An Observational Study of Various Risk Factors, Clinical Presentation and Stage of Carcinoma Breast, Correlation of Fine Needle Cytology / True Cut Biopsy with Post Operative Histopathology Report, Staging and Management of Carcinoma Breast

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Abstract

Introduction: Most diseases of the breast present as a palpable mass. the accuracy of identification are often accrued by a mixture of surgical tests like physical examination, diagnostic procedure, fine-needle aspiration cytology (FNAC), and Trucut needle biopsy (TGNB) or core needle biopsy (CNB). FNAC has big in quality and have become the primary initial used procedure when history taking and clinical examination for identification of solid and cystic breast lumps.

Methods: Total period three years of FNAC and Trucut biopsy and were compared with tissue identification. Variables like age, legal status, duration, size, expelling standing and web site were analyzed using applied math analysis.

Results: In our study of eighty patients presenting to our institute throughout such as amount with clinical suspicion of malignant neoplastic disease breast, the sensitivity, specificity, positive prognostic price and also the negative prognostic price of FNAC in diagnosing the carcinoma is eighty five. 7%, 100%, 100% & 21.4% severally. The sensitivity, specificity, positive prognostic price and also the negative prognostic price of true cut diagnostic assay in designation the carcinoma is 89.6%, 100%, 100% & 27.3%. There have been seventy nine (98.75%) females and one (1.25%) males within the study. Within the study, axillary lymphoid tissue involvement is 57.5%. Majority thirty two (40%) of the patients had bestowed with lump within the higher outer quadrant of the breast.

Conclusions: Results of our study demonstrated FNAC & Tru-cut assay were useful in confirmation of identification with diagnostic accuracy of Tru-cut being over FNAC. Most patients with malignant neoplastic disease breast underwent MRM with post operative chemoradiotherapy with advanced stages requiring neoadjuvant medical aid.

Keywords: Breast lump; FNAC; Mammography; Malignancy; Trucut biopsy; Tissue diagnosis.

Introduction

Breast cancer is the common most cancer in women universally, with a continuous rise in its incidence, especially in the developing countries, where the disease poses a major health care challenge.[1-3] This rise in occurrence of breast cancer can be attributed to the introduction of screening by mammography and to the increase of life expectancy amongst the population. In spite of all this, with Indian women breast cancer is still the main cause of death by cancer with cervical cancer being the second commonest.[2,3] The quality of management for breast cancer patients varies widely according to where the patient is treated. The rage with health education leading to earlier discovery of cancers,

and easily accessible facilities for cancer treatment are expected to bring about the much needed improvement in breast cancer care in India. The endocrine milieu associated with being female is a powerful determinant of risk. The other major risk factor is age. Breast cancer is a disease of the senile age with a peak in the fifth and sixth decades, but in India it is a decade earlier, owing to the shorter longevity of life in Indian women (about 65.3 years as per Indian data in 2005) as compared to counterparts in the USA. The management of carcinoma requires a posh multidisciplinary approach involving surgeons, radiotherapists, medical oncologists, and pathologists. In this we will be made to study the various risk factors, clinical presentation and stage of breast cancer, correlation of Fine Needle Cytology/True Cut Biopsy with post-operative Histopathology Report, staging and management of breast cancer.

Aim of the Study

To study the clinical profile of patients presenting with breast cancer in our institute.

Objectives of the Study

1. To study the clinical presentation and stage of breast carcinoma.

2. To assess the diagnostic accuracy of FNAC v/s True Cut Biopsy as preliminary diagnostic tool.

3. To correlate FNAC/True cut biopsy report to the Post operative Histopathology Reports.

4. To study the line of management employed with different stages of Breast cancer.

Materials and Methods

We propose to conduct this study in the department of General surgery at Sri Aurobindo Medical College and Post Graduate Institute, prospective study from January 2017 to December 2017 (duration 1 year) and for Retrospective study the relevant data will be collected from MRD (2 years data will be collected from September 2014 to August 2016). The work will be started after the review & approval of protocol of study by Institutional Ethics and Research committees. For statistical purpose available data at Sri Aurobindo Hospital, Indore, pertaining to disease during the above said period will be studied in detail and analysed with other similar study available from literature. The details of the cases will be recorded as shown in proforma.The diagnosis will be made on the basis of detailed history and clinical findings and should be confirmed either by fine needle aspiration biopsy/True Cut Biopsy and histopathological study.

