Research Paper

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Medical Science

KEYWORDS :

Study of 44 Cases of Breast Lumps that Underwent FNAC Followed by HPE

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AIMS AND OBJECTIVES OF STUDY

- To evaluate the FNAC report preoperatively in patients presenting with breast lump.
- To study the age incidence of benign and malignant breast lesions.
- To compare the FNAC and Histopathological reports.
- To establish the accuracy of FNAC

MATERIALS AND METHODS

A study of fine needle aspiration cytology was conducted in breast lumps. The study was conducted from June 2014 to June 2015 at L.G. Hospital Ahmedabad. The cases with breast lump were first recorded in prepared proforma. After clinical diagnosis , fine needle aspiration was done and cytology was studied.

All the smears were stained by H & E(mainly) and also Leishmain‟s, Giemsa stain.

Cytology reporting and clinical findings were correlated and final opinion was formed. These patients after undergoing the surgery, their cytological and histopathological results were compared. The FNAC procedure was conducted as an outpatient procedure. Some were conducted on inpatients also, but no patient is admitted for FNAC.

ADVANTAGES OF FINE NEEDLE APSIRATION CYTOLOGY

1. It is rapid and least expensive diagnostic procedure.
2. Both the neither hospital stay nor anesthesia is required, and it takes only a few minutes to perform.
3. The technique is relatively less painful.
4. It produces speedy results and relieves the patient‟s anxiety.
5. It is readily repeatable.
6. The need for frozen section diagnosis is reduced.
7. Many benign conditions can be confidently diagnosed by FNAC combined with radiological imaging and surgery avoided.
8. There is a low risk of complication. Pneumothorax is rare in this technique.
9. By following this technique, definitive treatment can be planned in advance.

ACCURACY OF DIAGNOSIS BY FINE NEEDLE ASPIRATION CYTOLOGY

The sensitivity of Fine Needle Aspiration Cytology in the diagnosis of breast cancer is 90-95 % in most series. The aim should be sensitivity of not less than 95% and this can be achieved by with increasing experience. Sensitivity is lower for low-grade carcinoma (invasive and in situ), for lobular carcinoma, and for very small and very large cancers.

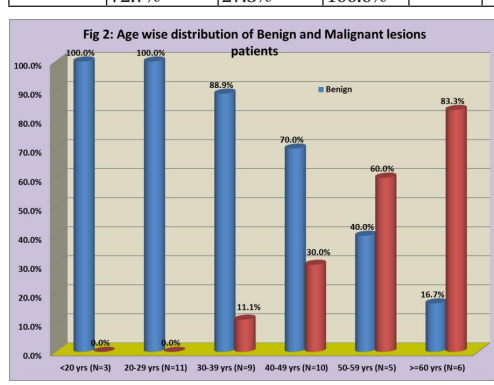
There are many factors, which may influence the diagnostic accuracy. The foremost ones are the skill and experience. Significant improvement in accuracy occurs with experience. The false-negative rate is generally less than 5%, but significantly higher than the false-positive rate.

ANALYSIS AND DISCUSSION

The following facts and figures are observed from the study of 44 cases of breast lumps that underwent FNAC followed by HPE at L.G. Hospital Ahmedabad.

Table: 1 Age distribution of patients studied

	FNAC		Total	2 Value	„p‟ value
	Benign	Malignant			
<20 yrs	3	0	3	18.680	0.002
	100.0%	.0%	100.0%		
20-29 yrs	11	0	11		
	100.0%	.0%	100.0%		
30-39 yrs	8	1	9		
	88.9%	11.1%	100.0%		
40-49 yrs	7	3	10		
	70.0%	30.0%	100.0%		
50-59 yrs	2	3	5		
	40.0%	60.0%	100.0%		
>=60 yrs	1	5	6		
	16.7%	83.3%	100.0%		
Total	32	12	44		
	72.7%	27.3%	100.0%		



In this series of breast lump, the highest incidence of benign tumors were found in the second decade accounting for 25% of all benign tumors. Highest incidences of malignant tumors were found in the sixth decade accounting for 41.7% of all malignant tumors.

Table: 2 Marital status:

	FNAC		Total	2 Value	„p‟ value
	Benign	Malignant			
Married	22	12	34	4.853	0.028
	64.7%	35.3%	100.0%		
Unmarried	10	0	10		
	100.0%	.0%	100.0%		
Total	32	12	44		
	72.7%	27.3%	100.0%		

Out of 44 cases, 10 cases were unmarried and 34 cases were married. All unmarried women were diagnosed to have benign tumor and 12 out of 34 married were diagnosed to have malignancy.

