Cytopathological Review of Breast Lesions In Ile-Ife Nigeria

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Citation

Abstract

INTRODUCTION: Aspiration Cytology of breast lump is an established method of rapid diagnosis of breast lump..MATERIALS AND METHODS: The FNAC database in our hospital was assessed for relevant information. The diagnostic categories include: Normal, Inflammatory, Benign, Suspiciously Malignant and Malignant.RESULTS: 757 cases were analyzed. The age-range was13-90 years.(mean age 39.1+/- 15.6ears,) . The peak age group was 20 - 29years (24.3 %). Benign lesions were predominant (50.2%). Malignant lesions (31.4%), suspiciously malignant 9.5% and inflammatory lesions 7.4%.The malignant and suspiciously malignant occur more in the elderly. 5(0.7%) patients were males, three of which were malignant.CONCLUSION: This study further confirms the predominance of benign breast lesions in the young. Malignant lesions predominate in the 4-5th decade of life. However, both diagnoses cut across all age groups. FNAC is a veritable tool for early diagnosis of breast cancer in a low-resource setting such as ours

INTRODUCTION

Breast cancer is the leading female malignancy in the world and also the most common cancer in Nigeria [1], [2]. In Nigeria, as in other developing countries, awareness of breast cancer morbidity and mortality is spreading among the general populace. There is an increase in awareness campaigns, increasing availability of screening facilities as well as fine needle aspiration clinics [3].

Fine needle aspiration cytology (FNAC) of the breast is a cheap, simple, reliable, diagnostic procedure for screening, early diagnosis and treatment of breast lesions [4]. The breast is one of the organs that are readily accessible for fine needle aspiration biopsy and there is an increasing use of FNAC as a diagnostic tool in the management of breast lesions [5].

It has been found to have a sensitivity ranging from 84% to 97.5% and a specificity of more than 99% to 100% for breast lesions. [6], [7], [8]. In a review of 209 cases by Ogunniyi et al [6] in Ibadan, south western Nigeria, they found the diagnostic accuracy of fine needle aspiration cytology for malignancy to be 79% and specificity to be 97% [5]. A recent review from our centre also showed a diagnostic accuracy of 79.2% and specificity of 88.2%. [7]

Nggada et al in north eastern Nigeria also found a diagnostic accuracy of 97.7% and a sensitivity and specificity of 95.7% and 98.7% respectively [5].

Breast FNAC has found usefulness in a wide variety of clinical settings. Apart from diagnosis, it is useful in triage of patients into therapeutic and surveillance groups; follow-up and monitoring of diseases especially breast cancers and early recognition of relapse. [4]

In this study we reviewed the cases of breast FNAC at the Obafemi Awolowo University Teaching Hospitals complex Ile-Ife from 1997-2006.

MATERIALS AND METHODS

The fine needle aspiration cytology database in the histopathology department of the Obafemi Awolowo University Teaching Hospitals complex Ile-Ife, Nigeria from year 1997-2006 was used for the study. Clinical information and cytological diagnosis of the patients with breast lesions were obtained from the cytology day book.

Usually the procedure is explained to the patient and verbal consent obtained. The pathologist examined the lesion and the skin over the lesion is cleaned with alcohol. FNAC was usually done using 23 or 25G disposable needle 11/2 inches long on a 20cc plastic syringe. The needle is inserted into the lesion and manipulated as previously described [5]. Aspiration usually required 2-3 passes to obtain diagnostic materials. The tissue obtained was smeared on already prepared slides and fixed immediately in 95% alcohol. The slides were stained with Haematoxylin & Eosin, or Papanicolaou stains.

The slides were then reviewed by the pathologist. Unsatisfactory/inadequate smears were repeated by the pathologist.

The diagnostic categories used include the following: Normal, Inflammatory, Benign, Suspiciously Malignant and Malignant.

Normal diagnosis is made from aspirate from normal breast with suspected lesions which may be due to vague lumpiness in the breast. Cytologically aspirate from normal breast is usually hypocellular, consisting of stromal connective tissue , adipocytes , and few normal ductal cells.

Inflammatory lesion is made from cellular aspirate with predominantly inflammatory cells, cytophagocytosis with granular debris in the background and occasional multinucleated giant cells. Few reactive ductal cells are often present. Inflammatory lesions were further categorized into breast abscess, acute mastitis and granulomatous mastitis.

A benign diagnosis is given when there is no evidence of malignancy seen in any of the ductal cells aspirated from a palpable lump in the breast or from fluid aspirated from a cyst. Further categorization into fibroadenoma (usually composed of cellular aspirate with biphasic pattern of stromal and ductal/myoepithelial cells components) when classical features present, fibrocystic change (breast cysts, stromal fibrosis and epithelial hyperplasia) and pregnancy associated changes were made.

The diagnosis of suspicious of malignancy is made when a few clusters of cells show features of malignancy while the diagnosis of malignancy is made when the aspirate is cellular with loss of cohesiveness, nuclear atypia, cellular pleomorphism and absence of myoepithelial cells. Malignant lesions were not further characterized.

Data were processed using SPSS version 15.0. Descriptive methods such as tables and figures were used for presentation of the results.

RESULTS

757 cases of breast FNAC that had complete information were analyzed.

The age of the patients ranges from 13-90 years (mean age =39.1+/- 15.6years, median 38 years).

The peak age group was 20 to 29years group with 184 patients (24.3 %), this is followed by age group 40-49 with 151 patients (19.9%) and 30-39years with 149 patients

(19.7%). The least number of patients was seen in the 10th decade of life. Majority (87.1%) of patients were within the age group 20-59 years.

