Role of FNAC in Breast Lesions

Shobha SN^{1,*}, Rajashekar YR²

¹Associate Professor, Dept. of Pathology, ²Professor, Dept. of Pharmacology, Adichunchanagiri Institute of Medical Science, BG Nagar Nagamangala Taluk, Mandya district, Karnataka

*Corresponding Author:

Email: shobharajashekar@gmail.com

Abstract

Background: A study was designed to see the role of fine needle aspiration cytology (FNAC) in palpable breast lumps.

Materials and Methods: A total of 50 patients of breast lesions are taken over a period of 6 months. Proper diagnosis was given in FNAC and correlated with histopathology.

Results: Out of 50 case of breast lesions done, 25 cases were of Fibroadenoma breast which was the most common lesion we encountered. Followed by fibrocystic disease in 18 case, rest 10 cases were of ductal carcinoma, 2 case of mastitis. Histopathology was obtained in 48 specimens and was correlared. 2 cases of mastitis were treated medically. There was 100% sensitivity and specificity of FNAC compared to histopathology.

Conclusion. FNAC serves as a rapid, economical, and reliable tool for the diagnosis of palpable breast lesions because the cytopathological examination of these lesions before operation or treatment serves as an important diagnostic modality.

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. Although benign lesions are common however there is no doubt that malignant lesions are increasing especially in younger women nowadays. Hence a complete awareness is essential for all the females of reproductive age group in this matter. Breast lesions compasses a wide variety of lesions comprising of most common benign lesion of Fibroadenoma to most malignant breast lesion infiltrating ductal carcinoma physical examination, mammography, fine-needle aspiration cytology, and core needle biopsy are very important in this aspect. (1,2)

Fine needle aspiration is very important procedure in this aspect as this helps in the further management of the cases. Whether simple excision procedure is required or mastectomy is required in that particular case. "Fine-needle aspiration (FNA) biopsy is an established and highly accurate in diagnosing breast lesions." The core biopsy (CB) is expensive and time consuming as compared to FNA procedure. (4-6) Core Biopsy or tru cut needle biopsy is not widely used because of its complications, interpretation, and time-consuming results; breast lesions can be accurately diagnosed by triple test only FNAC, physical examination and Mammography. (7)

Material and Methods

A total of 50 patients of breast lesions are taken over a period of 6 months. Proper diagnosis was given in FNAC and correlated with histopathology. FNAC was done as a usual procedure using 23 gauge needle. Slides were fixed in ethanol and stained with heamotoxylin and eosin stain and air dried smears were stained with giemsa and papa stain.

Results

Out of 50 case of breast lesions done, 25 cases were of Fibroadenoma breast which was the most common lesion we encountered. Followed by fibrocystic disease in 18 case, rest 10 cases were of ductal carcinoma, 2 case of mastitis. Histopathology was obtained in 48 specimens and was correlared. 2 cases of mastitis were treated medically. There was 100% sensitivity and specificity of FNAC compared to histopathology.

Discussion

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 equipments 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. (11-14)

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. (15,16)

Fibroadenoma is the most common lesion where it was common in the age group ranging from 15 yrs to 40 yrs, and presented with a well-defined palpable mobile nodule in the breast. Most common in young age. It yielded high cellularity, of grey white material in gross and microscopy revealed a cellular smears with ductal epithelial cells arranged predominantly in

staghorn pattern with myoepithelial cells and normochromatic dutal cells. Fibromyxoid stroma was seen in the background. Few of the patients were diagnosed as Fibroadenoma with epithelial hyperplasis which was revealed same in histopathology.

Fibrocystic disease was also common in middle aged females of around 35 to 40 yrs. They did not present with well-defined nodule but there were small nodular multiple swellings in majority of cases. Few of them complained of pain in the breast. Aspiration yielded scanty fluid material. Microscopy showed smears of moderate cellularity arranged in tiny clusters and small sheets. They were benign ductal epithelial cells. Background showed cyst macrophages which were diagnostic of the lesion.

