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A prospective study of breast lump andclinicopathologicalanalysis in relation to malignancy: A review of 100 cases

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Abstract: *Worldwide, breast cancer is the most frequently diagnosed life-threatening cancer in women and the leading cause of cancer death among women. In India, it is the most prevalent cancer in females after cancer of the cervix. The exact cause is uncertain, but is influenced and predisposed by various epidemiologic factors. The average size of the tumor with which the patient presents to the clinician has decreased, due to various health and screening programs but despite improvements in surgery, chemotherapy and radiotherapy but during the past few decades the mortality rate has remained rather constant.*

Objective: *To evaluate the various types of breast lump, percentage of benign versus malignant lump, stages of malignancy at time of presentation and understand the ecological, environmental and other patterns for breast lump in the local population.*

Patients and Duration: *The prospective study was conducted by the Dept. of General Surgery, Mahatma Gandhi Medical College and Hospital, Jaipur. We reviewed 100 patients who were admitted to the surgical department suspected of having carcinoma breast from August 2014 to August 2015*

Method: *A total of 100 patients with a palpable breast lump of various sizes and characteristics were included in the study. Patients were initially classified as per history, general and local examination and those who were suspected of having malignancy on clinical grounds were further investigated by FNAC, Core Biopsy and/or frozen section biopsy.Mean age of inclusion was 10 to 80 years*

Results: *100 patients having breast lump were included in the present study. All cases underwent surgery for resection of the lump. Out of 100 cases, 74 cases were benign and 26 were malignant with 24 positive for estrogen and progesterone receptors. Incidence was highest in 20-29 year age group (30%), Lesions were most commonly noted in the upper outer quadrant of the breast (45.94%), premenopausal women accounted for 65.95% (62) cases, 92% of cases did not present with any skin changes while 3% presented with ulceration, Axillary nodal involvement was noted in 17% cases. Oral contraceptive use was noted in 17 patients. Surgical management was considered the treatment of choice. 70% cases were managed by lumpectomy whereas modified radical mastectomy was done in 22%. Post operatively complications developed in 19 patients, 7 patients developed wound infections, and 6 developed wound dehiscence and haemorrhage.Hormonal therapy was administered to all 24 patients who were estrogen and progesterone receptor positive and local radiotherapy was given to all 26 patients with malignant histopathology.*

Conclusion: *In this era of modern medicine, with increased awareness and early diagnosis, the incidence of malignant breast disease has remarkably reduced. In our study, benign breast disease was the most commonly identified disease. Understanding importance of diagnosis and triple assessment and planning for effective management either surgical or conservative is the key to management. Malignant conditions must be dynamically managed and robustly followed in terms of chemotherapy, radiotherapy and possibility of recurrence.*

Keywords: *Breast Lump, Carcinoma, Fibroadenoma, FNAC.*

I. Introduction:

Worldwide, breast cancer is the most frequently diagnosed life-threatening cancer in women. In less-developed countries, it is the leading cause of cancer death in women. The general approach to evaluation of breast cancer has become formalized as triple assessment: clinical examination, imaging (usually mammography, ultrasonography, or both), and histopathological assessment. Increased public awareness and improved screening have led to earlier diagnosis, at stages amenable to complete surgical resection and curative therapies. Improvements in therapy and screening have led to improved survival rates for women diagnosed with breast cancer.

Surgery and radiation therapy, along with adjuvant hormone or chemotherapy when indicated, are now considered primary treatment for breast cancer. For many patients with low-risk early-stage breast cancer, surgery with local radiation is curative. Adjuvant breast cancer therapies are designed to treat micrometastatic

disease or breast cancer cells that have escaped the breast and regional lymph nodes but do not yet have an established identifiable metastasis.

Over the past 3 decades, extensive and advocate-driven breast cancer research has led to extraordinary progress in the understanding of the disease. This has resulted in the development of more targeted and less toxic treatments.