Table: 3 Menstrual status:

	FNAC		Total	2 Value	„p" value
	Benign	Malignant			
Reproductive	28	4	32	12.91	<0.001
	87.5%	12.5%	100.0%		
Post menopause	4	8	12		
	33.3%	66.7%	100.0%		
Total	32	12	44		
	72.7%	27.3%	100.0%		

In the reproductive age group, out of the 32 cases, 4 cases (12.5%) were diagnosed to be positive for malignancy and 28 cases (87.5%) were diagnosed to have benign tumors.

In the post-menopausal age group, out of 12 cases 4 cases were benign and out of 12 cases 8 cases were malignant.

Table: 4 Side involved

	FNAC		Total	2 Value	„p" value
	Benign	Malignant			
Left	17	5	22	0.5729	0.751
	77.3%	22.7%	100.0%		
Right	12	6	18		
	66.7%	33.3%	100.0%		
Bilateral	3	1	4		
	75.0%	25.0%	100.0%		
Total	32	12	44		
	68.2%	31.8%	100.0%		

Out of the 12 malignant cases, 05 were found in the left breast and 06 in the right breast. Whereas in benign tumors, 17 cases in the left breast and 12 cases in the right breast. 4 cases were bilateral in which 3 cases were benign and 1 case was malignant tumor.

Table: 5 FNAC: Benign lesions

Tumor	Benign	
	n	%
? Abscess	1	3.1%
Fibroadenoma	18	56.3%
Fibrocystic	5	15.6%
Galactocele	1	3.1%
Intraductal Papilloma	1	3.1%
PhyllodesTumour	5	15.6%
Serous Calcified Mass	1	3.1%
Total	32	100.0%

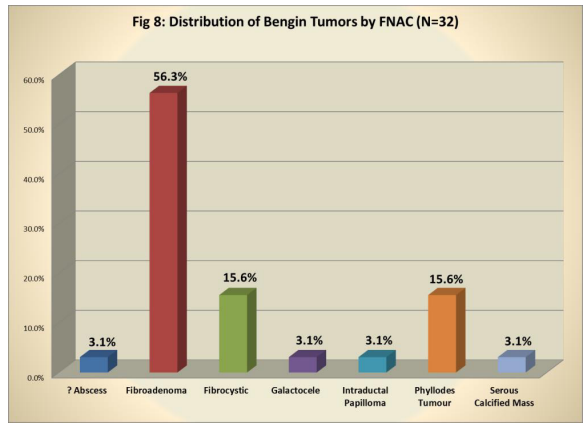


Table: 6 FNAC: Malignant tumors

Tumor	Malignant	
	N	%
Carcinoma	10	83.3%
Malignant PhyllodesTumour	1	8.3%
Suspicious of Carcinoma	1	8.3%
Total	12	100.0%

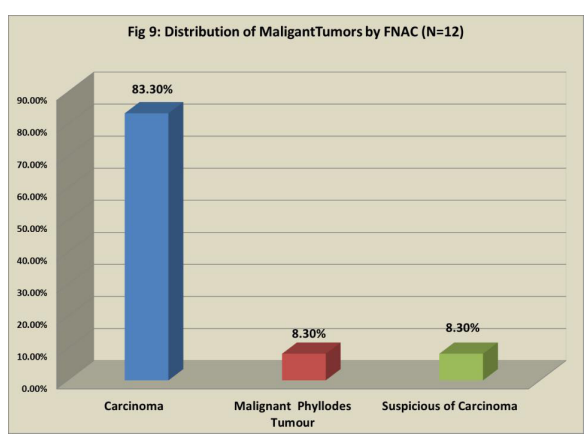


Table: 7 HISTOPATHOLOGY

Tumor Histopathology	Frequency	Percent
Benign	30	68.2
Malignant	14	31.8
Total	44	100.0

In Histopathology, 30 patients were benign and 12 were malignant.