Ductal carcinoma of breast was diagnosed in 18 cases. Most of them were between 35 yrs to 70 yrs of age. A 32 yrs aged lactating mother was also diagnosed with carcinoma in our study. They usually presented with an irregular mass without pain, some of them had enlarged lymph nodes too. A 70 year old lady had reported to the pathology department with ulcerated nipple and fixed skin with scaling on it. Aspiration yielded a grey white material. Microscopy revealed a highly cellular smears with malignant ductal epithelial cells in sheets and clusters. The cells were highly pleomorphic with prominent nucleoli and condensed chromatin. Tumor giant cells were seen. With these finding we reported as infiltrating ductal carcinoma for which all the 18 cases modified radical mastectomy was done and confirmed as carcinoma in histopathology with Bloom Richardson grading and TNM staging.

Mastitis was reported in 2 cases. The patients were 30 to 35 yrs aged and presented with pain in breast and fever. Aspiration yielded pus like material. Microscopy revealed a sheets of neutrophils with histiocytes and ductal epithelial cells in between. Background showed necrotic material. These patients were treated medically and responded to treatment.

Conclusion

The cytological examination of breast lesions prior to surgical treatment serves as a rapid, economical, and valuable diagnostic tool. Adhering to the principle of "Triple test," and acquisition of technical, observational, and interpretative skills will further enhance the diagnostic accuracy of proliferative conditions with atypia or suspicious lesions of breast.

References

- M. Auger and I. Huttner, "Fine-needle aspiration cytology of pleomorphic lobular carcinoma of the breast: Comparison with the classic type," Cancer, vol. 81, no. 1, pp. 29–32, 1997. View at Publisher · View at Google Scholar
- M. H. Bukhari and Z. M. Akhtar, "Comparison of accuracy of diagnostic modalities for evaluation of breast cancer with review of literature," Diagnostic

- Cytopathology, vol. 37, no. 6, pp. 416–424, 2009. View at Publisher · View at Google Scholar · View at PubMed
- S. Boerner and N. Sneige, "Specimen adequacy and falsenegative diagnosis rate in fine-needle aspirates of palpable breast masses," Cancer, vol. 84, no. 6, pp. 344– 348, 1998. View at Publisher · View at Google Scholar
- M. Rubin, K. Horiuchi, N. Joy et al., "Use of fine needle aspiration for solid breast lesions is accurate and costeffective," American Journal of Surgery, vol. 174, no. 6, pp. 694–698, 1997. View at Publisher · View at Google Scholar
- A. Berner, E. Sigstad, W. Reed, and B. Risberg, "Fine-needle aspiration cytology or core biopsy when diagnosing tumours of the breast," Tidsskrift for den Norske Laegeforening, vol. 123, no. 12, pp. 1677–1679, 2003. View at Google Scholar
- 5. D. Lieu, "Value of cytopathologist-performed ultrasound-guided fine-needle aspiration as a screening test for ultrasound-guided core-needle biopsy in non-palpable breast masses," Diagnostic Cytopathology, vol. 37, no. 4, pp. 262–269, 2009. View at Publisher · View at Google Scholar · View at PubMed
- T. Ishikawa, Y. Hamaguchi, M. Tanabe et al., "False-positive and false-negative cases of fine-needle aspiration cytology for palpable breast lesions," Breast Cancer, vol. 14, no. 4, pp. 388–392, 2007. View at Google Scholar
- D. R. Lannin, J. F. Silverman, C. Walker, and W. J. Pories, "Cost-effectiveness of fine needle biopsy of the breast," Annals of Surgery, vol. 203, no. 5, pp. 474–480, 1986. View at Google Scholar
- 8. S. K. Lau, G. T. McKee, M. M. Weir, R. H. Tambouret, J. H. Eichhorn, and M. B. Pitman, "The negative predicative value of breast fine-needle aspiration biopsy: the massachusetts general hospital experience," Breast Journal, vol. 10, no. 6, pp. 487–491, 2004. View at Publisher · View at Google Scholar · View at PubMed
- J. Lamb, T. J. Anderson, M. J. Dixon, and P. A. Levack, "Role of fine needle aspiration cytology in breast cancer screening," Journal of Clinical Pathology, vol. 40, no. 7, pp. 705–709, 1987. View at Google Scholar
- W. H. Hindle, P. A. Payne, and E. Y. Pan, "The use of fine-needle aspiration in the evaluation of persistent palpable dominant breast masses," American Journal of Obstetrics and Gynecology, vol. 168, no. 6 I, pp. 1814– 1819, 1993. View at Google Scholar
- 11. H. C. Lee, P. J. Ooi, W. T. Poh, and C. Y. Wong, "Impact of inadequate fine-needle aspiration cytology on outcome of patients with palpable breast lesions," Australian and New Zealand Journal of Surgery, vol. 70, no. 9, pp. 656–659, 2000. View at Publisher · View at Google Scholar
- H. Khatun, N. Tareak-Al-Nasir, S. Enam, M. Hussain, and M. Begum, "Correlation of fine needle aspiration cytology and its histopathology in diagnosis in breast lumpus," Bangladesh Medical Research Council Bulletin, vol. 28, no. 2, pp. 77–81, 2002. View at Google Scholar
- 13. Q. He, X. Fan, T. Yuan et al., "Eleven years of experience reveals that fine-needle aspiration cytology is still a useful method for preoperative diagnosis of breast carcinoma," Breast, vol. 16, no. 3, pp. 303–306, 2007. View at Publisher · View at Google Scholar · View at PubMed
- S. Ciatto, S. Cecchini, A. Tossa, G. Grazzini, and D. Bartoli, "Fine needle aspiration cytology and breast cancer diagnosis," Tumori, vol. 75, no. 3, pp. 280–283, 1989. View at Google Scholar
- F. Feoli, M. Paesmans, and P. Van Eeckhout, "Fine needle aspiration cytology of the breast: Impact of experience on accuracy, using standardized cytologic

- criteria," Acta Cytologica, vol. 52, no. 2, pp. 145–151, 2008. View at Google Scholar
- M. Zardawi, D. Clark, and G. Williamsz, "Inflammatory myofibroblastic tumor of the breast: a case report," Acta Cytologica, vol. 47, no. 6, pp. 1077–1081, 2003. View at Google Scholar
- 17. C. Soto, I. Vizcano, S. Isarria, and M. R. Pastor, "Tuberculosis of the breast: imaging findings in two patients," Radiologia, vol. 50, no. 6, pp. 518–521, 2008. View at Publisher · View at Google Scholar
- D. Nemenqani and N. Yaqoob, "Fine needle aspiration cytology of inflammatory breast lesions," Journal of the Pakistan Medical Association, vol. 59, no. 3, pp. 167– 170, 2009. View at Google Scholar
- D. K. Das, P. Sodhani, V. Kashyap, S. Parkash, J. N. Pant, and P. Bhatnagar, "Inflammatory lesions of the breast: Diagnosis by fine needle aspiration," Cytopathology, vol. 3, no. 5, pp. 281–289, 1992. View at Google Scholar
- R. H. Bardales and M. W. Stanley, "Benign spindle and inflammatory lesions of the breast: diagnosis by fineneedle aspiration," Diagnostic Cytopathology, vol. 12, no. 2, pp. 126–130, 1995. View at Publisher · View at Google Scholar
- 21. M. Guray and A. A. Sahin, "Benign breast diseases: classification, diagnosis, and management," Oncologist, vol. 11, no. 5, pp. 435–449, 2006. View at Publisher · View at Google Scholar · View at PubMed
- 22. C. Lee, J. K. Chan, and E. Gwi, "Tubular adenosis of the breast: a distinctive benign lesion mimicking invasive carcinoma," American Journal of Surgical Pathology, vol. 20, no. 1, pp. 46–54, 1996. View at Publisher · View at Google Scholar
- 23. R. Ariga, K. Bloom, V. B. Reddy et al., "Fine-needle aspiration of clinically suspicious palpable breast masses with histopathologic correlation," American Journal of Surgery, vol. 184, no. 5, pp. 410–413, 2002. View at Publisher · View at Google Scholar
- 24. E. Alkuwari and M. Auger, "Accuracy of fine-needle aspiration cytology of axillary lymph nodes in breast cancer patients: a study of 115 cases with cytologichistologic correlation," Cancer, vol. 114, no. 2, pp. 89– 93, 2008. View at Publisher · View at Google Scholar · View at PubMed