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Tru-Cut Needle Biopsy verses Fine Needle Aspiration Cytology (FNAC) for Early Diagnosis of Breast Carcinoma in High Risk Women

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Abstract

The cancer treatment has been the most important and devastating problem of human civilization, creating a burgeoning interest and commitment of cancer research and therapy and to obtain a gratifying result in the improvements in the length of survival, quality of survival and in palliative care. Until the past decade, breast cancer was the leading cause of cancer-related mortality in women. In 1985 the lung surpassed, it as the leading site of cancer related mortality in women. Despite the steady increase in incidence, the overall breast cancer mortality has remained static. This relative decrease in mortality rate reflects the detection of an increasing percentage of early disease. Worldwide, breast carcinoma in an epidemiologic problem.

Introduction

Now a day's much emphasis is being for early detection of breast cancer when it is very early stage than the treatment so as to have an effective cure.

Routine self examination of breast by the patient herself came into use first as a method of early detection as 90% of the breast cancer are detected by the patient herself but still did not satisfy the expecting results as self examination required mass education and training, then came the use of radiology a means of early detection of breast cancer.

Tru-cut needle biopsy has been gaining much popularity throughout the world so far as breast cancer detection, diagnosis and demonstration are concerned. During these years the question of possible heamatoma and infection & Pain. In spite of all these complication tru-cut needle biopsy not lost its acceptance rather it has gained much popularity so far as its accuracy, easy to perform and cost effective benefit are concerned and the risk of bleeding remain a theoretical.

No doubt that tru-cut needle biopsy has major contribution in detection, demonstration and diagnosis of breast cancer. It is the only reliable means of dictating palpable cancer and can detect many cancers in very early stage when they may be curable, therefore it would be more widely applied especially in symptomatic women age over 25 year.

In spite of its worldwide use it has not gained much attention in India particularly in Odisha state. Keeping these in view the present study has been carried out to assess the accuracy of tru-cut needle biopsy in diagnosis of breast cancer and

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correlate with clinical and fine needle aspiration cytology (FNAC) studies.

Materials and Methods

All the cases taken through clinical and physical examination have been subjected for different investigation procedure including mammography, Fine Needle Aspiration Cytology (FNAC), Trucut needle biopsy and histopathological study in order to establish the correlation between different investigative procedures. No doubt tru-cut Needle Biopsy has proved to be superior to fine needle aspiration cytology(FNAC) so far Breast cancer is concerned.

The female patient attending in the surgical outpatient department and gynaecological out patient department for various breast problem's are informed regarding the high risk factor's for breast carcinoma. They are provided with data based format with inclusion and exclusion criteria along with various risk factor's regarding breast cancer were on getting consent to be subjected for tru-cut needle biopsy and fine needle aspiration cytology (FNAC) depending upon site of lesion. They were subjected to be various method of treatment, local excision MRM, conservative breast surgery. The histopathological study compared between tru-cut needle biopsy and fine needle aspiration cytology FNAC to get the efficacy of the test.

Result and Analysis

A study of 55 cases of Breast lumps consisting of clinically overt and suspicious malignancy, admitted to the department of surgery Veer Surendra Sai Institute Medical Sciences & Research VIMSAR), Burla, Sambalpur (Odisha) were subjected to Clinical Examination ,Fine needle aspiration cytology (FNAC), tru-cut Needle Biopsy, routine laboratory investigations and conventional chest X-rays. All cases have been confirmed by histopathological study and finally clinical and histopothological studies were correlate with Tru-cut Needle biopsy findings to establish the accuracy of Breast cancer.

Showing the Sex Incidence of the Patients in the Present Study

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Sex	Malignant	Percentage	Benign	Percentage	Total
Female	42	76.36	12	21.8	54(98.2)
Male	0	0	1	1.8	(1.8)
Total	0	76.36	13	23.6	52.76(100)
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In our observation the incidence of Breast cancer was found to be 76.36% (42) cases in females but

no breast cancer was found in males. This indicates the rarity of the disease in Males.

