The spectrum of cytological morphology in breast lump at a tertiary care hospital

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Abstract

Background: Breast lumps are a source of anxiety for both patients and surgeons due to the possibility of cancer. In benign lesions, cytology plays the most crucial function in identifying proliferative lesions.**Aims and objectives:** To evaluate the spectrum of fine-needle aspiration cytology (FNAC) morphology in patients with a breast lump.**Materials and methods:** A hundred females aged between 13 to 80 years with breast lumps were studied in the Department of Pathology for the duration of the study. FNAC using 10 cc syringes with 22-23G needle under all aseptic precautions were performed. Breast lesions were categorized into C1(Insufficient material), C2 (Benign), C3 (Atypical probably benign), C4 (Suspicious for malignancy), and C5 (Malignant) as per the International Academy of Cytologists (IAC). **Results:** Breast lumps were more prevalent in those aged between 31-50 years (50%) with a mean age of 41.76±15.57 years. The upper quadrant was mainly affected (52.94%) with firm and mobile breast lumps (41%). Distribution according to IAC showed that 13% were graded as C1, 47% were C2, 4% were C3, 11% were C4 category, and 25% were C5 patients.**Conclusion:** The use of IAC structured reporting for cytological categorization will improve the repeatability of reports among pathologists and doctors. The cytoprognostic scores will aid in determining the aggressiveness of the tumor and forecast histological grade and prognosis by comparing cytohistological nuclear grading. It could be a helpful criterion for neoadjuvant chemotherapy selection.

Keywords: international academy of cytologists, malignant lesions, fine needle aspiration cytology, breast lump

Introduction

Breast cancer has recently surpassed cervical cancer as the most frequent malignancy among Indian women[1].According to the Indian Council of Medical Research (ICMR), 1.5 lakh new cases (10 percent of all malignancies) were reported in 2016, making it the most common malignancy[2].The use of fine-needle aspiration cytology (FNAC) for preoperative breast cancer diagnosis is becoming more common. According to a Bethesda-sponsored meeting on a standard approach to breast FNAC, tumor grading on FNAC material should be integrated into FNA reports for prognostication[3].IAC has developed a thorough and systematic method for classifying the FNAC of breast tumors into C1-C5 categories. Structured reporting can increase the quality, clarity, and reproducibility of reports. This will help with patient management, breast health care, and research[4].This research aimed to classify and assess various breast lesions using the IAC standardized reporting method and to analyze the spectrum of cytological findings in subjects with breast lumps.

Materials and Methods

The present retrospective study was performedat the Department of Pathology throughout the study. A total of 100 female subjects with breast lumps age between 13 to 80 years underwent FNAC using 10 cc syringes with 22-23G needles under all aseptic precautions. Wet smears were stained with PAP stain, whereas air-dried smears were stained with Giemsa stain. IAC has devised a procedure for producing a complete and uniform FNAC reporting method. In the present study, breast lesions were categorized into C1(Insufficient material), C2(Benign),C3(Atypical probably benign), C4 (Suspicious for malignancy), and C5 (Malignant). Details including history, age, side of the breast and its quadrant involved, lump size, and lump consistency were also evaluated for all the subjects. Different cytological findings were also listed. All the data analysis was performed using IBM SPSS ver. 20 software. Frequency distribution was performed to prepare the tables. Quantitative data such as age is presented as mean and standard deviation, whereas categorical data are expressed as either numbers or percentages.

Results

The mean age of the study cohort was 41.76±15.57 years which ranged from 13 to 80 years. Breast lumps were more prevalent in those with age between 31-50 years (50%), 13% were elders (>60 years), whereas 12% were teenagers. Equal distribution of side of the breast affected was observed (50% each). The majority of the patient's upper quadrant was affected (52.94%).

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Table 1: Distribution according to age

Age (years)	Frequency	Percentage
11-20	12	12
21-30	15	15
31-40	25	25
41-50	25	25
51-60	10	10
>60	13	13
Total	100	100

The majority had a breast lump size of 1*1 (33%), followed by 2*2 (32%) and 3*3 (24%). The majority of subjects had a history of the inverted nipple (18%) followed by pain during periods (12%), red, inflamed skin (7%), nipple discharge (6%), and breastfeeding (5%).

The majority had firm and mobile breast lumps (41%), 23% had ill-defined breast lumps, 19% had Hard fixed consistency, whereas 10% had soft and mobile breast lumps. The most common type of aspirate was blood mixed (69%), followed by pus (12%) and clear watery (11%).