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Table: 8 HISTOPATHOLOGY: Benign lesions

Tumor	Benign	
	N	%
Fibroadenoma	16	53.3%
Fibroadenoma With Adenosis	1	3.3%
Fibrocystic	5	16.7%
Hyalinised Calcified Fibroadenoma	1	3.3%
Nodular SclerosingAdenosis	1	3.3%
PhyllodesTumour	6	20.0%
Total	30	100.0%

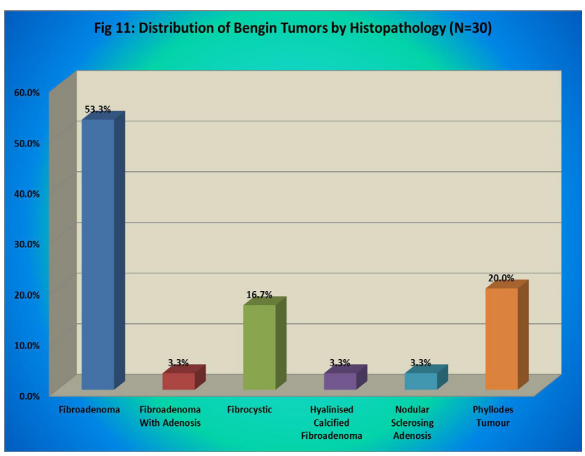
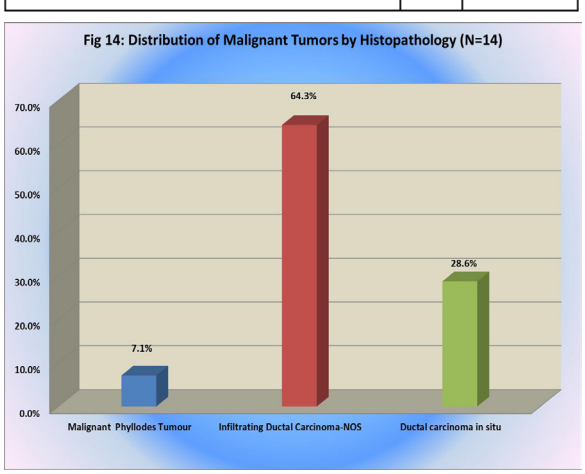


Table:9 HISTOPATHOLOGY: Malignant tumours

Tumor	Benign	
	N	%
Malignant PhyllodesTumour	1	7.1%
Infiltrating Ductal Carcinoma-NOS	9	64.3%
Ductal carcinoma in situ	4	28.6%
Total	14	100.0%



Out of the 44 case, 30 cases (68.2%) were benign and 14 cases (31.8%) were malignant.

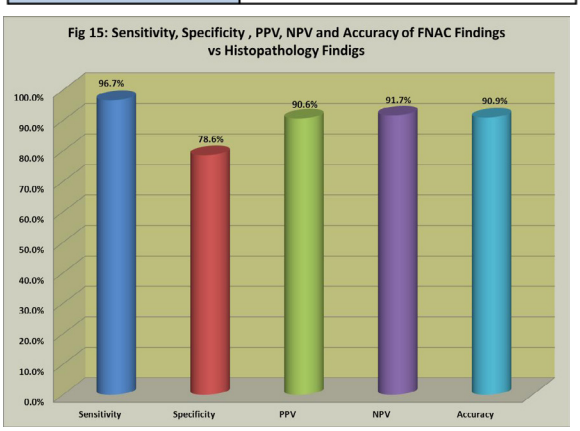
Infiltrating ductal carcinoma-NOS type was the most common malignant tumor. 9 cases (64.3%) out of the 14 cases in histopathology..

Fibroadenoma was the most common benign tumor (53.3%).

Table: 10 Accuracy of FNAC diagnosis:

FNAC	Tumor Histopathology		Total
	Benign	Malignant	
Benign	29	3	32
	90.6%	9.4%	100.0%
	96.7%	21.4%	72.7%
Malignant	1	11	12
	8.3%	91.7%	100.0%
	3.3%	78.6%	27.3%
Total	30	14	44
	68.2%	31.8%	100.0%
	100.0%	100.0%	100.0%

Sensitivity	96.7%
Specificity	78.6%
PPV	90.6%
NPV	91.7%
Accuracy	90.9%



In this study we had a sensitivity rate (true positive) of 96.7%, specificity (true negative) of 78.6%, positive predictive value of 90.6% and negative predictive value of 91.7%.

DISCUSSION

Our present study was conducted on 44 female patients with a palpable breast lump. Each of whom underwent a fine-needle aspiration cytology of the lump followed by excisional surgery either in the form of a lumpectomy or a definitive surgical procedure like a mastectomy, depending on the diagnosis at aspiration cytology. The aspiration cytology findings were then compared with the final histology report to see as to how accurate FNAC was as compared to open biopsy i.e. to assess the cytohistopathologic correlation. None of our patients were subjected to a core biopsy and its correlation with FNAC was not a part of

our study. Our study also did not attempt to draw any conclusions as to whether one diagnostic modality could replace the other.

