of Pathology, Smt NHL MMC and Sheth VS Hospital, Ahmedabad.

Materials and Methods

This study was based on Histopathological examination of mastectomy and post lumpectomy mastectomy specimens, received at Department of Pathology, Smt. NHL MMC and Sheth VS Hospital, Ahmedabad. Total 100 cases were studied. The study was done over a period of 6 years from 2006 to 2011 which included a retrospective period of 3 years and prospective period of 3 years.

Among the specimens of breast which presented as mastectomy and post lumpectomy mastectomy specimens of breast to the Department of Pathology, Smt NHL MMC and Sheth VS Hospital, Ahmedabad for histopathological examination, 100 cases were taken up for this study. Detailed clinical data were noted as per the proforma with emphasis on history, gross examination and microscopic examination.

Mastectomy as well as post lumpectomy Mastectomy specimens received in histopathology department were examined grossly for their size, shape, colour and consistency. Changes in the nipple and skin and the presence of lymph nodes were also noted wherever relevant. Specimens were cut serially at a distance of 2-3cms. Cut surfaces were noted for tumour, colour, size, extension, involvement of the skin and secondary changes such as necrosis, cystic degeneration, haemorrhage and fibrosis.

They were then fixed in 10% formalin for 24 to 48 hours. Next day, gross examination was done. First sections from all margins (medial, lateral, superior, inferior) were taken then base was painted with Indian ink die and section from base was taken. Distance of tumour from base was also noted. Minimum four sections were taken from tumour and at least one section was including normal breast tissue with tumour tissue. One section was taken from nipple and areola.

Than axillary tail was examined for lymph nodes and dissected.

All sections were taken of 3-6 microns thickness and they were processed by the routine paraffin embedding technique. Sections were stained with routine haematoxylin and eosin stain and whenever needed, special stains like periodic acid schiff (PAS) and mayer's mucicarmine.

Results

In the present study, out of the 100 cases of Mastectomy and post lumpectomy mastectomy specimens, 87 cases were carcinomas (87%) and 4 cases were malignant stromal neoplasms (4%). Out of 14 cases of post lumpectomy Mastectomy 8 cases were showing no residual tumour cells. One case of Non Hodgkin's diffuse-mixed type lymphoma was also found.

In the present study, among females majority of patients were in the age group of 41-50 years (32%) and 51-60 years (31%). Lowest incidence was observed in women above 70 years of age and between 21- 30 years. There were 3 cases found in males, the age of the patients was 65 years, 42 years and 35 years, which constituted 1% each of malignant neoplasms of breast.

The main presenting symptom in the present study was presence of painless lump in many cases, patients presented with a combination of pain, ulceration, Peaude orange appearance of skin, retraction of nipple and lumpectomy wound. Painless lump (77%) was found as most common symptoms, while nipple retraction was found in 3 cases (3%) and Peaude orange skin was found in 1% case. In 14% cases of post lumpectomy Mastectomy, wound of previous lumpectomy were observed.

Majority of patients had lump in the left breast 53 (53%) followed by right breast 47 (47%). 40% of patients presented with lump in the upper outer quadrant and 11% in lower outer quadrant. Other quadrants involved were upper inner (14%), all quadrants (1%), two quadrants (3%), sub areolar (30%) and axilla (1%). Among all the quadrants, upper outer quadrant was most commonly involved.

The histological typing of carcinoma of breast was done on the basis of World Health Organization (WHO) histological classification of breast tumours. In the present study, out of the total 88 carcinomas of breast encountered, 85.2%, were Infiltrating Duct Carcinoma (IDC (NOS)) (Figure-1), 1.1% were Ductal Carcinoma in Situ (DCIS), 1.1% each of mucinous carcinoma, invasive papillary carcinoma and acinic cell carcinoma, 2.2% were metaplastic carcinoma and 6.8% were invasive lobular carcinoma. There was also found one (1.1%) case of Non Hodgkin's diffuse-mixed type lymphoma which included in others category.

Most of tumour was T3 (53.48%) followed by T2 (29.06%). Only 9.3% tumours were T1, while 6.97% were T4. Axillary lymph nodes were positive in 52 out of 95 cases in which these were dissected i.e. 54.73%, while in 43 cases (45.26%) lymph nodes were negative for metastasis. Of the 52 cases of positive lymph nodes: 21.05% were p N1 (metastasis in 1-3 LNs); 13.68% were p N2 (metastasis in 4-9 LNs); and 20% were p N3 (metastasis in more than 10 LNs).