Table 2: Distribution according to FNAC Diagnosis

FNAC diagnosis	Frequency	Percentage
Benign breast lesions	47	47
Fibroadenoma	11	23.40
Fibroadenosis	1	2.13
Granulomatous mastitis	8	17.02
Fibrocytic	10	21.28
Abscess /Inflammation	12	25.53
Galactocele	1	2.13
Not specified	4	8.51
Malignant breast lesions	25	25

Table 3: Distribution according to IAC

IAC	Description	Frequency	Percentage
C1	Insufficiency/ unsatisfactory	13	13
C2	Benign	47	47
C3	Atypical probably benign	4	4
C4	Suspicious for malignancy	11	11
C5	Malignant	25	25
Total		100	100

Discussion

In 99 percent of instances, a combination of clinical examination, mammography, and a simple, non-invasive, cost-effective procedure FNAC can accurately diagnose breast cancer. The FNAC technique offers a wide range of use and utility for malignancies that are easily palpable on external inspection[4].Breast lumps were more prevalent in those with age between 31-50 years in the present study. Benign lesions are more common in the younger age group as compared to malignant lesions. A recent study by Agrawal et al. enrolling 220 patients reported that the majority were in the age group between 20-40 (51.4%) year followed by the 41-60 (23.6%) year group[5].On FNAC, the majority were benign breast lesions (47%) whereas 25% had malignant breast lesions. Among the benign breast lesions, the most common were abscess /inflammation (25.53%), fibroadenoma (23.40%), fibrocytic (21.28%),and granulomatous mastitis(17.02%). Distribution according to IAC showed that 13% were graded as C1; there are those patients who had inadequate aspirate. In agreement with this, Bajwa and Tariq reported similar rates of C1 cases [6].Contrary to this, Modi et al[7] (1.36%) and Sunita et al[8] (2.9%) reported lower rates for the C1 category. In the present study, we found 47% of patients with the C2 category. Among these, abscess / inflammation(25.53%),fibroadenoma(23.40%),fibrocytic (21.28%), and granulomatous mastitis (17.02%) were the most common. In agreement with this previous study by Sunita et al. also assessed cytomorphological study of breast lesions and classified smears into C1-C5. They reported that fibroadenomas being most common (50%),followed by the benign lesion (48.8%) and fibrocystic disease (13.3%)[8]. Bajwa et al. also reported fibroadenomas as the most common (67.7%), followed by fibrocystic disease (16.37%)[6].There were 4% C3 patients and 11% were C4 category patients in the present study. Previous author results are in line with the present

study. Sunita et al. reported 10% of cases belonged to the gray zone (category C3 and C4)[8].Georgieva et al. studied 320 FNACs out of which 7 were diagnosed (2.2%) as C3, 17 were diagnosed (5.3%) as C4[9].Our study had 25% cases of C5 category, which was higher than the studies done by Modi et al[7] and Sunita et al[8], which was 16.7% 37.1%, respectively. The cross-sectional nature and small sample size are the main limitations of the present study. There is a need for a large randomized clinical trial to provide strength to present study findings.

Conclusion

The IAC standardized approach to cytological categorization is organized reporting which can provide reproducibility and uniformity in assessment, particularly among practitioners. We conclude that a standardized reporting system for classifying and diagnosing breast lesions is beneficial because the risk of cancer in each category is directly associated.

References

1. Malvia S, Saxena S.Epidemiology of breast cancer in Indian women. Asia Pac J Clin Oncol. 2017; 13:1-6.
2. Panwar H, Ingle P, Santosh T, Singh V, Bugalia A, Hussain N. FNAC of breast lesions with special reference to IAC standardized reporting and comparative study of cytohisto logical grading of breast carcinoma. J Cytol. 2020; 37:34-9.
3. Bansal C, Pujani M, Sharma KL, Srivastava AN, Singh US. Grading systems in the cytological diagnosis of breast cancer: A review. J Can Res Ther. 2014; 10:839-45.
4. Field AS, Schmitt F, Vielh P. Standardized Reporting of Breast Fine-Needle Aspiration Biopsy Cytology.Acta Cytologica. 2017;61:3–6.
5. Agrawal R, Mohan N, Sharan J, Gupta G, Kumar P. Spectrum of breast diseases with Cyto-Histopathological correlation in a

tertiary care hospital of Western Uttar Pradesh. Indian Journal of Pathology and Oncology. 2017; 4(1):1-7.

6. Bajwa R,Tariq Z.Association of fine needle aspiration cytology with tumor size in palpable breast lesions. Biomedica. 2010; 26:124-9.

7. Modi P, Haren O, Jignasa B. FNAC as preoperative diagnostic tool for neoplastic and non-neoplastic breast lesions: A teaching hospital experience. Indian J Med Res. 2014; 4:274-8.

8. Sunita H, Urmila T, Sharma DC. Cytomorphological study breast lesions with sonomammo-graphic correlation. J Evol Med Dent Sci. 2015; 4:137-42

9. Georgieva RD, Obdeijn IM, Jager A, Hooning MJ, Tilanus-Linthorst MM, van Deurzen CH. Breast fine-needle aspiration cytology performance in the high-risk screening population a study of BRCA1/BRCA2 mutation carrier. Cancer Cytopathol. 2013; 121:561-7.

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