Table 11: comparison of age distribution in the present study with the other studies:-

Age groups	Names of studies		
	A Khemka et al[28]	Rajendra kumar et al[29]	Present study
	No. of cases and percentage	No. of cases and percentage	No. of cases and percentage
0–10	00 (0%)	01 (0.41%)	00 (0 %)
11–20	08 (16%)	26 (10.7%)	03 (6.8%)
21–30	13 (26%)	87 (35.8%)	11 (25%)
31–40	12 (24)	67 (27.6%)	09 (20.5%)
41–50	11 (22%)	40 (16.5%)	10 (22.7%)
51–60	03 (6%)	16 (6.6%)	05 (11.4%)
>61	03 (6%)	06 (2.5%)	06 (13.6%)
Total	50	237	44

Table no. 1 shows the comparison of the age incidence in the present study with other studies. In present study maximum numbers of cases were between the ages of 21-30 years. In A Khemka et al and Rajendra Kumar et al, maximum numbers of cases were between the ages of 21-30 years.

In our study, 31.3% breast lumps were in the upper and outer quadrant, 25.0 % were in the upper and inner quadrant.

JJ Vyas et al[30] reported in their study (of 298 patients), 42.2 % occurrence of malignant tumors in the upper and outer quadrant. Philippa D. Darbre et al[31] reported (Female breast cancer incidence in England and Wales with site-specific information between 1979 and 2000), 52.5% were in the Upper Outer Quadrant of the breast.

In the present series of benign tumors diagnosed by FNAC, 56.3% were fibroadenoma, 15.6% were fibrocystic disease, 15.6% were phyllodes tumour, 3.1% were galactocele, and 3.1% intraductal papilloma

Sushila Khanna et al[32] reported in their study of 1031 benign breast tumors, 38.4% were fibroadenoma, 13.1% were fibrocystic disease, 12.9% phyllodes, 4.8% sclerosing adenosis, 1.2% were galactocele, 4.3% of plasma cell mastitis and 0.7% were duct papilloma.

Sushila khanna et al, 1998 [33], reported that out of all benign lesions 60% were fibroadenoma, 15% were mammary dysplasias, 20% were inflammatory, 1.6% were galactoceles and remaining 2.9% were of miscellaneous origin.

From a total of 50,399 patients with early breast cancer in the Baylor College of Medicine Breast Cancer data-bases, we identified 4140 patients (8.2%) with

Infiltrating Lobular Carcinoma and 45,169 (89.6%) patients with Infiltrating Ductal Carcinoma (not otherwise specified)[34] .

Similar results we found in our study, as Infiltrating ductal carcinoma-NOS type was the most common malignant tumor. 9 cases (64.3%) out of the 14 cases who had Infiltrating Ductal Carcinoma-NOS on histopathological evaluation.

Table 12: showing the comparison of the sensitivity and specificity of the present study with other studies:-

Studies	Sensitivity	specificity
Mulazim Hussain Bukhari et al[35]	100 %	98 %
Ying Hua Yu et al[36]	92.7 %	94.8 %
Tabriz et al[37]	89.79 %	93.47 %
Ujjagar et al[38]	93.3 %	--
A A Hai et al[39]	98.1 %	99.4 %
Richard J Zarbo et al[40]	97 %	97 5 %
Tiwari et al[41]	83.3 %	100 %
Present study	96.7 %	78.6 %

In our study, sensitivity and positive predictive value of FNAC were calculated as 96.7% and 90.6%, respectively, while specificity and negative predictive value for malignancy were 78.6%' and 91.7%, respectively.

The procedure of FNAC was performed by trained personnel in the pathology department following a uniform protocol. All pathology specimens underwent a histopathological study, the final report was compared with that of FNAC and the correlation was sought. The results obtained were tabulated and conclusion drawn based on statistical tests. Though many aspects dating to the patient profit were tabulated and compared with those in other similar studies, the most important aspect of this study was to draw conclusions regarding the cyto-histological correlation in these patients.