With early detection and significant advances in treatment, death rates from breast cancer have been decreasing over the past 25 years in North America and parts of Europe. In many African and Asian countries (eg, Uganda, South Korea, and India), however, breast cancer death rates are rising.[1]In India, the overall incidence of breast cancer is less as compared to the US. But if you see the actual number of cases, India is not far behind. In the year 2012, there were about 2,32,000 breast cancer cases reported in the US, whereas in India, 1,45,000 new cases were diagnosed. This implies that, though, because of India's population, the percentage of total women affected seems less, the breast cancer burden in India has almost reached about 2/3rds of that of the US and is steadily rising.For the year 2015-2016, there will be an estimated 1,55,000 new cases of breast cancer and about 76000 women in India are expected to die of the disease. The gap only seems to be widening, which means, we need to work aggressively on early detection.

Two of the most important prognostic factors in breast cancer detection are tumor size and axillary lymph node status, the size of the tumor directly correlating with the probability of nodal metastasis i.e. patients with large breast masses or higher clinical stage are more likely to have positive nodes. Node positive patients experience relapses into distant organs. It is also noted that clinically palpable axillary lymph nodes may often turn out to be negative for metastasiswhereas non palpable nodes may be positive for metastasis. Thus the histopathological evaluation of axillary lymph node status is an important prognostic discriminator rather than clinical assessment alone.

The study to follow tries to draw a relationship between tumor size, benign versus malignant, metastasis and whether conservative breast therapy is possible.

II. Patients and Methods:

The study encompasses 100 cases presenting to the surgical outdoor or admitted in the surgical wards from August 2014 to August 2015 of Mahatma Gandhi Medical College and Hospital, Jaipur.

Patients presented to the outpatient clinic with the clinical features suggestive of lump breast underwent a detailed history taking procedure, general and local examination. Patients were then subjected to routine blood investigations, Mammogram, Ultrasonography, FNAC and/or Core biopsy. After diagnosis, definitive surgery was done followed by adjuvant treatment (chemotherapy, radiotherapy, hormone therapy or a combination of these) based on histopathological report.

Fine needle aspiration cytology was done as an outdoor procedure using a 20cc syringe, 20/22 gauge needles, clean glass slides and 95% alcohol for fixation.

Core Biopsy was done using a no. 12 size core biopsy needle and was placed in formalin and sent for histopathological analysis.

Intraoperative frozen sections were done and histological reports acquired to assess the primary tumor and lymph node metastases.

The patients were advised to come to follow-up after chemotherapy and/or radiotherapy as per the following schedule:

1. Every 3 months for the 1st three years
2. Every 6 months for the next 2 years
3. Annually after 5 years

III. Results:

The present study was prospective and carried out in 100 patients having lump breast. All cases underwent surgery for resection of the lump. Out of 100 cases, 74 cases were benign and 26 were malignant.

Distribution with respect to nature of lesion and age was determined. The details mentioned in the table below.

Table1: Age related distribution

Age Group	Total Cases	Benign	Malignant
10-19 yrs	10 (10%)	10 (10%)	-
20-29 yrs	30 (30%)	30 (40.54%)	6 (23.07%)
30-39 yrs	18 (18%)	12 (16.21%)	06 (23.07%)
40-49 yrs	28 (28%)	20 (27.02%)	08 (30.76%)

50-59 yrs	08 (08%)	02 (2.70%)	06 (23.07)
60-69 yrs	06 (06%)		06 (06%)
70 and above	-	-	-

Incidence was highest in 20-29 year age group (30%). Next in order of frequency was in 40-49 year group with 28 cases (28%). Maximum number of benign cases was noted in 20-29 year age group, 30 cases (30.54%), followed by 40-49 year age group with 20 cases (27.02%). Maximum number of malignancy was 8 cases (30.76%) in the 40-49 years age group with equal distribution of 6 cases in the age groups of 30-39, 50-59 and 60-69 respectively. All cases in the age group of 60-70 were malignantpositive for estrogen and progesterone receptors.Data from SEER (Surveillance, Epidemiology and End Results) suggests that the incidence of invasive breast cancer for women younger than 50 years is 44.0 per 100,000 as compared with 345 per 100,000 for women aged 50 years or older2, However in our region incidence of breast lump was highest in the age group of 20-29 years.

Table 2: Sex distribution

Age Group	Total Cases	Male	Female
10-19 yrs	10 (10%)	02 (33.33%)	08 (8.51%)
20-29 yrs	30 (30%)	02 (33.33%)	28 (29.78%)
30-39 yrs	18 (18%)	-	18 (19.14%)
40-49 yrs	28 (28%)	-	28 (29.78%)
50-59 yrs	08 (08%)	02 (33.33%)	08 (8.51%)
60-69 yrs	06 (06%)		04 (6.38%)
70 and above	-	-	-
Total	100	06	94

4 male patients in the study were suffering from gynaecomastia and two patients suffered from duct adenocarcinoma.

Table3: Distribution of cases according to side

Type of Lesion	No. of Cases	Side of lesion		
		Left	Right	Bilateral
Benign	74	26 (35.14%)	42 (56.76%)	06 (8.1%)
Malignant	26	14 (53.84%)	12 (46.15%)	-
Total	100	40 (40%)	54 (54%)	06 (06%)

Table 4: Distribution according to Quadrant

Quadrant	Total Cases	Type of Lesion	
		Benign	Malignant
UOQ	46 (46%)	34 (45.94%)	12 (46.12%)
LOQ	08 (08%)	06 (8.10%)	02 (7.69%)
LIQ	20 (20%)	16 (21.62%)	04 (15.38%)
UIQ	08 (08%)	06 (8.10%)	02 (7.69%)
Central	12 (12%)	08 (10.81%)	04 (15.38%)
Diffuse	06 (06%)	04 (5.40%)	02 (7.69%)
Total	100	74	26

UOQ: Upper outer quadrant, LOQ: Lower outer quadrant, LIQ: Lower inner quadrant, UIQ: Upper inner quadrant.

Lesions were most commonly noted in the upper outer quadrant of the breast (45.94%) followed by lower inner quadrant (21.62%), central retroareolar region (10.81%), upper inner and outer quadrant (8.1%)

each. There were 6 cases where breast were involved diffusely, diagnosed as gynaecomastia, giant fibroadenoma and carcinoma respectively.

In terms of menstrual status, premenopausal women accounted for 65.95% (62)cases and 34.04% (32) were postmenopausal. Family history was noted in only 1 patient. In relation to parity 69 women were parous and 27 were nulliparous.

Late age at first pregnancy, nulliparity, early onset of menses, and late age of menopause have all been consistently associated with an increased risk of breast cancer3,4,5,6,7.

Malignant cases presented with various clinical aspects as briefed below.

Table 5:Clinical Presentation

Clinical Presentation	No. of Cases	Percentage
Lump Axilla	4	15.38%
Breast Pain	14	53.84%
Ulcer Breast	3	11.53%
Nipple Ulcer	1	3.84%
Nipple Retraction	2	7.69%
Nipple Discharge	2	7.69%
Total	26	100%

92% of cases did not present with any skin changes while 3% presented with ulceration.

Table6: Skin Changes

Clinical Presentation	No. of Cases	Percentage
Ulcer	3	3%
Tethering	1	1%
PeauD'orange	2	2%
Eczema	0	-
Oedema	1	1%
Dimpling	1	1%
No skin changes	92	92%
Total	100	

Clinically palpable breast lumps were classified as per size. 5 patients presented with a lump of size less than 2 cm. 52 patients presented with a lump of size 2-5cms and 43 patients has a lump of size more than 5cms.

Lymph Node involvement was a critical aspect of the study and involvement was analysed, majority of patients has nolymphadenopathy. Axillary nodal involvement was noted in 17% cases.

Table 7: Lymph Node Involvement

Lymphadenopathy	No. of Cases	Percentage
Axillary	17	17%
Supraclavicular	5	5%
Cervical	3	3%
Internal Mammary	1	1%
No Lymphadenopathy	74	74%
Total	100	100%

In all cases pertaining to a malignancy, histopathological conformation was sought. Percentage distribution of different type of lesion on cytology is briefed below.