Showing the	Age inciden	ce of the Cases	with Different	t Breast Pathology	in The Present Study
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Provisional diagnosis	Α	Total(0)		
r Tovisionai diagnosis	25-35	35-45	45-55	10tal (70)
Carcinoma	2	8	30	40 (72.7)
Fibroadenoma	3	3	2	8 (14.5)
Cystosarcoma Phylloides	-	-	2	2 (3.6)
Duct Papilloma	-	1	1	2 (3.6)
Fibrodenosis	2	-	-	2 (3.6)
Gynaecomastia	-	1	-	1 (1.8)
Carcinoma Male Breast	-	-	-	-
Total	7 (12.7)	3(16.3)	35 (41.8)	55 (100)

The overall age incidence of breast disease in our series is high in between 45-55 years of age within incidence of 54.54% (35cases) out of which 30

cases presented with Breast cancer is between 45-55 years of age.

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Risk factors	25-35	35-45	45-55	Total %
Family history of Breast cancer	-	2	1	3(5.45)
Previous Breast disease	1	1	3	5(9.09)
Early menarche (<12yrs)	-	1	14	15(27.27)
Late Menopause (<50yrs)	-	-	-	5(9.09)
Marietal status unmarried	2	1	1	4(5.45)
Late marriage (>28yrs)	-	1	2	3(4.45)
Age at First child and marriage gap (<5yrs)	1	2	3	7(12.72)
Parity Nullipara	1	1	1	3(5.45)
Issue >2	1	2	1	4(7.27)
Average Breast feeding duration >2yrs	2	5	11	21(38.18)

Showing the Incidence of Risk Factors in Different Age Group of Patients With Breast Cancer

Out of all 55 cases family history of Breast cancer was present in 3 cases (5.45), history of previous Breast disease was pr5esent in 5 cases (9.09), 36 were married with 3 unmarried (5.45). In the married group only 4 patients were having two or less children (7.27). Nulli parity and late marriage were present in 3 cases each (6.45) More than 5

yrs gap between marriage and first child was present in 7 cases (12.7). Average Breast feeding during more than 2 years was present in 21 cases (38.18). Early menarche less than 12yrs was present in 15 cases and late menopause after 50yrs was present in 5 cases.

Showing the Presenting Complaints of The Patients In The Present Study

Different Symptoms	Within 2	2-4 months	4-6	6month	Total (%)		
	months		months	to 1 yr			
L.I.B. Painless	6	12	18	4	40		
Painful	2	-	2	4	8		
Total	8	12	20	8	48(87.27)		
Pain and discomfort	3	-	-	-	3(5.45)		
Nipple discharge	Nipple discharge						
Serous	2	-	-	-	2		
Bloody	1	-	-	-	1		
Greenish	1				1		
Total	4	-	-	-	4(7.27)		
Size & shape							
Enlarged	-	1	6	1	8(14.54)		
Shrinked	-	2	5	3	10(18.18)		
Normal	7	-	10	-	17(30.90)		

L.I.B. – Lump in Breast

From the above table it is seen that maximum number of cases in the present study presented with a lump in the Breast in 48 cases, with pain and discomfort in the breast in 3 cases and nipple discharge in 4 cases. In the Lump group large number of cases got themselves examined within 4 months to 6 months duration and all the cases in the pain and discomfort, nipple discharge group came for a check-up within a few weeks to two months duration.

Table No. Vi

Showing the Incidnce of Tru-Cut Needle Biopsy Abnormalities in Clinical Maligant Cases

Type of abnormalities	Number	Percentage
Altered architecture of cell	21	38.18
Nuclear abnormality	12	25.45
Hyperchromatic nucleus	4	7.27
Altered nucleo cytoplasmic ratio	3	5.45
Total	42	76.36

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Out of 55 cases diagnosed 42 cases (76.36%) of Malignant lesions of which 21 (38.18) were Altered cellular archetectured lesions, Hyperchromatic nucleus in 4(7.27%) and Nuclear abnormality in 12(25.45%) cases respectively with Altered nucleo cytoplasmic ratio seen in 3(5.45) cases.

Showing the Tru with their abnormalities Groupa (definite malignancy)

Type of Tru-cut needle biops abnormalities	Number (%)
Irregular outline of cell	20(36.36)
Calcifications only	4(7.27)
Nuclear polymorphism	11(20)
Alteration of nucleo cytoplasmic ratio	2(3.63)
Total	37(67.27)

Group B (Possible Malignancy)

Types of abnormalities	Number (%)
Type of abnormalities	3(5.45)
Mass with dilated ducts without calcification	1(1.8)
Irregular Mass with surrounding Isodense fibroglandular tissue	1(1.8)
Total	5(9.09)

Group- C (Benign)

Type of abnormalities	Number (%)
regular outline	11(20)
Multiple Nucleous	1(1.8)
Altered nucleo cytoplasmic ratio	1(1.8)
Total	13 (23.6)