The primary aim of our study was to determine diagnostic correlation between fine needle aspiration cytology report and the final histopathology of the lump. In other words, how accurate and reliable was FNAC in diagnosing breast pathology which could help us in proceeding towards definitive excisional (and often mutilating) surgery without having an unpleasant surprise at the final histology report of the specimen.

For centuries, conventional histology has remained the cornerstone of diagnostic pathology and was often described quite rightly as „the final court of appeal' in the presence of controversy.

The obvious advantages of FNAC are in form of a rapid and cost effective, out-patient‟s procedure, not requiring anaesthesia, which can be easily repeated without much pain or discomfort to the patient. Occasional complications include the formation of a hematoma or post procedure pain and rare chance of tumour seeding along the needle tract. With needles used now being quite fine, this chance is even less likely. However, there are a few limitations in terms of its inability to diagnose lesions if the aspirate is scanty either due to an inexperienced operator or a very small or deep lesion. More needle manoeuvres are required in some patients and it may be difficult to diagnose unusual tumours. Being a cytological study, classification and grading is not possible. Diagnosis is also impossible if the aspirate is from the centre of a necrotic tumour.

SUMMARY

This study of BREAST LUMP CORRELATION BETWEEEN FNAC AND HISTOPATHOLOGY was conducted to compare the diagnostic accuracy of fine needle aspiration cytology in differentiating benign and malignant lesions of the palpable breast lumps and to determine the accuracy of needle tip in localizing the tumour during the cytology procedure.

In our study 44 patients underwent fine needle aspiration cytology of the palpable breast lump after thorough physical exami-

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nation. The cytological diagnosis was classified in to 3 groups benign, suspicious and malignant. After this reporting all the patients were later subjected to open/excision biopsy and its histopathological confirmation. Later diagnostic accuracy of cytology reporting was compared with that of histopathology.

RESULT

Of all 44 patients selected, the sensitivity of the study was 96.7% and the specificity was 78.6%. The positive predictive value was 90.6%' and the negative predictive value was 91.7%.

CONCLUSION

At the end, I conclude that the fine needle aspiration cytology is a simple, cost-effective, quick, and relatively less painful procedure which can be used as an outdoor patient procedure or as a part of the screening programme for the diagnosis of breast lump.

When performed by an expert pathologist, the diagnostic accuracy of FNAC is very high. A high sensitivity and a high positive predictive value proved that a positive FNAC in the breast means a definite diagnosis of the concerned pathology if compared with the final histology report.|

FNAC can be utilized as a first line diagnostic procedure in patients presenting with palpable breast lesions especially in developing countries and countries with limited resources. When diagnostic accuracy has been determined to be high in a centre, definitive treatment can be offered to patients with cancer, and in those with benign result, excision should be performed only at the patient's request.

STUDY PROFORMA

- Name :
- Age: Sex: IP No.:
- Date Of Admission:
- Date Of Aspiration:
- Date Of Discharge:
- Chief complaints:
- History of present illness:

1. Swelling/lump in the breast [right/left] -Onset
2. -Duration -Rate of growth
3. Aggravating factors
4. Pain over swelling
5. Discharge from nipple -Hemorrhagic / pus / serous -Recent / old
6. Retraction of nipple
7. Loss of weight

- Past history: H/o similar complaints
- Co – Morbid conditions: H/o Diabetes Mallitus
  Hypertension
  Tuberculosis
  Asthma
- Family history
- Personal history: - Diet
  Sleep
  Bowel/bladder habits
- Marital history
- Menstrual history
- Obstetric history
- General physical examination: -Built, Nourishment
  - Pallor, Cyanosis, Clubbing, Edema, Lymphadenopathy
  - Respiratory system
  - Cardiovascular system
  - Central nervous system
  - Per Abdomen
  - Per Rectal
- Local examination

Inspection: Size, Shape, Site, Surface,
Skin over the breast: puckering/dimpling
Nipple position
Areola
Axilla / supraclavicular fossa

Palpation: Temperature, Tenderness -
Number, Consistency, Fluctuation
Fixity of skin to underlying structures
Lymph nodes

- Clinical diagnosis:
- Investigations: [1] Blood: Hemoglobin, Total Count, Differential Count,
  Erythrocyte Sedimentation Rate, Blood group
  Random Blood Sugar, Urea, S.Creatinine
  [2] Mammography
  [3] Chest X-Ray
  [4] Ultrasonography

- FNAC: a. Site of aspiration
  b. nature of aspirate
  c. date of aspirate
- Operative procedure:
- HPE: date:
- Conclusion: