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Role Of Fine Needle Aspiration Cytology In Breast And Axillary Lesions: A Retrospective Study

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Abstract

Background and Aim: Breast and axillary lesions have varied pathology, and there are different techniques to prove the diagnosis. The aim of the study is to know the role of fine needle aspiration cytology (FNAC) in palpable breast and axillary swellings.

Materials and Methods: In this study 100 patients of breast and axillary swellings were studied over a period of 1year from May 2023 to May 2024 to compare the findings with clinical diagnosis, FNAC and histopathological report for its diagnostic reliability. This study was done in the department of General Surgery of Mc Gann Teaching District Hospital attached to Shimoga Institute of Medical Science. Patients of above 16years age both male and female were included in the study. History of patients was taken, clinical examination of swelling was done followed by FNAC and histopathological report of the operative specimen.

Results: Of 100 patients, FNAC was false negative in five cases, 2 cases of phyllodes were reported as fibroadenoma, 3 cases of carcinoma were reported as atypical hyperplasia. The sensitivity, specificity of FNAC in diagnosing breast lump were 95% and 100% respectively. Of 34 patients for whom FNAC was performed for axilla, 31 had proven to have axillary lymph node metastasis and rest had reactive hyperplasia. The sensitivity and specificity of FNAC in diagnosing axillary swelling were 100% and 91.17% respectively.

Conclusion: FNAC is rapid, accurate, outpatient based and less complicated procedure helps in diagnosis of breast cancer, benign diseases and axillary involvement.

Keywords: NIL

Introduction

Breast lesions are the most common lesions seen in our patients. They range from wide variety of lesions ranging from benign to malignant lesions. Hence a complete awareness is essential for all the females of reproductive age group in this matter. Breast lesions has a wide variety of lesions comprising of most common benign lesion of Fibroadenoma to most malignant breast lesion infiltrating ductal carcinoma. Breast cancer is one of the most common cancers in women in India and is a leading cause for mortality and morbidity. Breast tissue contains various tissue components and there is change in composition of breast tissue with hormonal changes. It is important for the clinician to examine properly and take proper decision during evaluation of a patient with palpable breast mass.

Triple assessment of breast mass had decreased the false negative rate less than 1%. But FNAC can be done as an outpatient procedure and helps in rapid diagnosis. The limitations of FNAC includes differentiating atypical hyperplasia from DCIS and fibroadenoma from phyllodes tumor. Core biopsy is an effective means to diagnose breast lumps, but it is

expensive, time consuming and associated with complications like hematoma and rarely pneumothorax.

Materials And Methods

A Retrospective analysis of medical records of patients with palpable breast and axillary swelling were studied over a period of 1year from May 2023 to May 2024 to compare the findings with clinical diagnosis, FNAC and Histopathological report for its diagnostic reliability. FNAC was performed by a pathologist using 21-22gauge needle with 2-4aspirations. Specificity and sensitivity values of FNAC for both breast lump and axilla were calculated, while correlation was seen by Pearson's correlation curve.

Results

In a period of 1year, 100 patients who underwent FNAC of breast and axillary swelling were studied. The mean age of patients who underwent FNAC was 37.86 (range 18-65years). 3 male patients had undergone FNAC, 2 had gynaecomastia and 1 had malignancy. Fibroadenoma was the most common pathology of the patients who underwent FNAC constituting 37% of all cases.

Of the benign lesions, fibroadenoma was the most common cytological diagnosis in 37% of patients. Fibrocystic disease was diagnosed in 17%. 2 cases of phyllodes tumour were incorrectly reported as fibroadenoma on cytology. Of 3cases who were diagnosed to have atypical hyperplasia the final histopathology showed invasive ductal carcinoma. 31 cases was diagnosed as invasive ductal carcinoma with cytology correlating with histology in 31cases as well. 2% cases of breast cyst were diagnosed and 8% phyllodes were diagnosed with cytology in correlation with histology. 5 cases were incorrectly diagnosed by FNAC (2 cases phyllodes reported as fibroadenoma and 3 cases of carcinoma diagnosed as atypical hyperplasia). The sensitivity and specificity of FNAC in diagnosing breast lumps were 95% and 100% respectively and p value was <0.01 which is statistically significant.

