



PATTERN OF BREAST LUMPS AND DIAGNOSTIC ACCURACY OF FINE NEEDLE ASPIRATION CYTOLOGY IN COMPARISON TO HISTOPATHOLOGY- A STUDY OF 50 CASES.

Ashok Kumar	Assistant Professor Department of General Surgery Government Medical College, Amritsar - Corresponding Author
Anand bhuktar	Junior Resident Department of General Surgery Government Medical College, Amritsar
Brij Mohan Joshi	Junior Resident Department of General Surgery Government Medical College, Amritsar
Mandeep Singh Sandhu	Senior Resident Department of General Surgery Government Medical College, Amritsar

ABSTRACT Breast cancer is among most common cancer in women these days. It's important to diagnose it correctly with available modalities. This study is to compare FNAC with histopathological results. Aims and objective is Cytohistopathological comparison and correlation of results to estimate the efficacy of FNAC vs histopathology. A prospective study on 50 patients done presented with breast lump aged 11 to 80 yrs. In the present study, cytological findings were consistent with histopathological findings in 48 out of 50 cases (96%) and inconsistent in 2 (4%) cases. Hence, FNAC should be used as a routine diagnostic procedure to maximize the availability of effective health care to patients with breast lesions.

KEYWORDS : .breast lumps, cytology, histopathology

Introduction

Breast is a host to many diseases which range from benign and malignant neoplasm's, inflammatory conditions to infections, most of which present as lumps in the breast. With growing awareness in the general population, especially about breast pathologies, a lady with a breast lump is one of the commonest presentations at all ages in outpatient department. [1,2] This makes it important to differentiate between benign and malignant conditions before treating it.

Various diagnostic methods have been developed to evaluate the breast lumps, as breast cancer is the second most common cancer in the women in India. [3]

Physical examination, mammography, ultrasonography, FNAC, Core needle biopsy (Tru-cut biopsy), open excision biopsy are all used to greater or lesser extent in diagnostic workup of a palpable breast mass. Mammography represents the most used modality for breast cancer screening, with mortality reduction of 30–40% in screened population. [4,5] However, its sensitivity is decreased in young women with radiologically dense breast. [6]

Despite the imaging techniques, pathological characterization still plays an essential role for differential diagnosis and for avoiding surgical over-treatment in case of breast lesions with suspicious features. [7] Fine needle aspiration cytology (FNAC) is a relatively simple, reliable, atraumatic, economical and complication-free technique for the evaluation of mass lesions. FNAC is now a well-established technique for the investigation of women with suspected breast carcinoma. [8] It has been shown that FNAC has reduced the number of open biopsies because of its high diagnostic sensitivity and specificity. However, open biopsy is still preferred in some centres due to lack of expert cytologists. [9] Different studies have determined that FNAC has a sensitivity ranging from 80% to 98% and a specificity of 99% to 100%. [10]

The present study was undertaken to evaluate various patterns of breast lumps, and diagnostic accuracy of FNAC in comparison to histopathological findings.

Aims and Objectives

1. To study the various patterns of FNAC of breast lesions based on systematic pattern analysis.
2. To correlate the results of fine needle aspiration cytology of breast

lesions with its histopathological diagnosis wherever possible.

Material and Methods

A prospective study conducted in department of Surgery and Department of pathology of Guru Nanak Dev Hospital, Government Medical College, Amritsar from July 2014 to May 2017. A total of 50 subjects were consecutively recruited for the study including women having clinically breast lumps aged between 11 to 80 years and excluding Breast lumps which were suspected clinically and already diagnosed by sonomammography as malignant.

All the selected patients underwent complete examination and routine investigations. FNAC procedure was done and at every time the biopsy specimen was sent to the pathology department for histopathological examination. A Cytohistopathological correlation of results was done to estimate the efficacy of FNAC.

Distribution of disease

Number of breast lumps cases were 50, out of these maximum cases were found in 4th decade i.e. 18 cases (36%) and minimum in 8th decade i.e. 1 cases (2%). lesion present in 98% of females and in 2% of male patient in our study.

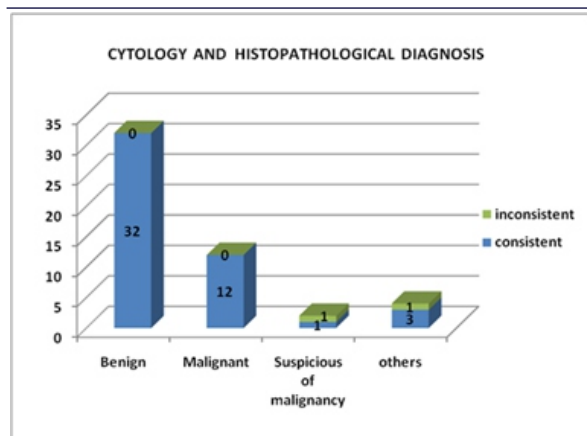
The lesions were most common in upper outer quadrant of the breast i.e. 28 (56%), followed by upper inner quadrant i.e. 8 cases (16%), lower outer quadrant 6(12%), lower inner quadrant 4 (8%) and central quadrant 3 (6%). There was 1 (2%) case where whole breast was involved.

Patient presented with lump in 92%, lump with bloody discharge in 4%, lump with milky discharge in 2%, lump with pain in 2% of cases.

Cytological & Histological Correlation:

Amongst benign and malignant lesions cytological diagnosis and histopathological diagnosis were consistent in 100% of the cases. The lesions, which were diagnosed as suspicious for malignancy in 2 cases on cytology were found malignant in 1(50%) cases and benign in 1 (50%) case. In remaining non neoplastic cases, consistency was found in 75%.

Thus in the present study, cytological findings were consistent with histopathological findings in 48 out of 50 cases (96%) and inconsistent in 2 (4%) cases.



Graph: Correlation between cytological and histopathological diagnosis

Table: Accuracy of fine needle aspiration cytology

Statistics	Value	95 % Confidence Interval
Sensitivity	97.30%	85.84% to 99. 93%
Specificity	100%	75.29% to 100%
Negative Likelihood Ratio	0.03	0 to 0.19
Positive Predictive Value	100%	90.26% to 100%
Negative Predictive Value	92.86%	66.13 % to 99.82%

Discussion

Our present study was conducted on 50 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 matched with the final histology report to see as to how accurate FNAC was as compared to open biopsy i.e., to assess the cytohistologic correlation.

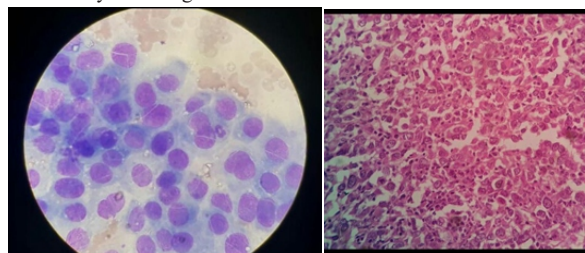


figure: showing intraductal breast cancer on fnac and histopathology

The present study was comprised of assessment of various patterns of breast lumps, and diagnostic accuracy of FNAC in comparison to histopathological findings. Study shows the age-wise distribution of 50 cases of breast lumps, out of these maximum cases were found in 3rd decade i.e. 18 cases (36%) and minimum in 8th decade i.e. 1 cases (2%). In the present study total 50 cases were included having age group ranging from 11 years to 80 years with a mean age of 39.4 years. Of these 50 cases most of the cases were in age group 31 – 40 years. Total 18 cases out of 50 (36%) were included in this age group. Present study is comparable to Dutta et al 2009 where in most cases were in the age group of 31-40 years. [11]

In present study total 50 cases were included out of which 01 (2%) case was male and 49 (98%) were females, out of which 30 cases (60%) were benign, 14 (28%) were malignant. . This finding is comparable to the findings of Ghosh et al 2011, Gulam Nabi Sofi et al, Syeda Zubeda et al wherein more than 95% of the cases were female. [12] Present study findings correlate with Raddy and Reddy et al, R.K.Gang and Ishita Pant study.[13] The commonest pathology found in our patients was fibroadenoma in 32 patients. This was followed by malignancy in 14 patients. In their study on 91 patients, Tiwari et al also reported fibroadenoma as the commonest pathology (39.6%). [14] Other

important conditions such as subareolar abscess, invasive ductal cancer, breast abscess, fibrocystic disease, duct ectasia and galactocele ranged from 5.5% to 7.7%.

Cytological & Histological Correlation:

In the present study out of 32 smears diagnosed as benign on cytology showed 26 as fibroadenoma, 3 as benign phyllodes tumor, 1 as fibrocystic disease, 1 as chronic non specific inflammatory tissue and 1 as granulomatous mastitis.

12 cases were diagnosed as malignant on cytology which on histology showed infiltrating duct carcinoma in 8 cases, invasive papillary carcinoma in 2 cases, 1 as infiltrating lobular carcinoma, 1 as mucinous carcinoma and 1 as intraductal carcinoma (DCIS). Suspicious for malignancy was made in 2 smears of which 1 was diagnosed as infiltrating duct carcinoma and 1 as ductal carcinoma in situ (DCIS). In remaining cases, gynecomastia was diagnosed in 1 case on cytology and was confirmed on histology. Galactocele diagnosed on cytology was confirmed on histology. One case diagnosed as fibrocystic on cytology was diagnosed on histopathology. One case diagnosed as non specific inflammatory smear on cytology was diagnosed as granulomatous mastitis on further histology.

Percentage of cytohistological correlation for benign lesions in this study correlates with Khan et al and Yusuf et al study. [18,19] The results of study shows sensitivity of the FNAC procedure was 97.30%, specificity 100%, with a positive predictive value 100%.

Summary and Conclusion:

In the present study, cytological findings were consistent with histopathological findings in 48 out of 50 cases (96%) and inconsistent in 2 (4%) cases. Findings of FNAC were compared with that of histopathological findings. Sensitivity, Specificity, Positive Predictive value, and Negative predictive value of FNAC were found to 97.30%, 100%, 100%, and 92.86% respectively.

Thus, we can conclude that Fine-needle aspiration cytology is a patient friendly, easy, reliable, repeatable and simple diagnostic test with a high rate of sensitivity and specificity. Hence, FNAC should be used as a routine diagnostic procedure due to its cost effectiveness, thus maximizing the availability of effective health care to patients with breast lesions.

REFERENCES

- Khemka A, Chakrabarti N, Shah S, Patel V. Palpable Breast Lumps: Fine- Needle Aspiration Cytology versus Histopathology: a Correlation of Diagnostic Accuracy. *Internet Journal of Surgery*. 2009;18(1).
- Qureshi H, Amanullah A, Khan KM, Deeba F. Efficacy of fine needle aspiration cytology in the diagnosis of breast lumps. *JPMI*. 2011;21(4):301-4.
- Coleman MP, Quaresma M, Berrino F, Lutz J-M, Angelis De, Capocaccia R. Cancer survival in five continents: a worldwide population-based study (CONCORD). *Lancet Oncol*. 2008 Aug;9(8):730–56.
- Kerlikowske K, Carney PA, Geller B, Mandelson MT, Taplin SH, Malvin K, et al. Performance of screening mammography among women with and without a first-degree relative with breast cancer. *Ann Intern Med*. 2000;133:855-863.
- Lindfors KK, Boone JM, Nelson TR, Yang K, Kwan AL, Miller DF. Dedicated breast CT: initial clinical experience. *Radiology*. 2008;246:725-733.
- Chan SW, Cheung PS, Chan S, Lau SS, Wong TT, Ma M, et al. Benefit of ultrasonography in the detection of clinically and mammographically occult breast cancer. *World J Surg*. 2008;32:2593-8.
- Capalbo E, Sajadidehkordi F, Colombi C, Ticha V, Moretti A, Peli M, et al. Reevaluation of breast cytology with pathologist onsite of lesions with suspicious sonographic features. *Eur J Radiol*. 2013;82:1410-5.
- Smith MJ, Heffron CC, Baak J.P.A. The relative prognostic significance of nucleolar morphology in invasive ductal breast cancer. *Histopathology*. 1985 Apr;9(4):437-44.
- Feichter GE, Haberthür F, Gobat S, Dalquen P. Breast cytology. *Acta cytologica*. 1997 Mar-Apr;41(2):327-32.
- Bajwa R, Zulfikar T. Association of fine needle aspiration cytology with tumor size in palpable breast lesions. *Biomedica*. 2010 Jul-Dec;26:124-9.
- Col V, Dutta SM, Brig GS, Chopra SM, Lt Col K Sahai, Brig SK Nema. Hormone Receptors, Her-2/Neu and Chromosomal Aberrations in Breast Cancer. *MJAFI* 2008; 64 : 11-15
- J Ghosh, S Gupta, S Desai, T Shet, S Radhakrishnan, P Suryavanshi, V Parmar, R Jalali, G Goyal, R Hawaldar, A Patil, N Nair, RA Badwe. Estrogen, progesterone and HER2 receptor expression in breast tumors of patients, and their usage of HER2-targeted therapy, in a tertiary care centre in India. *Indian J Cancer*. 2011 Oct-Dec;48(4):391-6.
- Reddy DG and Reddy CRM: Carcinoma of the breast. Its incidence and histological variants among south Indians, *Indian Journal of Medical Sciences*, 228 - 235, 1958
- Tiwari N. *Katmandu University Medical Journal* 2007;5(2):18: 215-217.
- Khan A, Jamali R, Jan M, Tasneem M. Correlation of fine needle aspiration cytology and histopathology diagnosis in the evaluation of breast lumps. *Int J Med Students* 2014;2(2):37-40.

16. Ibrahim Yusuf, AT Atanda. Validity of fine needle aspiration cytology of the palpable breast lesions: A teaching hospital experience. *Nigerian Journal of Basic and Clinical Sciences / Jan-Jun 2014 / Vol 11; 36-40.*
17. Panjvani SI, Parikh BJ, Parikh SB, Chaudhari BR, Patel KK, Gupta GS, et al. Utility of fine needle aspiration cytology in the evaluation of breast lesions. *J Clin Diagn Res* 2013;7(12):2777-9.
18. Chokshi MH, Mehta NP. Cytological study of palpable breast lumps (407 cases) with their histological correlation. *Int J Med Sci Public Health* 2014;3(2):181-5.
19. Prem Singh, Manish Chaudhry, Samal Nauhria, Deepika Rao. Cytomorphological patterns of breast lesions diagnosed on fine-needle aspiration cytology in a tertiary care hospital. *Int J Med Sci Public Health*. 2015; 4(5): 674-679.