Most of the patients 37(67.27%) were in the group of Definite malignancies followed by the Benign group and only 5(9.09%) patients presented with the tru-cut findings of possible malignancy. Showing the Clinical, Tru-Cut Needle Biopsy and

Fine Needle Aspiration Cytology Correlation

Type of study	No. of Malignant cases	Percentage
Clinical	35	63.63
Tru-cut Needle Biopsy	37	67.27
Fine Needle Aspiration	38	69.09

In the present study of 55 cases of breast diseases, Fine Needle aspiration 38 cases (69.09%), clinical examination confirmed 35(63.63) cases and Tru-cut Needle Biopsy 37 (67.27) of Breast cancer respectively.

Tru-Cut Needle Biopsy of Opposite Breast

Tru-cut needle biopsy of opposite Breast was done in all cancer cases with a suspicion do detect occult carcinoma in the opposite Breast.

Foot and Stewart (1945) stated an incidence of synchronous bilaterality in 0.2 to 2% of cases with an average of 0.05% of cases, Egan found this to be 3-4% and the incidence of metachronous bilaterality has a wide variation stated by various authors with an average incidence of 1% per year. In the present series not a single case could be detected tru-cut needle biopsy developing bilateral Breast cancer which can be attributed to the lack of special slide preparation needed for vigorous Breast cancer diagnosis, experienced histopathologist and good quality of microscopy in order to detect the fine clustered calcification

Detection Method

In the present series physical examination alone detected 63.63 of malignant lesions, tru-cut needle biopsy along in 67.27% of cases and combined tru-cut needle biopsy and fine needle aspiration cytology study in 65.45% of cases. Combined physical and histopathological examination after tru cut needle biopsy study definitely increases the chance of cancer detection. The fact attests to the observations made by various studies.

Summary

In the current study, tru-cut needle biopsy has been taken as a special diagnostic tool accuracy in breast cancer, therefore before doing tru-cut needle biopsy a detailed history, complete clinical examination and necessary laboratory investigations were done and finally all the cases (55 cases) were subjected to histopathological examination and various finding thus obtained during the work were complied, analysed and compared with the observations of other workers in this field.

Total 55 no. of cases having history of breast lesion and symptoms were selected for the present

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study of which 54 were females. Majority of the cases (41.8%) were in the age group of 45-55 years and the incidence of breast cancer was also high (32.7%) in the same age group. Majority of cases presented with a palpable lump in breast (87.27%), and maximum number of patients (72.8%) attended the Hospital within 4-6 months duration of the onset of disease. The incidence of Breast lump was more common in the upper and outer quadrant of the breast, as it is the commonest site for Breast cancer. Tru-cut needle biopsy was done in all 55 cases. Most of the cases (67.27%) revealed the direct evidence of with a celluar atypia and irregular nuclear in 38.18 cases, hyperchromatic nucleus with irregular celluar outline in 21.8% of cases, calcification in 7.2% of cases, hyperchromatic nucleus with calcification in 25.45% of cases and altered duct in 5.45% of cases. Finaly tru-cut needle biopsy findings were corroborated with fine needle aspiration cytology (FNAC) findings and the correlation thus obtained was found to be excellent. In the present study tru-cut needle biopsy excluded the positibility of malignancy in 2.5% of clinically malignant cases and increased the chance of malignancy in 20% of clinically benign cases. Both clinical and tru-cut needle biopsy differentiation become difficult in few benign cases which present alike as that of the malignant cases both clinically and tru-cut needle biopy. The accuracy of tru-cut needle biopsy in the present study was found to be 98.1% with specificity and sensitivity of 70.5% & 97.3% respectively.

Conclusion

Tru-cut needle biopsy is a simple, safe, invasive and less time consuming procedure with high accuracy, specificity and sensitivity so far the diagnosis of Breast cancer is concerned which can be carried out in small hospitals having basic set up. The number of needs for fine needle aspiration cytology FNAC also can help in differentiating benign from malignant conditions of the breast. But it requires an immense experience in interpretation of histopathologist.

Tru-cut needle biopsy is at present of immense importance both in diagnosis and detection of breast cancer and should be used widely so as to achieve an effective cure in Breast cancer when it is in its early stage. This study showed that, provided the limitations of tru-cut needle biopsy are appreciated it is useful as a contribution to the management of Benign Breast Disease and in the doubtful cases unlikely to have carcinoma.