Table8: Histopathological correlation of various clinical cases studied

Cytodiagnosis	**Total number of cases**
Benign Lesions	72 (72%)
Fibroadenoma	34 (34%)
Fibrocystic disease / Benign Cyctic Lesion	10 (10%)
Benign breast disease	18 (18%)
Inflammatory lesion	04 (4%)
Gynaecomastia	04 (4%)
Lactating adenoma	-
Duct estasia	-

Giant Fibroadenoma / Benign Phyllodes	02 (2%)
Malignant	22 (22%)
Intraductal carcinoma	22 (22%)
Lobular carcinoma	-
Suspicious Malignancy	02 (2%)
Unsatisfactory / Inconclusive	04 (4%)
Total	100

Oral contraceptive use was noted in 17 patients.Positive diagnostic mammogram was seen in 44 patients.One of the most widely studied factors in breast cancer aetiology is the use of exogenous hormones in the form of oral contraceptives (OCs) and hormone replacement therapy (HRT)8,9.

Surgical management was considered the treatment of choice, 70% cases were managed by lumpectomy whereas modified radical mastectomy was done in 22%.

Table 8: Surgical procedure performed

Procedure	No. of Cases	Percentage
Microdochectomy	4	4%
Lumpectomy	70	70%
Simple Mastectomy	4	4%
Modified Radical Mastectomy	22	22%
Total	100	100%

Post operatively complications developed in 19 patients, 7 patients developed wound infections, and 6 developed wound dehiscence and haemorrhage each.

Post-operative histopathological diagnosis was sought for correlation with cytology analysis. Out of the 72 cases being reported benign, histopathological and cytological correlation was achieved in 70 cases while remaining 2 cases were proved malignant by histopathological analysis, which was later identified as ductal carcinoma in situ. There was no false positive in malignant cases

Table 9: Histopathological results

Cytodiagnosis	No. of Cases	Histopathological Diagnosis	
		Benign	Malignant
Benign	72	70	02
Malignant	20	00	22
Suspicious of Malignancy	02	-	02
Unatisfactory	06	04	-
Total	100	74	26

TP: True Positive, TN: False Positive, FP: False Positive, FN: False Negative

IV. Discussion:

The study reveals that benign breast disease presents in myriads of ways ranging from simple mastitis to well defined lumps in the breast.

Breast lumps are one of the most common presentations in women, although a lot of research on etiopathogenesis, diagnosis, prevention and management is being pursued, after the development of FNAC and core biopsy the diagnosis has changed drastically thus the diagnosis is easy, quick, reliable and well in the comfort of the patient.

From our present study, we noted that the highest number of cases was noted in the 20-29 year age group, which were mostly benign whereas maximum malignant cases were identified in the 40-49 year age group. Majority of the patients were not taking oral contraceptives and were parous in the premenopausal age group. Family history of malignant breast disease was seen only in one patient and majority of patients had lump in the right breast. Lesions were more common in the upper outer quadrant. Patients generally presented with pain in the breast followed by development of lump in axilla and did not have any skin changes and size in lump was less than 5cms. Axillary lymphadenopathy was noted in 17 patients. Fibroadenoma was the most commonly diagnosed and histologically proved condition, followed by intraductal carcinoma. FNAC has 91.7% sensitivity and 100% specificity. Majority of cases were managed by lumpectomy, malignant lesions were managed by MRM with no major post-operative complications.

Benign breast diseases are the most confused areas of surgical disease and even in the modern era of enormous and elaborate studies there is no definite conclusionin regard to the aetiology and its relation to the development of subsequent breast carcinoma.Hussain et al.,10 and Khemka et al.,11 studied 50 patients and they

also found that the maximum number of patients were in the age group of 31-40 years. Khemka et al.11 observed that benign lesions of breast were more commonly seen in younger age groups with maximum number of patients found in the age group 30-34 years. Ganiat et al.,12 reported maximum number of patients with malignant lesions in the fourth to seventh decade of life.

V. Conclusion:

In this era of modern medicine, with increased awareness and early diagnosis, the incidence of malignant breast disease has remarkably reduced. In our study, benign breast disease was the most commonly identified disease. Understanding importance of diagnosis and triple assessment and planning for effective management either surgical or conservative is the key to management. Malignant conditions must be dynamically managed and robustly followed in terms of chemotherapy, radiotherapy and possibility of recurrence.

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