Inclusion Criteria: Patients willing for study. All diagnosed cases of breast cancer. Patients aged between 20 to 80 yrs. Includes both males and females.

Exclusion Criteria: Patients not willing for study. Patients with benign breast diseases. Patients with inflammatory breast carcinomas. Recurrent breast lump in a previously operated case of carcinoma breast.

Sample Size: 80.

This descriptive observational study was carried out over a period of three years, i.e. prospective study from January 2017 to December 2017 (duration 1 year) and for Retrospective study the relevant data will be collected from MRD (2 years data will be collected from September 2014 to August 2016). Study commenced after approval of the subject by the Institutional Ethics and Research Committee. All patients who were admitted with clinical suspicion of carcinoma breast were included in the study. Patients with lump in breast were investigated and those with histological or serological evidence of were included. Specific investigations like Ultrasound breast / Mammography, Ultrasound Abdomen and Pelvis, Fine needle aspiration cytology/True cut Biopsy, Chest X-ray PA view was done. As our hospital is getting referrals from surrounding states, many patients were admitted with a confirmed diagnosis of carcinoma breast. After taking the consent for inclusion in the study, patients were included in the study. Demographic data pertaining to the subject was recorded. Detailed history was taken and thorough clinical examination was done. All patients were investigated for hematological and biochemical abnormalities. Serological tests were done and further plan was decided. Most of the patients in our study have undergone either a surgery, chemotherapy, radiotherapy or combined approach., so we could get a tissue diagnosis. The collected data was entered in a Master Chart and analysed by simple statistical methods of averages and percentages. At any stage of this study, the individual patient's identity was not disclosed.

Observation and Results

Table 1: Distribution of patients according to age.

		(N=80)
Age Group	**Number**	**Percentage**
21–30	5	6.25
31–40	15	18.75
41–50	25	31.25
51–60	21	26.25
61–70	13	16.25
71–80	1	1.25

The Table 1 shows the distribution of patients according to age. Majority of the patients were in the age Group 41–50 years.

Table 2: Distribution of patients according to gender.

		(N=80)
Gender	**Number**	**Percentage**
Female	79	98.75
Male	1	1.25
Total	80	100.0

The Table 2 shows the distribution of patients according to gender. There were 79 (98.75%) females and 1 (1.25%) males in the present study, showing a female preponderance in the study.

Table 3: Distribution of patients according to presenting symptoms.

		(N=80)
Presenting Symptoms	**No of Patients**	**Percentage**
Lump	80	100
Pain	12	15
Ulcer	6	7.5
Discharge	2	2.5
Skin/Nipple Changes	24	30
Swelling Neck/Axilla	11	13.75
Systemic Changes	9	11.25

All of the patients (100%) had breast lump. Apart from lump, 12(15%) patients presented with complain of pain. Skin or nipple changes were found in 24(30%) patients, while skin ulceration in 6(7.5%) and nipple discharge in 2(2.5%). Complaints of swelling in neck or axilla were recorded in 11(13.75%) cases and of systemic changes in 9(11.25%) patients.

Table 4: Distribution of patients according to duration of symptoms.

		(N=80)
Duration of Symptoms	**No of Patients**	**Percentage**
< 6 Months	38	47.5
6 Months upto 1 Year	16	20
1 Year to 2 Years	19	23.75
2 Years and Above	7	8.75

Duration of symptoms varied from 1 week to as long as 6 years. The majority of patients 38 (47.5%) presented within 6 months.

Table 5: Distribution of patients according to the size of the lump.

		(N=80)
Lump/ Tumor Size	**No of Patients**	**Percentage**
≤ 2 cm	10	12.5
2.1 - 5 cm	47	58.75
> 5 cm	23	28.75

There were 47 (58.75%) patients who presented with a lump size of 2.1 cm to 5 cm followed by 23 (28.75%) patients with a lump size of > 5 cm. Only 10 patients presented with a lump size of ≤ 2 cm.