Table-1: Tumour Size and Lymph Node Status in Pathological Staging

T Component*	No.	%	N Component**	No.	%
T0	1	1.16	N0	43	45.26
T1	8	9.3	N1	20	21.05
T2	25	29.06	N2	13	13.68
T3	46	53.48	N3	19	20
T4	6	6.97			

*14 cases of post lumpectomy mastectomy were not included;
 **Axillary lymph nodes were available in only 95 cases out of 100 cases

Table-2: Incidence of Pathological Staging

Pathological Stage	No. of Cases	Percentage (%)
Stage 0	01	1.16
Stage I	03	3.48
Stage IIA	16	18.60
Stage IIB	21	24.41
Stage IIIA	22	25.58
Stage IIIB	04	4.65
Stage IIIC	19	22.09
Stage IV	00	0
Total	86	99.97

In the case of pathological staging the majority of patients were present in stage IIIA (25.58%), stage IIB (24.41%) and stage IIIC (22.09%), followed by Stage IIA (18.60%). Lowest incidence was observed in Stage IIIB (4.65 %) and stage I (3.48%). One case of stage 0 (1.16 %) was also

found. Among the 100 cases of Mastectomy and post lumpectomy Mastectomy specimens, in 6% cases base was involved by tumor and in one case nipple areola was involved. Among the 14 cases of post lumpectomy Mastectomy, in 6 (42.8%) cases observed residual tumour. Pathological staging was not applied to 14 cases of post lumpectomy mastectomy specimen.

In the present study, out of 75 cases of IDC, 32 (42.66%) cases show vascular invasion while 16 (21.33%) cases show lymphatic invasion and 12 (16%) cases show perineural invasion. In case of ILC, out of 6 cases, 4 (66.66%) cases show vascular invasion while 3 (50%) cases show lymphatic invasion and one (16.66%) case show perineural invasion. In case of stromal carcinoma, out of 4 cases, one (25%) case show each of vascular invasion, lymphatic invasion & perineural invasion. One case of Non Hodgkin's diffuse-mixed type lymphoma was showing all three vascular, lymphatic and perineural invasion.

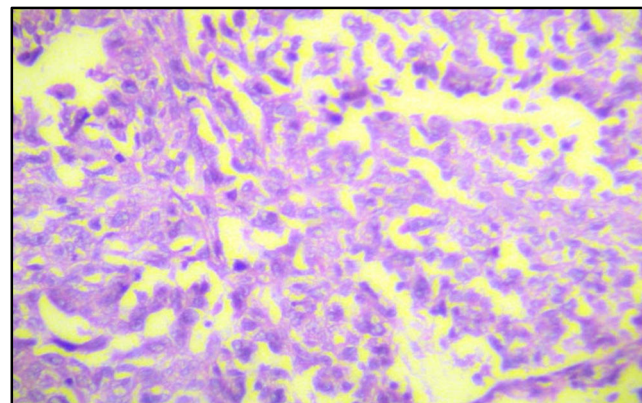


Figure-1: IDC - NOS - Cells Arranged in Nests (H&E, X100)

Discussion

Breast carcinoma is the most common malignant tumour and leading cause of death in women. Which though virtually limited to females can occur in males as rare exceptions. The main purposes of the pathological examination of a Mastectomy and post lumpectomy Mastectomy specimens for carcinoma in patients without previous breast surgery are confirmation of the diagnosis and assessment of prognostic and predictive factors to guide subsequent management. In patients with previous surgery, the biopsy cavity is sampled to search for

residual disease. Sections should also be taken of any further suspicious areas. In the present study, 100 cases were studied and the data was compared with the studies of other authors.

The observations regarding the age group incidence, most common age group was 41 to 50 which was similar to the study by Pal S et al.^[4] In this study, the youngest patient with carcinoma of breast was 27 years old, the oldest being 80 years. In the present study, majority of the malignant tumors occurred in left breast, which is comparable with the study by Samir S et al.^[5]

Incidence of infiltrating duct carcinoma NOS 85.2% which is near about that of study by Malik R et al. (92.4%) followed by mucinous carcinoma (1.1%) and invasive papillary carcinoma (1.1%). In the present study, we also found one case (1.1%) of Acinic cell carcinoma and 2(2.2%) cases of metaplastic carcinoma which were not found in previous studies. Infiltrating duct carcinoma NOS along with their usual pattern also showed combination of one or more patterns such as: (i) Infiltrating duct carcinoma-classic type with ductal carcinoma in-situ, come do pattern in 11 cases (14.6%), (ii) Infiltrating duct carcinoma-classic type with clear cell change in 1 case (1.3%), (iii) 3 cases showed Paget's disease (4%). Remaining cases of pure infiltrating duct carcinoma revealed different grades of differentiation, variable amounts of fibrocystic changes, necrosis and fibrosis.

