



A 1-year clinicoepidemiological prospective analysis of Breast lesions by Fine Needle Aspiration Cytology at a tertiary care center

Akshay Agarwal^{1*}, Pathan Saira Bano² and Prashant Jawade³

¹Pathology Resident, M.G.M. Medical College, Navi Mumbai, Maharashtra, India.

²Pathologist, N.M.M.C. Hospital, Navi Mumbai, Maharashtra, India.

³Medical Superintendent, N.M.M.C. Hospital, Navi Mumbai, Maharashtra, India.

Received for publication: October 21, 2015; Accepted: November 18, 2015

Abstract: Fine Needle Aspiration Cytology (FNAC) or biopsy usually confirms the diagnosis of breast lesions with both modalities having its own merits and demerits. The objective of the current study was to evaluate the diagnostic utility of FNAC in all patients presenting with breast lesions. The aim of the study was to analyze the varied breast lump lesions that presented to us for FNAC in 1-year duration. All patients of both sexes presenting with a palpable breast lump or nipple discharge were included in the study. Duration of the study was from 1st January 2014 to 31st December 2014. The Data was analyzed using Excel and expressed as percentage (%), Mean and median. The mean age of presentation was 33 years. Out of the 141 FNAC performed, 29 cases had indefinite diagnosis. Excluding these, the most common lesion was fibroadenoma (49 out of 112) followed by malignancy (16 out of 112). FNAC still remains an important tool to evaluate breast lesions because of its cost effectiveness, speedy diagnosis and minimally invasive quality.

Key words: Fine needle aspiration cytology; Breast; breast cancer; benign

INTRODUCTION

Breast cancer is the most common cancer in women worldwide, with nearly 1.7 million new cases diagnosed in 2012 (1). Fine needle aspiration cytology (FNAC) has been an important diagnostic tool to detect these lesions at an early stage leading to a decrease in morbidity and mortality of the patients suffering from breast cancer. Breast tissue contains various tissue components that are under the influence of hormones thus presenting with varied pathology and correlation with clinical presentation, history and examination findings along with radiological assessment can help reduce incorrect diagnosis.

Martin and Ellis first described FNAC in 1930 for sampling cervical lymph nodes (2). FNAC can be done as an outpatient procedure. It is an inexpensive, less traumatic, easy to perform and fast procedure and does not require anesthetic administration. FNAC not only reduces health care costs but also the psychological costs to the patients (3). The sensitivity and specificity varied in different studies based on whether the unsatisfactory samples were considered positive or negative (4). If the unsatisfactory samples were excluded from the study, the sensitivities and specificities varied from 58.3% to 100% and 55% to 100%(4).

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 (5). Thus the purpose of this study was to evaluate the diagnostic efficacy of FNAC performed on all patients presenting with breast lesions in the year 2014.

MATERIALS AND METHODS

A prospective observational study was conducted in the department of Pathology at Navi Mumbai Municipal Hospital for the year 2014 from 1st January 2014 to 31st December 2014. All patients presenting with a palpable breast mass including gynaecomastia and or nipple

discharge that were advised FNAC were included in this study. An informed consent was taken before the patient was subjected to FNAC. Detailed clinical history, local examination and correlation with Ultrasonography (USG) was done wherever available.

The procedure was performed by a pathologist using a 21-22-gauge needle attached to a 5mL/10mL syringe with 2 aspirations per case on an average. Papanicaloau (PAP) stain was performed on the aspirate. In case of inadequate sampling, a repeat aspiration was done. Statistical analysis of the data was done using Microsoft Excel.

RESULTS

141 patients presented with palpable breast mass, out of which 126 were females. The mean age of patient who underwent FNAC was 33 years (range 14-76 years) [Figure 1]. 13 patients presented with bilateral breast swelling, 64 presented with left and 61 presented with right-sided breast swelling. 3 patients came with history of nipple discharge. Out of 141 cases, in 29 cases no definite diagnosis was made. Fifteen male patients underwent FNAC of whom 9 had gynaecomastia.

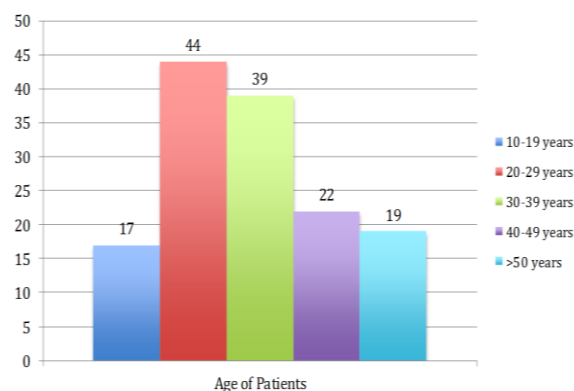


Figure 1: Age distribution of patients in our study.

*Corresponding Author:

Dr. Akshay Agarwal,

Pathology Resident,

M.G.M. Medical College,

Navi Mumbai, Maharashtra, India.

The Mean duration for presentation of fibroadenoma was 6.9 months [figure 2] whereas those which were positive for malignancy was 13 days [figure 3]. Of the 112 patients in whom diagnosis was made, the most common lesion was fibroadenoma, which was seen in 49 patients [figure 4]. 16 patients were diagnosed with malignancy and 5 were reported as suspicious for malignancy [figure 5].

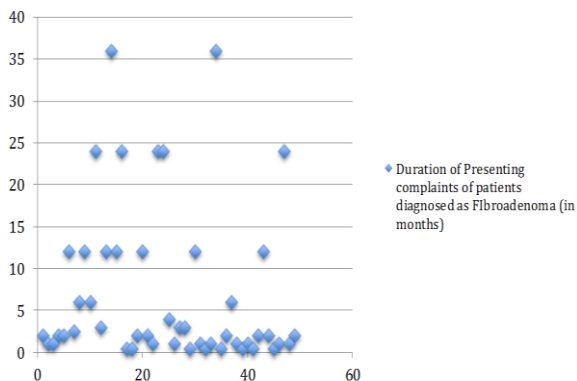


Figure 2: Distribution of Duration of Lump diagnosed as Fibroadenoma (49 patients)

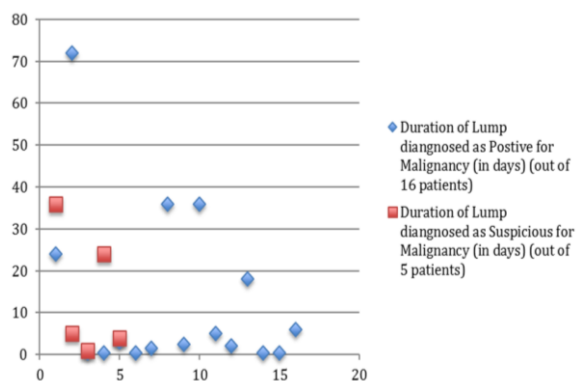


Figure 3: Distribution of Duration of Lump diagnosed as Suspicious and Positive for Malignancy

Out of 141, only in 112 cases, diagnosis was made.

Type of Lesion	No. of Cases (112 out of 141)
(A) Benign lesion with no risk of cancer	
(1) Inflammatory breast lesions	
a) Breast abscess	11 (9.8%)
b) Granulomatous mastitis	4 (3.5%)
(2) Non proliferative breast disorder	
a) Simple cyst	3 (2.6%)
b) Fibrocystic change	1
(3) Miscellaneous	
a) Galactocoele	5 (4.4%)
b) Gynaecomastia	9 (8%)
c) Lipoma	1
(B) Benign lesions with mild to moderate risk of cancer	
(1) Proliferative breast disease without atypia	
a) Fibrocystic breast disease without atypia	5 (4.4%)
b) Fibroadenoma	49 (43.7%)
c) Phyllodes tumor	2
(2) Proliferative disease with Atypia	
a) Atypical Ductal Hyperplasia	1
(C) Suspicious and Malignant Lesions	
(1) Suspicious	5 (4.4%)
(2) Carcinoma	16 (14.2%)
(D) Inconclusive	29 /141

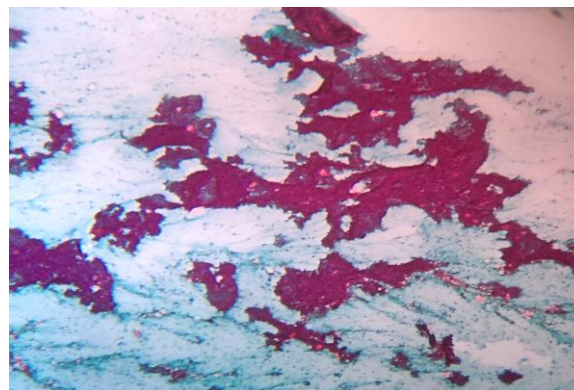


Figure 4: fibroadenoma [40x, PAP stain]

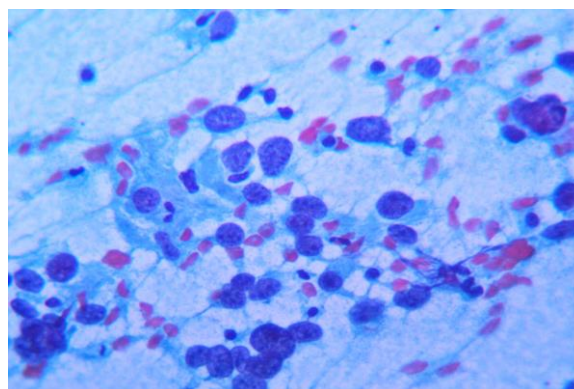


Figure 5: Ductal Carcinoma [400x, PAP stain]

DISCUSSION

FNAC still remains the first choice of diagnostic tool by the surgeons for patients presenting with breast lesions, which was shown in our study. The median age of presentation of these lesions was slightly higher.

Cytopathology plays a big role in the changing trends in the diagnostics of breast cancers. This contribution includes the implementation of FNAB, the analysis of the results and the optimization of new technologies for small-sized samples so as to provide the necessary information, both prognostic and predictive (6). Many studies have confirmed the fact that cytomorphology constitutes an integral part of breast cancer research and prevention (7).

The diagnostic sensitivity of FNAB was 93.8%, whereas for core biopsy it was 90.1%, so it was concluded that both FNAB and core biopsy are sensitive and efficient methods of breast cancer detection (8). False positive results vary from 1.4% to 1.6% (9-11). Factors such as the specialist's experience and/or the size and type of tumor may have a major impact on the sensitivity of the tests (12). The sensitivity of FNAB was 77.22% in a study by Farshid and Rush, who concluded that when experienced cytopathologists are available, fine FNAB can be a very accurate, fast and cost-efficient method in the diagnosis of breast cancer (13). However, the sensitivity of FNAB guided by ultrasound ranged from 25% to 95% and its specificity was 97% to 100% (14-16).

In spite of high sensitivity and specificity, our study failed to provide any diagnostic help to 29 breast lesions which can be attributed to poor yield of sample, staining quality and lack of patient follow-up. Histopathological confirmation of the lesions was not performed as most of these patients were referred to higher centers for surgery and further management. Thus primary evaluation followed by radiological, core biopsies along with ancillary tests such as immunohistochemistry & FISH analysis will help in complete patient care and management.

CONCLUSION

FNAC is a safe and an effective easy tool for speedy diagnosis of breast lumps in experienced hands. Core biopsies and ultrasound guided procedures increase the efficacy and specificity and provide important diagnostic clues for successful and early management of breast lesions.

REFERENCES

1. Ferlay J, Soerjomataram I, Ervik M, Dikshit R, Eser S, Mathers C, Rebelo et al GLOBOCAN 2012 v1.0, Cancer Incidence and Mortality Worldwide: IARC CancerBase No. 11.
2. J. C. Litherland, "Should fine needle aspiration cytology in breast assessment be abandoned?" *Clinical Radiology* 2002, 57;2: 81-84.
3. Wallis M, Tarvidon A, Helbich T, Schreer I: Guidelines from the European Society of Breast Imaging for diagnostic interventional breast procedures. *Eur Radiol* 2007, 17, 581-588.
4. Y.H. Yu, W. Wei, and J.L. Liu "Diagnostic value of fine-needle aspiration biopsy for breast mass: a systematic review and meta-analysis," *BMC cancer*, 2012, 12; 41.
5. S. H. Parker, A. T. Stavros, and M. A. Dennis, "Needle biopsy techniques," *Radiologic Clinics of North America*, 1995, 57; 2, 1171-1186.
6. Bean GR, Scott V, Yee L, Ratliff-Daniel B, Troch MM, Seo P et al Retinoic acid receptor-beta2 promoter methylation in random periareolar fine needle aspiration. *Cancer Epidemiol Biomarkers* 2005, 14, 790-798.
7. Masood S, Frykberg ER, McLellan GL, Scalapino MC, Mitchum DG, Bullard JB: Prospective evaluation of radiologically detected fine needle aspiration biopsy of nonpalpable breast lesions. *Cancer* 1990, 66, 1480-1487.
8. Sun W, Li A, Abreo F, Turbat-Herrera E, Grafton WD: Comparison of fine-needle aspiration cytology and core biopsy for diagnosis of breast cancer. *Diagn Cytopathol* 2000, 24, 421-425.
9. Kuennen-Boumeester V, Menke-Pluymers M, de Kanter AY, Obdeijn IM, Ulrich D, Van Der Kwast TH: Ultrasound-guided fine needle aspiration cytology of axillary lymph nodes in breast cancer patients. A preoperative staging procedure. *Eur J Cancer* 2003, 39, 170-174.
10. Ciatto S, Brancato B, Risso G, Ambrogetti D, Bulgaresi P, Maddau C, et al Accuracy of fine needle aspiration cytology (FNAC) of axillary lymph nodes as a triage test in breast cancer staging. *Breast Cancer Res Treat* 2007, 103, 85-91.
11. Van Rijk MC, Duerloo EE, Nieweg OE, Gilhuijs KG, Peterse JL, Rutgers EJ et al Ultrasonography and fine-needle aspiration cytology can spare breast cancer patients unnecessary sentinel lymph node biopsy. *Ann Surg Oncol* 2005, 13, 31-35.
12. Dixon JM, Anderson TJ, Lamb J, Nixon SJ, Forrest APM: Fine needle aspiration cytology, in relationship to clinical examination and mammography in the diagnosis of solid breast mass. *Br J Surg* 1984, 71, 593-596.
13. Farshid G, Rush G: The use of fine-needle aspiration cytology and core biopsy in the assessment of highly suspicious mammographic microcalcifications. *Cancer Cytopathol* 2003, 99, 357-364.
14. Krishnamurthy S: Current applications of future prospects of fine-needle aspiration biopsy of locoregional lymph nodes in the management of breast cancer. *Cancer Cytopathol* 2009, 12, 451-462.
15. Alvarez S, An`orbe E, Alcorta P, Lo´pez F, Alonso I, Corte´s J: Role of sonography in the diagnosis of ancillary lymph node metastases in breast cancer: a systematic review. *AJR Am J R oentgenol* 2006, 186, 1342-1348.
16. Jain A, Haisfield-Wolfe ME, Lange J, Ahuja N, Khouri N, Tsangaris T et al The role of ultrasound-guided fine-needle aspiration of axillary lymph nodes in the staging of breast cancer. *Ann Surg Oncol* 2007, 15, 462-471.

CITE THIS ARTICLE AS:

Akshay Agarwal, Pathan Saira Bano and Prashant Jawade. A 1-year clinicoepidemiological prospective analysis of Breast lesions by Fine Needle Aspiration Cytology at a tertiary care center. *International Journal of Bioassays* 4.12 (2015): 4640-4642.

Source of support: Nil
Conflict of interest: None Declared