Table 6: Distribution of patients according to site of breast lump.

		(N=80)
Quadrant/ Site of Breast Lump	**No of Patients**	**Percent Age**
Central	15	18.75
Upper Outer	32	40
Upper Inner	19	23.75
Lower Outer	12	15
Lower Inner	1	1.25
Whole	1	1.25

Majority 32(40%) of the patients had presented with lump in the upper outer quadrant of the breast; followed by 19(23.75%), 15(18.75%) and 12(15%) patients in upper inner, in central and in lower outer quadrants respectively.

Table 7: Distribution of patients according to Axillary lymph node status.

		(N=80)
Axillary lymph nodes	**No. of patients**	**Percentage**
Positive	46	57.5
Negative	34	42.5

Axillary lymph nodes whether ipsilateral or ipsilateral and contralateral were palpable in 46(57.5%) patients and not palpable in 34(42.5%) patients.

The Table 8 depicts that out of 80 FNAC we got 66 positive and 14 negative for malignancy. True positive for FNAC was 66(100%) and True negative was 3(21.4%) and false positive was zero

and false negative was 11(78.6%), which lead to the interpretation of sensitivity of 85.7% for FNAC and specificity of 100% for FNAC. For FNAC in our study positive and negative predictive values were found to be 100% and 21.4% respectively.

The Table 9 depicts that out of 80 True Cut biopsies; we got 69 positive and 11 negative for malignancy. True positive for True Cut biopsy was 69(100%) and True negative was 3(27.3%) and false

Table 8: Cross Tabulation for FNAC versus Post operative Histopathology.

(N=80)

FNAC_category * postop_histopath_cat cross tabulation					
Sl. No.	FNAC category		Postop_histopath_cat		Total
			Positive	Negative	
1	FNAC positive	Count	66	0	66
		% within FNAC positive category	100.0%	0.0%	100.0
		% within postop_histopath_cat	85.7%	0.0%	82.5%
2	FNAC negative	Count	11	3	14
		% within FNAC negative category	78.6%	21.4%	100.0%
		% within postop_histopath_cat	14.3%	100.0%	17.5%
	Total	Count	77	3	80

Sensitivity = a / a+c = 85.7%, Specificity = d / b+d = 100%

PPV: = a / a+b = 100%, NPV: = d / c+d = 21.4%

Table 9: Cross Tabulation for True Cut versus Post operative Histopathology.

(N=80)

True cut_category * postop_histopath_cat Crosstabulation					
Sl. No.	True cut_category		postop_histopath_cat		Total
			Positive	Negative	
1	True cut positive	Count	69	0	69
		% within True cut_category	100.0%	0.0%	100.0%
		% within postop_histopath_cat	89.6%	0.0%	86.2%
2	True cut negative	Count	8	3	11
		% within True cut_category	72.7%	27.3%	100.0%
		% within postop_histopath_cat	10.4%	100.0%	13.8%
	Total	Count	77	3	80

Sensitivity = a / a+c = 89.6%, Specificity = d / b+d = 100%

PPV: = a / a+b = 100%, NPV: = d / c+d = 27.3%

19   An Observational Study of Various Risk Factors, Clinical Presentation and Stage of Carcinoma Breast,
Correlation of Fine Needle Cytology / True Cut Biopsy with Post Operative Histopathology Report,
Staging and Management of Carcinoma Breast

Table 10: Cross Tabulation of Clinical Staging versus Operative procedure done.

(N=80)

			Clinical Staging * Operative_procedure Crosstabulation					
			Operative_procedure					
Sl. No.	Clinical staging	Number of patients and percent	Lumpectomy	Lumpectomy followed by MRM	MRM	Right sided palliative subtotal mastectomy	Simple Mastectomy	Total
1	DCIS	Count	0	0	0	0	2	2
		% within clinical staging	0.0%	0.0%	0.0%	0.0%	100.0%	100.0%
2	I	Count	1	0	6	0	0	7
		% within clinical staging	14.3%	0.0%	85.7%	0.0%	0.0%	100.0%
3	II A	Count	0	2	19	0	0	21
		% within clinical staging	0.0%	9.5%	90.5%	0.0%	0.0%	100.0%
4	II B	Count	0	0	25	0	1	26
		% within clinical staging	0.0%	0.0%	96.2%	0.0%	3.8%	100.0%
5	III A	Count	1	2	10	0	0	13
		% within clinical staging	7.7%	15.4%	76.9%	0.0%	0.0%	100.0%
6	III B	Count	0	0	10	1	0	11
		% within clinical staging	0.0%	0.0%	90.9%	9.1%	0.0%	100.0%
	Total	Count	2	4	69	1	4	80
		% within clinical staging	2.5%	5.0%	86.2%	1.2%	5.0%	100.0%

