



Fine Needle Aspiration Cytology of Breast Lump with histological correlation- A Hospital based study

KEYWORDS

Breast lump, Duct carcinoma, Fine needle aspiration, cytology, proliferative breast disease

Ranjana Deka

Assistant Professor, Pathology,
Tezpur Medical College), Tezpur

Usha Sarma

Associate Professor, Pathology,
Gauhati Medical College, Gauhati

Swapna Deuri

Professor, Pathology, Tezpur
Medical College), Tezpur

ABSTRACT A hospital based study was done in patients who attended surgery OPD with breast lump of variable duration to evaluate the role of fine needle aspiration cytology in diagnosis of breast lump. the fine needle aspiration cytology was carried out in each patients. Depending on the report, they were managed. Out of 115 cases, 66 patients underwent surgery and biopsy results were correlated with the initial findings on cytology. Invasive duct carcinoma was the commonest entity. On cyto-histological correlation, 98.5% showed consistency in. The possibility of false negative diagnosis in 1.5% case was the uniformity and low grade nature of the cell population. The sensitivity of the study is 98.5% and specificity is 100%. Hence FNAC should be practiced as a routine procedure as there is a high degree of correlation with histopathological findings.

Introduction:

Breast cancer represents one in four of all cancers in women. Its incidence has increased by more than 20%, while mortality has increased by 14%. Breast cancer is also the most common cause of cancer death among women (522,000 deaths in 2012). In India, for decades together, cervical cancer was the most common cancer in women, but now breast cancer is the most common cancer in women accounting for 144,937 newly detected cases [1]. As per population based cancer registry data, location wise, Bangalore ranks the top most position in India (age adjusted incidence rate or AAR per 100,000 population being 36.6%) and in North-East region, Aizawl recorded maximum number of cases (30.3% in India) and Kamrup Urban district recording 22.8% [2]. Rapid urbanization, change in life style and increased life expectancy, incidence of breast cancer cases also high up. Early detection with screening mammography and multimodality treatment has reduced the cancer mortality in western countries; however, it still continues to have a high prevalence in the developing countries. Due to lack of awareness on early detection and barriers to health services, most women with breast cancer are diagnosed in late stages in India [3]. The commonest clinical presentation of breast cancer is breast lump. The first mode of investigation for a breast lump is fine needle aspiration cytology. Here we aspirate the cellular material with the help of a 22-23 gauge needle under aseptic condition. The material is spread over a clean grease free glass slide, fixed, stained and observed under good quality light microscope and reported on the basis of cell morphology. FNAC is very quick, cost effective and can be done as OPD procedure. So a patient with breast lump can be diagnosed in the same very day and managed accordingly on the basis of FNAC report. A palpable breast lump, whether benign or malignant, is a cause of anxiety to patient. Therefore accurate pathological diagnosis is crucial for further treatment and estimation of an outcome. The trend has now been shifting to a less invasive procedure in its diagnosis. The sensitivity of FNA in diagnosis of breast lesion is 90-95 % [4]. The aim of the present study is to carry out cytological evaluation of breast lump cases attending to this institute for two year and to correlate its efficacy with corresponding histological examination.

Methodology:

The study was carried out for two year duration from August 2011 to July 2013 at Gauhati Medical College, a tertiary level referral hospital, Guwahati. A total of 125 cases attended Surgical OPD with clinical presentation of breast lump of variable duration. Cases were examined by a qualified person mostly post graduate trainee. After noting down the clinical and family history, The procedure of FNAC was explained and written consent was taken from the patient. Each patient was subjected to FNAC of breast lump under aseptic precautions. FNA was performed by using a 10 ml disposable syringe and 22/23-gauge needle. No local anesthesia was given during the procedure. FNA smears were stained with both Pap & MGG stains. Tissue sections, obtained from mastectomy/lumpectomy specimens were stained with H and E stains. In cytology, lesions were divided according to following criteria [5, 6].