Depending upon these factors, a few of these carcinomas were further grouped under the following categories, 56 cases which showed numerous morient differentiated structures were grouped as morient differentiated carcinoma, 16 cases showed extensive necrosis, 16 cases showed fibrocystic changes, 4 cases showed fat invasion.

Out of 88 cases of carcinoma of breast, 6 cases were of invasive lobular carcinoma which constituted 6.8% of all breast carcinomas. This incidence is almost double that of Malik R et al.^[6] Age of patients ranged between 40 to 70 years the mean being 55 years.

Microscopically, various histological variants of invasive lobular carcinomas were recognized by Rosen PP which included classical, alveolar, solid, tubulo-lobular, mixed, histiocytoid and signet ring variant. The histological type in majority of invasive lobular carcinomas in the present study was classical type with a few mixed and solid variants.^[7]

Metaplastic breast carcinomas are a highly heterogeneous group of tumors characterized by ductal carcinoma with areas of spindle, squamous, chondroid and/or osseous differentiation. Chondroid and osseous differentiation occur focally in 0.2% of breast carcinomas, and osseous metaplasia is the rarest component. In the present study, two cases of metaplastic carcinoma were reported (2.2%). One was squamous cell carcinoma and other was osteoclast like giant cell, metaplastic carcinoma.^[8]

In present study, we found a case (1%) of Non-Hodgkin's lymphoma which comprised 1% of all carcinoma of breast. Non-Hodgkin's lymphoma may originate in, or spread to, any extranodal organ. Breast lymphoma is a rare disease, either as a primary site or as secondary involvement, representing 0.04–0.5% of malignant breast tumours. The most common symptoms of breast lymphoma are a painless breast mass, most frequently located in the outer quadrants as was seen in our case. It is almost always of non-Hodgkin's diffuse type. Our case was also of diffuse variety.^[9]

In present study we found 3 cases of carcinoma breast in male patients, which constituted 3% of all breast carcinomas whereas in the study of Data TK et al the incidence was 5.3%.^[10] The age of the patients was 34, 35 and 74 years. In the present study, as in females, carcinoma of the male breast also showed a preponderance of occurrence in the left breast. This observation is similar to the study by Crichlow RW.^[11]

According to Crichlow RW majority of male breast carcinomas, were infiltrating duct carcinomas, followed by inflammatory and mucinous carcinomas.^[11] In the present study, two tumour showed infiltrating duct carcinoma

(Grade II), one of them presented with metastasis in the lymph node. The third tumour showed stromal sarcoma.

Malignant phyllodes tumour in the present study comprised 2% of all malignant tumours of breast whereas in the study of Moffat CJC et al.^[12] the incidence was 1.5%. Microscopically, tumors to be composed of intracanalicular ductal growth pattern with marked proliferation of the stromal cells show periductal hypercellular cuffing. The stromal cells are large, elongated and show marked cytological atypia. Bizarre tumor giant cells and atypical mitosis (>4/10 HPF) are seen. Foci of hyalinized collagen tissue, myxoid area and necrosis are evident. All these observations are in accordance with those by majority of the authors. In the present study, neither of the cases showed lymph node metastasis.

Angiosarcoma of the breast occurs during the third and fourth decade of life, in contrast with mammary carcinoma which generally arises later. This malignant tumor occurs primarily in young women, with 6–12 % of the cases found during pregnancy, implying a hormonal effect. In most cases, the tumor size was >4 cm in diameter. A few patients with tumors <4 cm at diagnosis had a better survival rate.^[13]

Malignant mesenchymal tumours of the breast are rare neoplasms. Their incidence varies from 1%-3% of all malignant breast tumours. Stromal sarcoma of the breast is an extremely uncommon tumour.^[14] In present study, we received one case of stromal sarcoma of the breast in 35 years old male patient. This comprised 1% of all malignant tumour of breast.

Most tumour was T3 (53.48%) followed by T2 (29.06%). Only 9.3% tumours were T1, while 6.97% tumours were T4. These results show that majority of our patients, the tumours are already of large size when women first seek attention. In the present study, results of axillary lymph nodes metastasis show that in the half of our cases, axillary lymph nodes are already positive for metastatic tumour when patients first seek attention, and infect majority of patients with positive nodes have p N1 as well as p N3 disease.

In present study, histological grading was applied only to the invasive ductal carcinoma. Various studies have analyzed the importance of histologic grade as the prognostic factor in carcinoma of breast. Histologic grade has also been found to be useful predictor of prognosis in patients with different stages of disease especially among those with negative axillary lymph nodes. for these reasons, accurate grading of invasive breast carcinoma is extremely important and our cases have been graded according to the Scarff-Bloom-Richardson grading system which measures three parameters i.e. tubular formation, nuclear pleomorphism and mitotic rate.^[15]

In our study, as seen in the results, only 4% cases were grade I, while majority were grade II (74.6%) or grade III (21.3%). Among the tumours of all histologic grades, majority were T2 or T3 with axillary lymph nodes, and increasing number of positive nodes with tumour grade.

In the present study, the majority of patients were present in stage IIIA (25.58%), stage IIB (24.41%) and stage IIIC (22.09%), followed by Stage IIA (18.60%). Lowest incidence was observed in Stage IIIB (4.65 %) and stage I (3.48%).

Vascular invasion shows, according to several studies, a high correlation with grade of the tumour, tumour size and lymph node status. In our study, it comprised of 42.66% of IDC, 66.66% of ILC, 25% of stroma tumour and 100% of other tumours.

Conclusion

The present study highlights the importance of histopathological examination in breast lumps not only in establishing the final diagnosis, but also in predicting the prognosis by typing, staging and grading malignant neoplasm of breast.

References

1. Kumar V, Abbas AK, Fausto N, Aster JC. Robbins & Cotran Pathologic Basis of Disease. 8th ed. Philadelphia: Saunders Elsevier; 2010.
2. Rosai J. Rosai and Ackerman's Surgical Pathology. 9th edi. Edinburgh: Mosby; 2004.

3. Damjanov I, Linder J. Anderson's Pathology. 10th edi. St. Louis, Mo: Mosby; 1999.
4. Pal S, Senugupta SK. Breast cancer in West Bengal an epidemiological study, 1969- 72. Indian J Cancer 1980;17:153-158.
5. Samir S, Sadi ARM, Ilahi F. The spectrum of breast diseases in Saudi Arab females: A 26 year pathological survey at Dhahran Health Centre. Ann Saudi Med 1995;15(2):125-132.
6. Malik R, Bharadwaj VK. Breast lesions in young females- a 20 year study for significance of early recognition. Indian J Pathol Microbiol 2003;46(4):559-562.
7. Rosen PP. Rosens Breast Pathology. 2nd edi. Philadelphia: Lippincott-Roven Publications; 1993.
8. Lang R, Fan Y, Fu X, Fu L. Metaplastic breast carcinoma with extensive osseous differentiation: a report of two cases and review of the literature. Tumori 2011;97(4):e1-5.
9. Garg NK, Bagul NB, Rubin G, Shah EF. Primary lymphoma of the breast involving both axillae with bilateral breast carcinoma, Case report. World Journal of Surgical Oncology 2008;6:52.
10. Dutta TK, Deka AC, Gupta BD, Kaushik SP. Carcinoma of the male breast. Indian J Cancer 1975;12(1):67-71.
11. Crichlow RW. Carcinoma of the male breast – collective review. Surg Gynecol Obstet 1972;134:1011-19.
12. Moffat CJC, Pinder SE, Dixon AR, Elston CW, Blamey RW, Ellis IO. Phyllodes tumours of the breast : a clinicopathological review of thirty-two cases. Histopathology 1995;27;205-18.
13. Ohta M, Tokuda Y, Kuge S, Okumura A, Tanaka M, Kubota M, et al. A Case of Angiosarcoma of the Breast. J Clin Oncol 1997;27(2):91-94.
14. Chawla S, Deo SV, Shukla NK, Rathi AK, Prakash MB. Stromal sarcoma of the breast: a case report: Indian J Pathol Microbiol. 1998;41(3):355-6.
15. Fitzgibbons PL, Connolly JL, Page DL. Update protocol for examination of specimens from patients with carcinoma of breast – A basis for checklist. Arck Pathol Lab Med 2000;121:1026-103.

Cite this article as: Mistry S, Gandhi M, Patel P, Shah CK, Shah NR. A study of histopathological assessment of mastectomy specimen. Int J Med Sci Public Health 2013; 2:523-528.

Source of Support: Nil

Conflict of interest: None declared