Table 11: Cross Tabulation of Clinical Staging versus Adjuvant/Neoadjuvant Therapy given.

Sl. No.	Clinical staging	Number of patients and percentage	Post OP CT		Total	Post OP RT		Total	Neoadjuvant therapy		Total	Post op hormone therapy		Total
			No	Yes		No	Yes		No	Yes		No	Yes	
1	DCIS	Count	2	0	2	2	0	2	2	0	2	2	0	2
		% within clinical staging I	100%	0.0%	100.0%	100%	0.0%	100%	100.0%	0.0%	100%	100%	0.0%	100%
2	I	Count	1	6	7	1	6	7	7	0	7	3	4	7
		% within clinical staging I	14.3%	85.7%	100.0%	14.3%	85.7%	100%	100.0%	0.0%	100%	42.9%	57.1%	100%
3	II A	Count	0	21	21	0	21	21	21	0	21	12	9	21
		% within clinical staging I	0.0%	100.0%	100.0%	0.0%	100.0%	100%	100.0%	0.0	100%	57.1%	42.9%	100%
4	II B	Count	1	25	26	1	25	26	26	0	26	14	12	26
		% within clinical staging I	3.8%	96.2%	100.0%	3.8%	96.2%	100%	100%	0%	100%	53.8%	46.2%	100%
5	III A	Count	1	12	13	1	12	13	6	7	13	5	8	13
		% within clinical staging I	7.6%	92.4%	100.0%	7.6%	92.4%	100%	46.1%	53.8%	100%	38.5%	61.5%	100%
6	III B	Count	0	11	11	0	11	11	0	11	11	6	5	11
		% within clinical staging I	0.0%	100.0%	100.0%	0.0%	100.0%	100%	0.0%	100%	100%	54.5%	45.5%	100%
	Total	Count	5	75	80	5	75	80	62	18	80	42	38	80
		% within clinical staging I	6.25%	92.75%	100.0%	6.25%	92.75%	100%	77.5%	22.5%	100%	52.5%	47.5%	100%

positive was zero and false negative was 8(72.7%), which lead to the interpretation of sensitivity of 89.6% for True Cut biopsy and specificity of 100% for True Cut biopsy. For True Cut biopsy in our study positive and negative predictive values were found to be 100% and 27.3% respectively.

Discussion

Study was conducted at Sri Aurobindo Institute of Medical Sciences and PG Institute on 80 patients with clinical suspicion of Carcinoma Breast. To compare FNAC/True Cut biopsy report to Post

operative Histopathology report. to assess the diagnostic accuracy of FNAC v/s True Cut biopsy as preliminary diagnostic tool. To study line of management employed with different stages of breast cancer.

In our study of 80 patients with suspicion of carcinoma breast, age variations as observed was patients between 41–50 years were most commonly affected-31.25% (25 patients) & patients between the age of 71–80 years were least commonly affected-1.25% (1 patient). These results were similar to the results observed in following studies-: Mohammad Fazelul Rahman Shoeb et al. (2017)[4] where maximum participants(18) were in age group of 41-50 yrs (36%). Husnu Hakan Mersin et al. (2015)[5] where median age at diagnosis was 48 yrs between Jan 1994-Dec 1998 and 50 yrs between Jan 2004–Dec 2008. Arifa Almas(2017)[6] had maximum patients in 41-50 yrs (70%). Of all the patients in our study, 79 patients (98.75%) were females and 1 patient (1.25%) was male. Acharya SC et al. (2012)[7] also showed similar results with 111 females (97.4%) and 3 males (2.6%). Lump was the presenting symptom in all of our patients (100%) which was similar to the study done by Mohammad Fazelul Rahman Shoeb et al. (2017)[4] followed by skin/nipple changes (30%) and pain (15%). Vaanika Kaira et al. (2017)[8] also had similar results in their study. All patients in their study presented with breast lump. In our study maximum number of patients presented within 6 months of onset of symptoms (47.5%). These results were comparable to study done by Mohammad Fazelul Rahman Shoeb et al. (2017)[4] who had 64% of patients presenting within 6 months. Size of the lump as observed in our study upto 2cms -2.1 to 5 cms 10 patients (12.5%), 47 patients (58.75%) more than 5 cm-23 patients (28.75%). Similar studies which observed sameresults are Mohammad Fazelul Rahman Shoeb et al. (2017)[4] upto 2 cms-1 patient (2%), 2. 1 to 5 cms-23 patients (46%) more than 5 cms-26 patients (52%)

Between January 1994 to December 1998

upto 2 cms	-	391 patients (32%)
2.1 to 5 cms	-	713 patients(58%)
more than 5 cm	-	119 patients (9.7%)

Between January 2004 to December2008

upto 2 cms	-	531 patients (39%)
2.1 to 5 cms	-	723 patients (53%)
more than 5 cm	-	92 patients(6.8%)

Decreased awareness of breast cancer, poverty,

ignorance, negligence and non-availability of good screening programmes may be the cause for late presentations among Indian population. Quadrant distribution in our study was upper outer (40%) followed by upper inner (23.75%). These findings were consistent with study done by Mohammad Fazelul Rahman Shoeb et al. (2017)[4] which showed maximum patients in upper outer group(58%) followed by upper inner group(14%). Acharya SC et al. (2012)[7] had similar results with upper outer quadrant involvement in 73 cases (64%).

In the present study, axillary lymph node involvement is 57.5% which was comparable to study by Mohammad Fazelul Rahman Shoeb et al. (2017)[4] which had 32 patients(64%) with palpable axillary lymph nodes. Husnu Hakan Mersin et al. (2015)[5] also showed similar results with 57.3% patients with palpable axillary lymph nodes between January 1994 to December 1998 & 58.2% patients between January 2004 to December 2008.

In our study of 80 patients presenting to our institute during specified period with clinical suspicion of carcinoma breast, the sensitivity, specificity,positivepredictivevalueandthenegative predictive value of FNAC in diagnosing the breast cancer is 85.7%, 100%, 100% & 21.4% respectively. The sensitivity, specificity, positive predictive value and the negative predictive value of true cut biopsy in diagnosing the breast cancer is 89.6%, 100%, 100% & 27.3%. The 100% specificity of FNAC & True Cut Biopsy in our study can be related to the fact that 80 patients taken in our study already were under clinical suspicion of breast carcinoma which minimized the false negative results. M.Moschetta et al. (2014)[9] in their study stated that sensitivity, specificity, PPV & NPV of FNAC as 97%, 94%, 91% & 98% whereas for true cut biopsy as 97%, 96%, 97% & 96% respectively. Shah Alam Sheikh et al. (2016) in their study stated that Sensitivity of Fine needle aspiration cytology was 99.11%, specificity 96.88%, positive predictive value 97.22%, negative predictive value 91.18%. Mitra Shaila K. et al. (2016)[10] conducted a study on 68 patients and concluded that CNB is superior to FNAC in diagnosis of breast lesions in terms of specificity, suspicious rate, diagnostic accuracy and correct typing of benign and malignant cases. Shashirekha C. A. et al. (2017)[11] in their study on 62 patients found out that Sensitivity of FNAC and TRUE CUT biopsy were 84.34% and 97.1% respectively. Adetola Olubunmi Daramola et al. (2015)[12] stated that the sensitivity, specificity and PPV of FNAC as 99.2%, 88.9% & 99.6% respectively. S.Sujith Kumar M.S. et al. (2015)[13] stated that sensitivity of FNAC is

21   An Observational Study of Various Risk Factors, Clinical Presentation and Stage of Carcinoma Breast,
          Correlation of Fine Needle Cytology / True Cut Biopsy with Post Operative Histopathology Report,
                          Staging and Management of Carcinoma Breast

