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ROLE OF FINE NEEDLE ASPIRATION CYTOLOGY IN EVALUATION OF BREAST MASSES IN PREGNANT AND LACTATING WOMEN: AN EXPERIENCE WITH 32 CASES.

Pathology

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ABSTRACT

Introduction: Evaluation of breast masses during pregnancy and lactation is challenging. FNA of these lesions and cytological interpretation is considered problematic due to atypical inherent to secretory change in glandular epithelia.

Objective: To evaluate the role of fine needle aspiration cytology in the diagnosis of palpable breast masses during pregnancy and lactation.

Methods: The present study was conducted at the department of pathology, People's medical college and research centre, Bhopal. Cases of breast mass in pregnant or lactating women presenting to OPD for FNA over a period of (January 2014–June 2017), were retrospectively evaluated.

Results: Around 32 cases of breast mass in pregnant and lactating women are included in the study . Present study focuses on most common differential diagnoses: galactocele (2 cases), fibroadenoma (7 cases), lactating adenoma (9 cases), mastitis and abscess (6 cases), Masses with Benign findings (4 cases), Fibrocystic disease (1 case), suspicious for malignancy (1 case) and PABC (2 cases)

Conclusion: Breast lesions detected during pregnancy or lactation are difficult to diagnose due to the hormone-induced physiological changes occurring in breast. However, FNA play an important role in evaluating breast masses in pregnant and lactating women.

KEYWORDS

Lactating adenoma, Fine needle aspiration (FNA), pregnancy-associated breast cancer (PABC)

Introduction

Physiological changes occur in breast during pregnancy and lactation. Due to elevated circulating hormones there is added ductal and lobular growth, increased vascularity and a decrease in stroma which results in increased breast density & makes breast evaluation challenging in these patients. Radiological assessment for pregnant and lactating women under age of 30 years, ultrasound is the imaging test of choice given the lack of radiation exposure[1].

Fine needle aspiration (FNA) of breast masses in pregnant or lactating women & cytological analysis is considered problematic due to atypia innate to secretory change in glandular epithelia[2].

Breast adenomas are defined as circumscribed neoplasm composed of proliferations of cytologically bland epithelial structures with inconspicuous stroma[7].

A pregnancy-related breast disorder is defined as a diagnosis made during pregnancy, within one year of post-partum or during lactation. Because of the variability in the length of lactation, cancer occurring up to 1 year after delivery has been accepted as the standard definition in most recent series[3].

Most disorders are analogous to those in non-pregnant women, though there are a number of conditions distinctive to pregnancy and lactating women. These conditions almost always present as a palpable mass and are often a source of great anxiety for the woman and her family[4].

The main differential diagnoses for palpable breast masses in pregnant or lactating women include: galactocele, fibroadenoma, lactating adenoma, mastitis and abscess, benign findings consistent with pregnancy or lactational changes, fibrocystic disease with lactational changes and Pregnancy associated Breast cancer (PABC)[1].

AIMS AND OBJECTIVES

1. To evaluate the role of Fine needle aspiration cytology in diagnosis of palpable breast masses in pregnant and lactating women.
2. To delineate the cytomorphologic features seen in cancer of the breast during pregnancy and lactation and to compare them to the cytomorphologic parameters in benign conditions.

MATERIAL AND METHODS

Present study was carried out at department of Pathology, People's medical college and research centre, Bhopal. Cases of breast masses in pregnant or lactating women presenting to OPD for FNA over a period of (January 2014–November 2017), were retrospectively evaluated. FNAC smears along with relevant clinical information related to age, sex, clinical diagnosis, geastational age, surgical information, radiological findings and findings on follow up of cases were retrieved from cytopathology records. The findings of FNA were reviewed, analyzed, tabulated and correlated with the histopathologic diagnosis of the cases in which breast biopsies were performed.

Results

Total of 32 cases with palpable breast masses in pregnant and lactating women between 18-38 yr of age (Table-1) presented to OPD for FNA during the study period. Size of mass ranged from 1.0 to 4.5 cm. The estimated gestational age at the time of FNA ranged from 16- 32 week, postpartum or lactating as shown in Table 2. The follow up was done regularly for a period of 1-1.5 yr and in few cases mass(es) regressed after delivery or discontinuation of breast feeding and the cases in which mass(es) persisted repeat aspirations was done with follow up or were operated and tissue was sent for histopathological examination.

Table 1 Distribution of cases according to Age

Age Group	No. of cases
15-20 yrs	03
21-25 yrs	15
26-30 yrs	10
31-35 yrs	03
36-40 yrs	01
Total	32

Table 2 Distribution of cases according to gestational age

Gestational Age	No of cases
No. of breast masses that arose during pregnancy (16-32 weeks)	05
No. of breast masses that arose during post partum period or lactation	27

Present study focuses on most common differential diagnoses for palpable breast masses in pregnant or lactating women as summarized in table 3.

In one case atypical cytological features were seen repeatedly on two aspirates that were done within 1 week of initial FNA and was given as suspicious for malignancy as the biopsy could not be done in this case.

In 2 cases, the cytodiagnosis of breast carcinoma was given and surgical biopsy further confirmed the diagnosis. Both the cases of breast carcinoma were multi Gravida and FNAC of breast mass in post partum period of these above cases showed discohesive sheets and clusters of ductal epithelial cells with marked anisonucleosis, hyperchromatic nucleus with nucleoli, irregular nuclear membrane and frayed basophilic cytoplasm.

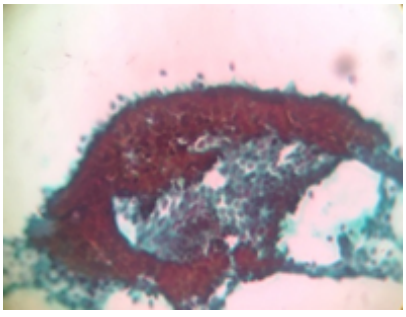
Rest 29 cases showed benign cytological features with uniform population of epithelial cells with moderate cytoplasm, intracyto plasmic vacuoles, frayed cytoplasmic borders and dissociated cells with myoepithelial appearance. The background show proteinaceous debris and paucity of stromal elements.

Table 3 Observation of FNA cytology

Breast lesions during pregnancy and lactation	No. of Cases
Pregnancy associated breast cancer (PABC)	2(6.25%)
Benign findings consistent with pregnancy or lactation changes	4(12.5%)
Mastitis and Abscess	6(18.75%)
Galactocele	2(6.25%)
Fibroadenoma	7(21.87%)
Lactating adenoma	9((28.12%)
Fibrocystic disease with lactational changes	1(3.12%)
Suspicious for Malignancy	1 (3.12%)
Total	32

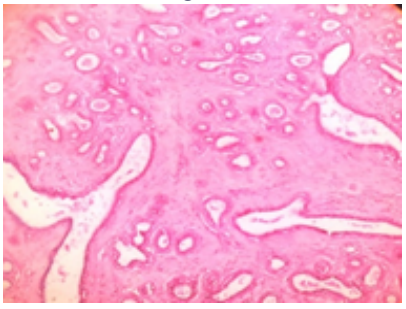
Fibroadenoma with lactational changes (Figure1&2) A 25 year/Female, lump in right breast since 3 month, Issue-1, Gestational age-32 week

Figure-1



Cellular smear with bimodal pattern. Smear show cohesive, branching sheets of epithelial cells
[Pap ,100x]

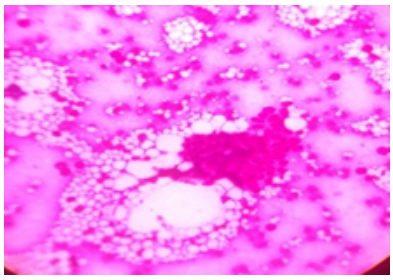
Figure-2



Section shows both pericanalicular and intracanalicular pattern of fibroadenoma with fibrocystic changes. [H.E 100x]

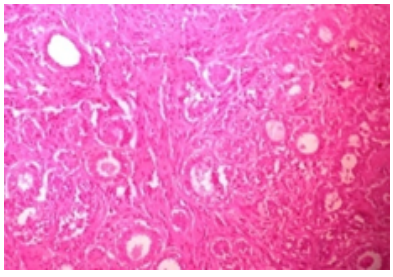
Lactating Adenoma(Figure-3&4) A 28 year/Female, lump in left breast since 5-6 month, Issue – 2, Last child birth-13 month & breast feeding.

Figure-3



Cells have abundant fragile cytoplasm , secretory vacuoles & frayed borders with dirty background due to lipid secretion
[Giemsa ,100x]

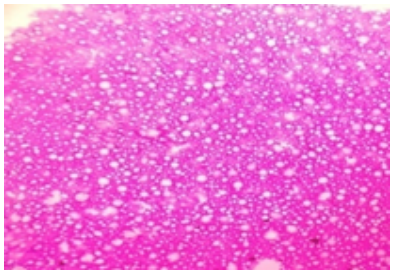
Figure-4



Section show round tubules with cells showing vacuolated granular cytoplasm and dilated lumina with secretions.
[H.E 400x]

Galactocele (Figure-5) A 28 year/Female, lump in right breast since 10 days after birth of baby. Issue – 1, Last Child Birth-1 month old & breast feeding.