TABLE 1: Gender Incidence

Gender	Frequency	%
F	97	97%
M	3	3%
Total	100	100%
Invalid	0	0%
Total	100	100%

TABLE 2: comparison of different type of lesions in breast

FNAC	Frequency	%
FB	37	37%
CARCINOMA	31	31%
FIBROCYSTIC	17	17%

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FNAC	Frequency	%
PHYLLOIDS	8	8%
ATYPICAL HYPERPLASIA	3	3%
GYNACOMASTIA	2	2%
BREAST CYST	2	2%
Total	100	100%
Invalid	0	0%
Total	100	100%

FIGURE 1 : Shows incidence of different lesions of breast and sex incidence

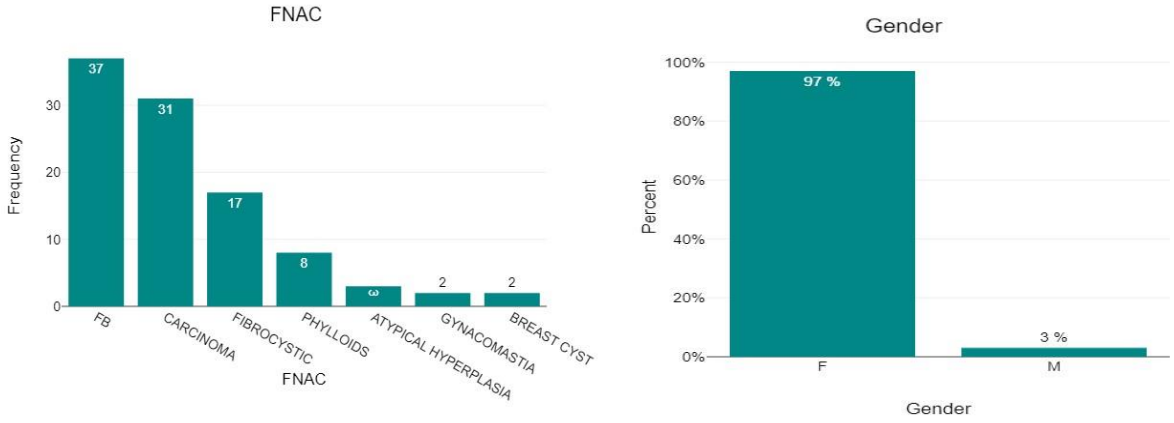

TABLE 3: Comparison between FNAC and HPE

		HPE													
		FB		PHYLLOIDS		CARCINOMA		GYNACOMASTIA		BREAST CYST		FIBROCYSTIC		Total	
		n	%	n	%	n	%	N	%	n	%	n	%	n	%
FNAC	FB	35	35 %	2	2%	0	0%	0	0%	0	0 %	0	0%	37	37 %
	CARCINOMA	0	0 %	0	0%	31	31 %	0	0%	0	0 %	0	0%	31	31 %

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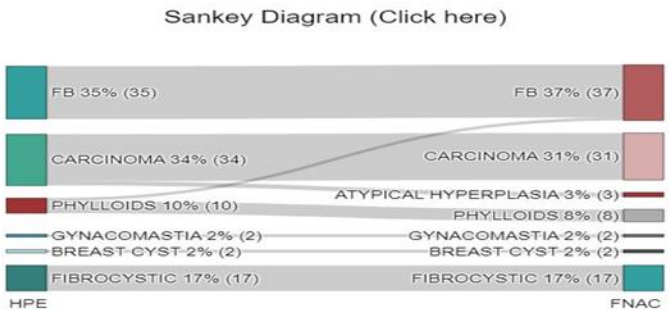
	HPE													
	FB		PHYLLOIDS		CARCINOMA		GYNACOMASTIA		BREAST CYST		FIBROCYSTIC		Total	
	n	%	n	%	n	%	N	%	n	%	n	%	n	%
GYNACOMASTIA	0	0%	0	0%	0	0%	2	2%	0	0%	0	0%	2	2%
PHYLLOIDS	0	0%	8	8%	0	0%	0	0%	0	0%	0	0%	8	8%
BREAST CYST	0	0%	0	0%	0	0%	0	0%	2	2%	0	0%	2	2%
FIBROCYSTIC	0	0%	0	0%	0	0%	0	0%	0	0%	17	17%	17	17%
ATYPICAL HYPERPLASIA	0	0%	0	0%	3	3%	0	0%	0	0%	0	0%	3	3%
Total	35	35%	10	10%	34	34%	2	2%	2	2%	17	17%	100	100%

FIGURE 2: Comparison between FNAC and HPE



FNAC in palpable axillary node was done in 34 patients of whom 31 had proven axillary LN metastasis and 3 had reactive hyperplasia. The sensitivity and specificity of FNAC was 100% and 91.17% respectively.

TABLE 4: Comparison of incidence of LN metastasis and hyperplasia in palpable Axillary LN with HPE

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	FB	N	PHYLLOIDS	Y	CARCINOMA	GYNACOMASTIA	BREAST CYST	FIBROCYSTIC	Invalid
HPE	35	0	10	0	34	2	2	17	0
Axillary LN	0	66	0	34	0	0	0	0	0
LN METS	0	69	0	30	0	0	0	0	1
LN HYPERPLASIA	0	97	0	3	0	0	0	0	0

TABLE 5: comparison between Palpable axillary LN and LN metastasis

		LN METS			
		N	Y		Total
Axillary LN	N	65	0	0	65
	Y	3	31	0	34
		0	0	0	0
	Total	68	31	0	99

FIGURE 3: Comparison of incidence of LN metastasis and hyperplasia in palpable Axillary LN with HPE

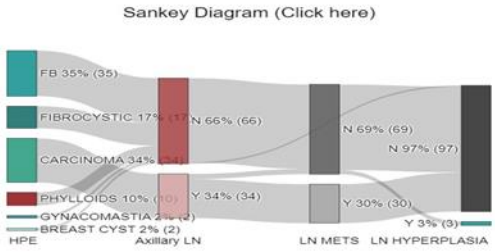

TABLE 6: comparison between LN metastasis and LN Hyperplasia

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		LN METS			
		N	Y		Total
LN HYPERPLASIA	N	65	31	0	96
	Y	3	0	0	3
		0	0	0	0
	Total	68	31	0	99

Discussion:

FNAC was first described by Martin and Ellis in 1930 for sampling cervical lymph node. Fine-needle aspiration cytology is widely used in the diagnosis of breast cancer because it is an excellent, safe, and cost-effective diagnostic procedure. One can get on site immediate report with minimal cost using inexpensive equipment and a simple technique. The most significant advantage of FNAC is the high degree of accuracy, rapid results, and a less invasive procedure than a tissue biopsy. FNAC of the breast can reduce the number of open breast biopsies.

The frequency of inadequate cases are variable is different studies ranging from 0 to 57.2% depending on various factors. The main causes for inadequate smears may be due to either lack of technical experience in performing FNA, preparation, and fixation of smears. FNA of ill-defined masses like or lesions with hyalinization and deeply located lumps may also be contributed to the inconclusive diagnosis. The other limitation of FNAC is it cannot differentiate few lesions like fibroadenoma from phyllodes, phyllodes from metaplastic carcinoma breast and atypical ductal hyperplasia from ductal carcinoma in situ.

The most common reason for a false negative result is failure to localize the lesion exactly. This can be overcome by performing the test under image guidance. Also, tumours with extensive fibrosis like scirrhous carcinoma can give a false negative result because of low cellularity which can be avoided by performing FNAC in the periphery of the tumour with 27-gauge needle in this type of malignancies. The false positive results occur because of some benign diseases with hypercellularity like cellular fibroadenoma, proliferative fibrocystic disease, phyllodes tumour, lactational changes, sclerosing adenosis, and so forth, and in lesions with atypia like post-radiation, fat necrosis. Roles of FNAC in palpable lymph nodes to rule out metastases were evaluated in a study which showed diagnostic accuracy for metastatic lymph nodes as 97.9%, sensitivity of 97.9%, and specificity of 100%. The cost effectiveness of FNAC of breast was studied in a study by Silverman et al. They demonstrated less costs with FNAC of breast and helped to triage the patients to either outpatient or inpatient setting. This is important in poor resource setting like our hospital where most of the patients present in advanced stage and cannot afford expensive investigations. We would like to bring in light that FNAC is still an acceptable mode of diagnosis in experienced hands and where there is limitation of resources.

Conclusion

It is concluded from the present study that there is a wide spectrum of lesions that can present as breast and axillary swellings which have to be diagnosed and treated carefully. FNAC is a safe, rapid, and effective test for diagnosing breast lumps in experienced hands. Triple assessment, acquisition of technical, observational and interpretative skills will further enhance the diagnostic accuracy.

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