1) **Positive for carcinoma** : all four of the following criteria must be met.

a) Cellular dyshesion refers to presence of abundant single epithelial cells or loosely cohesive groups of epithelial cells (this excludes singly bare bipolar cells and stromal cells).

b) Cytologic atypia may be variable but should at least include high nuclear: cytoplasmic ratio and markedly eccentrically located nuclei. Other useful feature which may or may not be present depending on the level of pleomorphism, include nuclear membrane irregularity, coarse and clumped chromatin, multiple and irregular nucleoli.

c) One cell population refers to one population of atypical epithelial cells, as opposed to mix population of atypical and benign appearing epithelial cells or atypical epithelial cells and stromal cells.

d) Hyper cellularity refers to atypical cell population only, rather than increased cellularity due to another component such as inflammatory or stromal cells.

2) **Suspicious for carcinoma** : When any three of the above features for malignancy are present, a suspicious diagnosis is given.

3) Epithelial proliferative lesion with atypia: This diagnosis is made when specimen is cellular with many epithelial cells and when epithelial cells present in groups show significant crowding and overlapping and/or specimen show one other feature of malignancy (cellular dyshesion, one cell population, cellular atypia)

4) Epithelial proliferative lesion without atypia .This category is used when a specimen is cellular with many epithelial cells and epithelial cells in group show no or mild crowding and overlapping with, obvious myoepithelial cells present. Most fibroadenoma tends to fall in this category

5) Unremarkable: When none of the four features of carcinoma was present, such lesions were described as unremarkable.

6) Non diagnostic/unsatisfactory: If specimen is acellular or extremely hypo cellular and when it does not yield an explanation of lesion based on information provided by clinician, it was reported as unsatisfactory.

Results:

A total of Out of 125 breast lump that underwent FNAC, 10 samples were unsatisfactory to report and excluded from the study. Seventy numbers of breast lump had neoplastic lesion out of which 25 cases were fibroadenoma and 45 cases had breast carcinoma. Infiltrating duct carcinoma was the commonest entity among the breast cancer group. Among the non neoplastic category, 10 cases had fat necrosis, 4 cases had inflammatory change. Fibrocystic change was detected in 3 cases. Hyperplastic change was noted 20 cases among which 10 cases had atypical change in some of the ductal cells aspirated and categorized under suspicious for malignancy group . Histopathological correlation could be done in 66 cases. The result of histology is stated in table 1.

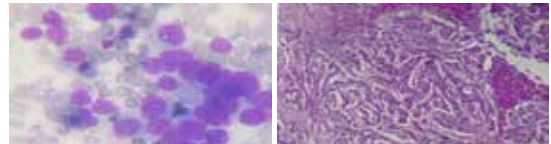
Table 1: Cyto-histological correlation of Breast Lump (Total No.66)

Pathology	FNAC Diagnosis N=66	Histology Diagnosis N=66	Cyto-histo correlation n=66	
			Consistent N=65 (98 %)	Inconsistent N=1 (2%)
Fibroadenoma	16	16	100%	None
Fibrocystic disease	03	03	100%	None
Proliferative breast disease(Without atypia)	02	01	100%	None
Proliferative breast disease(With atypia	1	1	50%	50%
Invasive Duct carcinoma	40	40	100%	100%
Tubular carcinoma	01	02	50%	50%
Invasive Lobular carcinoma	1	1	100%	100%
Phylloid tumour	2	2	100%	100%

Discussion:

Breast cancer incidence is rising up among Indian women. In India it was found to be 25.8 per 100,000 females [1]. Lack of awareness on early detection and barriers to health services, most women with breast cancer are diagnosed in late stages in India [3] . National Cancer Institute sponsored consensus conference on breast FNA biopsy in 1996, recommended the classification of breast FNAs into one out of the following 5 categories; benign, atypical, suspicious, malignant, or unsatisfactory [7]. Fine needle

aspiration of any breast lump helps in determining the underlying pathology by looking at the morphology ductal cells. In the present study, in 98.5% cases we could diagnose the lesion correctly in FNAC. Only in 1.5 % (1/66) cases the histology were inconsistent. The inconsistency was found in a case of tubular carcinoma. In this case, the smears showed high cellular yield showing small uniform cells. The nuclei showed finely stippled chromatin and small nucleoli. Hence the case was under diagnosed as Proliferative breast disease (Without atypia). On histology, the angulated arrangement of tubule formation , absence of myoepithelial cell and mild atypia of some of the cuboidal cells with cytoplasmic apical snouts were observed and confirmed as tubular carcinoma. Invasive duct carcinoma showed 100% sensitivity. (Figure 1 & Figure2).



