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FNAC REPORTING OF BREAST LESIONS USING NATIONAL CANCER INSTITUTE (NCI) GUIDELINES.

Pathology

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ABSTRACT

Background: To study the cytomorphological features of various breast lesions using National Cancer Institute guidelines, a uniform approach. **Materials and methods:** This was a prospective study done over a period of 2 years, 580 patients underwent FNAC for palpable breast lumps during this period. **Results:** In the present study, majority of the lesions were in the C1 category with 82(59.42)cases followed by C4 category with 51(37%) cases. One case was reported as C2(0.70%).There were two cases each in C3(1.44%) and C5(1.44%) categories. **Conclusion:** The proposed classification system endorsed by the NCI has the potential to recognize FNAs with atypical features in a manner not allowed by a dichotomous benign and malignant classification scheme.

KEYWORDS

FNAC, Breast, NCI.

INTRODUCTION

It has been widely used as a diagnostic tool for the past 50 years. Although past few years has seen a dramatic increase in the use of core needle biopsy over that of FNAC, there is still a need for rapid diagnosis using a robust, simple and cost effective method.[1]

In September 1996, National Cancer Institute (NCI) sponsored a conference for the purpose of defining a uniform approach to breast FNAC. The classification system proposed at the conference, places breast FNAs into one of the five categories.[2]

- C1-Benign,
- C2- Atypical/Indeterminate,
- C3- Suspicious/probably malignant,
- C4-Malignant
- C5-Unsatisfactory.

Application of these categories is useful in stratifying aspirates based on the likelihood of underlying malignancy.[3]

AIMS AND OBJECTIVES

- To study the cytomorphological features of various breast lesions using National Cancer Institute guidelines, a uniform approach.

C1(BENIGN)

Benign lesion means there is no evidence of malignancy. This should be followed with further description and classification as appropriate – findings consistent with abscess or mastitis, fat necrosis, nonproliferative breast disease(cyst, apocrine metaplasia,etc), proliferative breast disease witout atypia, fibroadenoma, pregnancy associated changes or treatment induced changes, etc.)[4]

A negative (benign) diagnosis should be reserved for an adequate specimen with a minimum of five to six well-preserved cell groupings. A negative FNA result is more reliable when a specific diagnosis corroborates a clinical and radiological impression (e.g., fibroadenoma, lactating adenoma).Needless to say, a negative cytologic result is by no means a guarantee that the nodule is benign, and a mammographically or clinically suspicious lesion requires a biopsy despite a negative cytologic result.[5]

C2(Atypical /Indeterminate)

An interpretation of atypical/indeterminate, favor benign is rendered when the FNA has characteristics of a benign aspirate but with features not commonly present in benign aspirates. These could be any, or a combination of nuclear polymorphism, some loss of cellular cohesiveness or nuclear and cytoplasmic changes resulting from hormonal or treatment influences. Increased cellularity may accompany the above features.[6]In atypical category, we advise that FNA should not be used as sole modality, and results must be interpreted in correlation with clinical and imaging findings (Triple test) to reduce error and allow proper management of each patient.[7]

C3-Suspicious

The suspicious diagnosis is used for lesions that are probably malignant, but the atypical cells are too few, too poorly preserved, or too obscured by blood or inflammation for a definitive diagnosis, or when the findings suggest a type of breast cancer with minimal cytologic atypia, such as lobular carcinoma, tubular carcinoma, or papillary carcinoma. Obviously, surgical biopsy should follow any specimen deemed suspicious.[8]

Alternatively, the sample may show some malignant features of a greater degree than those observed in the C2 category without the presence of overtly malignant cells. Conversely, the sample may have an overall benign pattern with large numbers of naked nuclei and/or cohesive sheets of cells, but with occasional cells showing distinct malignant features.[6]

C4-Malignant

Infiltrating duct carcinoma(IDC) is the most common lesion in this category. The 5-year survival is approximately 55–65%.[9]

Cytological features of low grade DCIS[9] : Moderately to highly cellular smears with cohesive, three-dimensional sheets of uniform, small cells with inconspicuous nucleoli arranged in cribriform pattern. Single malignant cells were prominent in only a minority of cases. In general, absence of myoepithelial cells and oval bare nuclei favour low-grade DCIS over ADH. Obvious necrosis in the form of granular debris and calcified granules is highly suggestive of DCIS but is not diagnostic per se.