90% and specificity is 100%. The positive predictive value is 100% while negative predictive value is 90% whereas sensitivity and specificity of TCNB was 96% and 100% respectively. Similarly positive and negative predictive value was 100% and 96% respectively. Thus the results obtained in our study were comparable to the results of all these studies as diagnostic accuracy of True cut needle biopsy is better than FNAC in diagnosing carcinoma breast. In the present study we have taken 80 patients who have presented to our institute with clinical suspicion of carcinoma breast. Management of these patients was decided based on their clinical staging, fnac/true cut biopsy reports, distant spread & postop histopathology report. Most of the patients belonged to stage IIA and IIB. - Stage IIB had 26 patients out of which 1 patient was diagnosed phylloides tumor on Tru-cut biopsy & underwent simple mastectomy. FNAC/Trucut biopsy confirmed malignancy on rest 25 patients and all underwent MRM & received postoperative chemoradiotherapy. Stage IIA had 21 patients out of which 19 were FNAC/Tru-cut positive for malignancy and underwent MRM. 2 patients were not diagnosed on FNAC/Tru-cut & underwent lumpectomy & postoperative histopathology report was suggestive of breast carcinoma so MRM was done. All 21 patients received post op chemotherapy and radiotherapy. 12 patients had positive hormone receptors & received postop hormonal therapy. In our study we had 13 patients belonging to stage IIIA, 3 patients were FNAC/Tru-cut negative for malignancy, underwent lumpectomy out of which 1 patient was diagnosed fibroadenoma on postoperative histopathology report, rest 2 patients were diagnosed breast cancer and underwent MRM. Rest 10 patients were diagnosed malignancy on FNAC/Tru-cut as breast cancer and underwent MRM. All 12 patients received postoperative chemoradiotherapy, 7 patients received neoadjuvant chemotherapy and 8 patients received postoperative hormonal therapy. Stage IIIB had 11 patients, 10 underwent MRM & 1 underwent palliative subtotal mastectomy. All 11 patients received neoadjuvant chemotherapy, postoperative chemoradiotherapy and 5 patients received postoperative hormonal therapy. There were 7 patients in stage I, out of which 1 patient had fnac & tru-cut negative for malignancy and underwent lumpectomy and postoperative histopathology report was suggestive of benign breast disease, rest 6 patients were FNAC/True Cut positive and underwent MRM and were given postoperative chemotherapy and radiotherapy.

In our study we had 2 patients with DCIS who had undergone simple mastectomy. Gurdeep S Mannu et al. (2015) did a cross sectional study on DCIS and concluded that breast conservation surgery or mastectomy are the surgical procedures recommended. Anne-France Leclerc et al. (2016) in their study concluded that radical mastectomies are most common surgical procedures in carcinoma breast with advanced stages requiring neoadjuvant therapy. Ambikavathy Mohan et al. (2017)[14] also concluded that all patients with locally advanced breast cancer were given 3 cycles of neoadjuvant therapy followed by MRM followed by adjuvant therapy.

Conclusion

This clinical study on carcinoma breast was conducted between January 2017 to December 2017 in Sri Aurobindo Medical College & Hospital and Post Graduate Institute. Study included 80 patients with clinical suspicion of breast cancer between January 2017 to December 2017 (prospectively) and January 2015 to December 2016 (retrospectively). End of the study concludes following points- Most common age group of presentation of carcinoma breast was 41-50 years (31.25%) while least was 71-80 years (1.25%). Carcinoma Breast is more commoner in females. In our study F:M is 98:1. Breast lump was the most common mode of presentation followed by skin/nipple changes and pain. Most patients presented within 6 months of onset of symptoms and with lump size of 2-5cms. Most commonly involved quadrant for breast lump is upper outer f/b upper inner. Axillary lymph node involvement was present in 58% of patients. Diagnostic accuracy of True cut biopsy is better than FNAC in diagnosing the breast cancer. Most patients with carcinoma breast underwent MRM with post operative chemoradiotherapy. Neoadjuvant therapy was required from stage IIIA onwards and postoperative hormonal therapy was given in 47.5% patients.

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