Invasive Duct Carcinoma
Figure 1: Cytology Figure 2 Histology

The main objective of fine needle aspiration cytology of breast lump is to distinguish between inflammatory and neoplastic lesions. In case of neoplastic lesion, the FNAC helps to predict the clinical behavior of the tumour. Study of Breast lump by FNAC becomes a routine out patient department test as it is easy, cost effective and quick procedure and can be done without anesthesia. The result of FNAC carried out in a case of breast lump of any pathology helps in better management and follow up when required. In carcinomatous lesion, by observing the morphology of the malignant cells, cytological grading of breast cancer is possible so that prior to the surgery and biopsy study, we can evaluate the prognostic assessment of that particular tumour. The present study showed 97.8% sensitivity and 100% specificity. Cytohistological correlation of 55 breast lump was carried out by Touhid Uddin Rupom et al (2011) revealed that considering only cases with a definitive diagnosis of malignancy, the sensitivity of FNAC to diagnose the disease was 100% and accuracy was 100% [8]. However, some cytologic lesions may have features mimicking to those of low grade or sparsely cellular carcinoma. Many authorities recognized this limitation of breast cytology and advised use of categorical or probabilistic approach in reporting of breast FNA to limit false positive or false negative results[9] . In present study also we had one false negative reports in tubular carcinoma case. The sensitivity of the study is 98.5% and specificity is 100%

Conclusion:

The present study shows that FNAC is a reliable method for diagnosis of breast lump.. It helps to confirm the clinical impression without open biopsy. The most important aspect of this procedure lies on the diagnosis of malignancy. From this study it can be concluded that diagnosis of breast carcinoma from fine needle aspiration cytology (FNAC) should be practiced as a routine procedure as there is a high degree of correlation with histopathological findings.

REFERENCE

1. Ferlay J, Soerjomataram I, Ervik M, et al (2013). GLOBOCAN 2012 v 1.0, Cancer incidence and Mortality Worldwide: IARC Cancer Base No.11[Internet]. Lyon, France: International Agency for Research on Cancer, 2013. Available from <http://globocan.iarc.fr>. | 2. National Cancer Registry Programme (NRCRP). Three year Report of Population Based Cancer Registries, 2009-2011. (ICMR); Bangalore Pg 55. | 3. Babu GR, Lakshmi SB, Thiagarajan JA (2013). Epidemiological correlates of breast cancer in South India. Asian Pac J Cancer Prev, 14, 5077-83. | 4. Karin Lindholm-Breast. Orell S.R., Sterrett G.F., Whitaker D. — Fine needle aspiration cytology. 4th edition. Reed Elsevier India Private Limited, New Delhi: Chapter7, pg.167; 2005. | 5. Wang H.H., Ducatman B.S: — Fine needle aspiration of the breast: a probabilistic approach to diagnosis of carcinoma. ActaCytol. 42(2): 285-289, 1998. | 6. Ayata G., Abu-Jawdeh G.M., Fraser J.L., Garcia L.W., Upton M.P., Wang H.H. — Accuracy and consistency in application of a probabilistic approach to reporting | 7. The uniform approach to breast fine-needle aspiration biopsy. National Cancer Institute Fine-Needle Aspiration of Breast Workshop Sub committees. DiagnCytopathol. 16 (4): 295-311, 1997. | 8. Touhid Uddin Rupom, Tamanna Choudhury & Sultana Gulshana Banu- Study of Fine Needle Aspiration Cytology of Breast Lump: Correlation of Cytologically Malignant Cases with Their Histological Findings. Bangabandhu Sheikh Mujib Medical University journal. 2011; 4(2):60-64 | 9. Ayata G., Abu-Jawdeh G.M., Fraser J.L., Garcia L.W., Upton M.P., Wang H.H. — Accuracy and consistency in application of a probabilistic approach to reporting breast fine needle aspiration. Actacytol. 47(6): 973-978, 2003. |