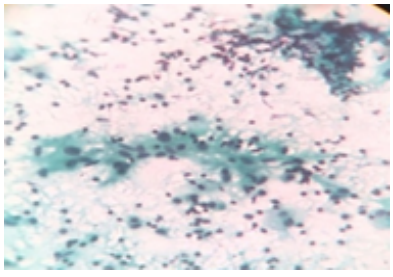
Figure-5



dirty background with due to lipid secretion with stripped nuclei and cystic macrophages
[Giemsa , 100x]

Granulomatous Mastitis (Figure-6&7) A 26 year/Female left breast lump since 2 month, Issues-2 and Last Child Birth- 2 year.

Figure-6

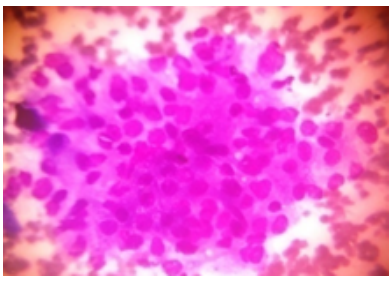


Section show Granulomas confined to breast lobules
[H.E 400x]

Suspicious for Malignancy (Figure 8&9). A 25 year/Female lump in

right breast since 5-6 month, Issue – 5, Last Child Birth-4 month old & breast feeding.

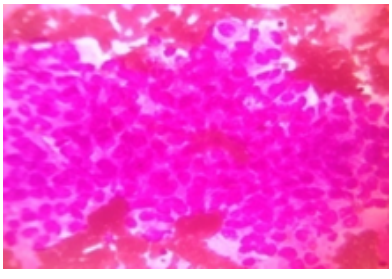
Figure-8



Smear show clusters of cells with irregular nuclear border, enlarged and pleomorphic nuclei, single or multiple nucleoli, mitosis . [Giemsa , 400x]

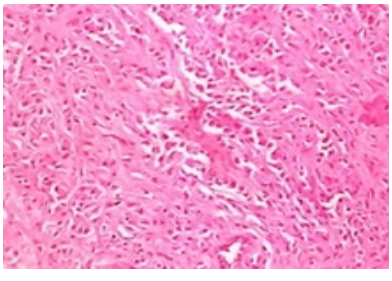
Pregnancy associated Breast cancer (PABC) (Figure-9&10). A 30 year/Female, trauma in left breast & noticed lump after trauma since 6 month , Issue – 2, Last Child Birth-10 month old & breast feeding

Figure 9



Smear show clusters of cells with irregular nuclear border, pleomorphic nuclei, single or multiple nucleoli, mitosis in a hemorrhagic background .[Giemsa , 400x]

Figure-10



Section from biopsy shows clusters and singly scattered malignant ductal epithelial cells. Cells show hyperchromatic nucleus, eosinophilic cytoplasm, pleomorphism and prominent nucleoli. [H.E 400x]

Discussion

As modern women delay childbearing, pregnancy-associated breast cancer (PABC) becomes a more common problem & represents up to 3% of all breast malignancies[8,9]**.** A postponement in finding can be attributed to hypertrophy of breast tissue during pregnancy and lactation, which can cover symptoms. Association of breast malignancy in pregnancy or lactation is rare & carcinoma in these females disseminates rapidly with poor prognosis.(1) Various factors which results in altered physiology during pregnancy and lactation are accountable for promptness of growth and spreading of breast carcinoma[4].

An analysis by FNA in pregnant and lactating women with suspected breast pathology is important above existing method like physical examination. It is important that breast cancer during pregnancy or lactation be diagnosed without delay. “Liberal” surgical biopsy in these women is not needed as many women with benign lesion will be subjected to unnecessary biopsies[2].

Aspirates from benign breast masses under gestational or lactational influences may show increased cellularity, anisonucleosis, prominent nucleoli, granular chromatin with proteinaceous background & these conclusions can result in false positive diagnosis by those who are unknown with aspirates from pregnant or lactating women[2,3,5].

The main cytologic features that distinguish breast carcinoma from benign conditions during pregnancy and lactation are crowding & overlapping of nuclei, dyscohesion and enlarged, pleomorphic nuclei with irregular nuclear membranes, coarse nuclear chromatin and mitoses[3,5]. Pregnancy-related hyperplastic changes with atypia can result in a false positive diagnosis of carcinoma[1].

Based on our study we are of opinion that an investigation by FNA in pregnant & lactating women is very important. In this study we describe the role of FNA cytology in pregnant and lactating women to decrease the delay in diagnosis of breast cancer and our experience of breast lesions in pregnant or lactating women that appeared for FNA cytology in our opd. In our study we used FNA as first line of investigation and have performed open biopsy only when FNA suggested suspicious findings on repeated aspirations .All women with benign diagnosis on FNA with persistent breast lesion were regularly followed up with repeated aspirations. Unnecessary invasive surgeries were avoided by use of FNA.

Conclusion

In summary we suggest that FNA is an effective method in diagnosis of carcinoma of breast during pregnancy or lactation. Knowledge of typical cytological features in FNA smears with atypical features should prevent a false positive diagnosis of breast cancer in pregnant or postpartum patient.

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