Cytology of high grade DCIS[9] : Usually cell-rich smears.,Neoplastic cells in sheets, irregular aggregates and single. Large, pleomorphic cells showing obvious malignant nuclear features. Necrotic debris, granular calcium, lymphocytes and vacuolated macrophages are seen.

Cytological features of IDC[9] : Moderately to highly cellular smears ,Single population of epithelial cells,no myoepithelial cell,no single bare bipolar nuclei,variable loss of cell cohesion – irregular clusters and single cells**,** Moderate to severe nuclear atypia: enlargement, pleomorphism, irregular nuclear membrane and chromatin, Fibroblasts and fragments of collagen (stromal desmoplasia) associated with the atypical cells, Intracytoplasmic neolumi, Necrosis unusual, more suggestive of DCIS.

C5 – Unsatisfactory.

Specimen is reported as unsatisfactory if the following conditions are present:

Scant cellularity , Air drying (for those pathologists using fixed smears) or distortion artefact and obscuring blood, inflammation, or other factors.[10]The adequacy of the FNA of palpable breast lesions is based mostly upon factors such as confidence of needle placement, cell preservation and correlation with clinical and mammographic findings.[11]

Most laboratories (55%) are not requiring a minimum number of cells as a criterion of specimen adequacy, commenting that adequacy should be determined by the aspirator, as suggested in the conclusion from the NCI-sponsored conference. Of those laboratories requiring a minimum number of cells, Atleast six clusters of cells with a minimum of 5–10 cells/group is recommended.[12]

MATERIALS AND METHODS

This was a prospective study done over a period of 2 years from November 2014 to October 2016 in the Department of Pathology , Karnataka Institute of Medical Sciences, Hubballi. During the 2 years study period, 580 patients underwent FNAC for palpable breast lumps.

Method Of Collection Of Data

Informed written consent was taken from the patient and complete clinical details were obtained. The physical examination was performed and location of tumor, size, mobility, skin changes, fixity to chest wall were noted .FNAC was performed using 10cc disposable syringe with 23 gauge needle.

Table 1: Cytological spectrum of breast lesions.

FNAC DIAGNOSIS	NO OF CASES	PERCENTAGE(%)
C1	82	59.42
C2	1	0.70
C3	2	1.44
C4	51	37
C5	2	1.44
TOTAL	138	100

Table 2: Distribution of C1 lesions

C1 LESIONS	NO OF CASES	PERCENTAGE(%)
Fibroadenoma	63	76.82
Fibrocystic disease	1	1.21
Benign phylloides	6	7.31
Suppurative lesion	3	3.69
Granulomatous mastitis	4	4.9
Acute mastitis	2	2.43
Chronic mastitis	1	1.21
Benign breast disease NOS	2	2.43
TOTAL	82	100

Distribution of C4 lesions

In the present study, out of 138 cases, 51(37%) cases were reported under C4 category. All the lesions in this category were reported as Infiltrating ductal carcinoma (IDC). Associated Ductal carcinoma in situ (DCIS) component was seen in 2 cases.

CONCLUSION

FNAC has been shown to be safe, simple, cost effective and accurate method for the management of breast lesions. It is recommended that a categorization of the breast lesions according to NCI guidelines be used so that FNAs of the breast are stratified according to the risk of underlying malignancy .

The importance of the atypical and suspicious categories lies in the buffering they provide to both cytopathologists and the clinicians. The presence of such borderline categories definitely provides scope for the cytopathologists to make mistakes and also speaks volumes of the limitations and difficulties in interpretation of the breast cytology smears.

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