Figure 1

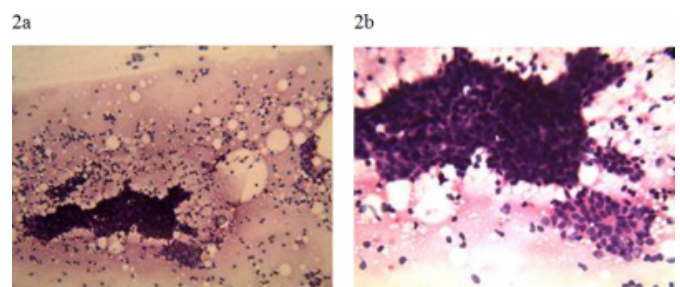Figure 1 shows age groups of patients with breast cytology
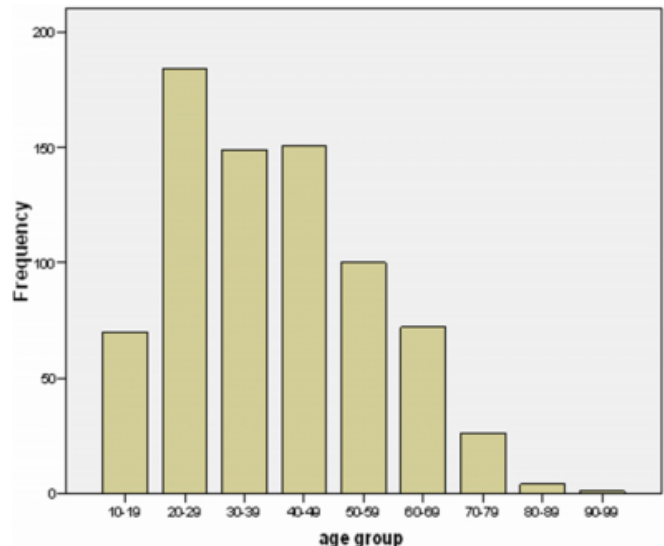
The female to male ratio is 150:1 (752 to 5 cases)

The benign lesions constituted the largest number of cases seen in this series with 380 cases (50.2%). Of the benign lesions, 109 cases (28.7%) were fibroadenomas with classical features (figure 2a,b),

Figure 2

Figure 2

(2a)Fibroadenoma. Direct smear showing biphasic pattern of clusters of epithelial cells and stromal cells in the background. (H&Ex16 obj). 2b , higher magnification of a (x 40 obj) .

pregnancy associated changes 10cases (2.6%) and fibrocystic change 65 (17.1%).(Fig3a&b).

Fibrocystic change: Non-proliferative breast disease displaying low to moderate cellularity with fragments of stroma and adipose tissue. Apocrine cells are present in the

background (H&E x16 obj) .

3b. Same patient as 3a. monolayer cell population with attempt at forming ducts. (x40 obj).
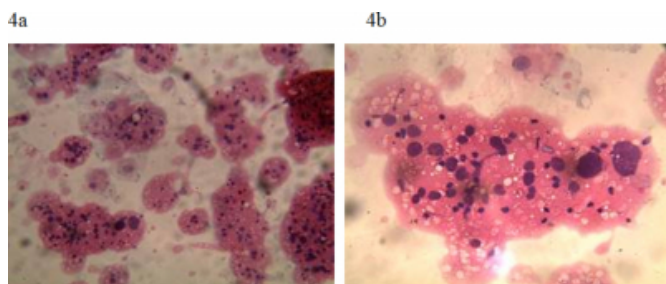
Figure 3

Figure 3a   3b.
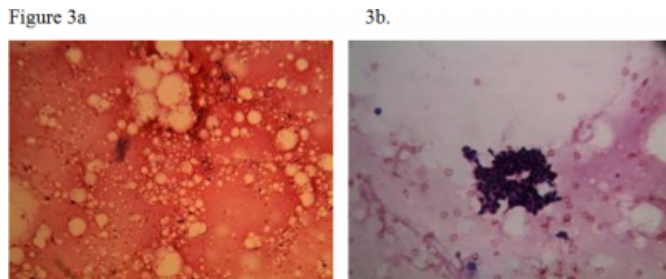
Others were simply classified as benign.

Malignant lesions constituted 238 cases (31.4%).Figure 4

Figure 4

Figure 4.a, direct smear, infiltrating ductal carcinoma: aspirate is cellular with loss of cell cohesion.(H&E x16). F higher magnification of (4b) showing nuclear pleomorphism and hyperchromatism (x40).

4a   4b

Suspiciously malignant 72 (9.5%) and inflammatory lesions 55 (7.3%). (table 1).

Figure 5

Table 1: shows cytological diagnosis within different age groups

Age group	Benign	Inflammatory	Malignant	Suspiciously malignant	Normal	Total(%)
10-19	63	2	2	2	1	70(9.2)0
20-29	140	19	8	9	8	184(24.3)
30-39	73	14	46	14	2	149(19.7)
40-49	57	11	73	9	1	151(19.9)
50-59	25	5	53	17	0	100(13.2)
60-69	12	2	45	13	0	72(9.5)
70-79	6	2	11	7	0	26(3.4)
80-89	3	0	0	1	0	4(0.5)
90-99	1	0	0	0	0	1(0.1)
Total	380(50.2%)	55(7.3%)	238(31.4%)	72(9.5%)	12(1.6%)	757(100.0)

Of the inflammatory lesions 43.6% were breast abscess, 2(3.6%) were granulomatous mastitis while others were acute and non-specific inflammation.

Normal breast tissues were found in 12 patients (1.6%). Normal breast tissue, inflammatory and benign lesions were the predominant lesion in age group 20-29 years.

The malignant and suspicious of malignancy category were found more in the older age groups. Of the 238 malignant cases, 73 (30.4%) were found in age group 40-49years, 53 (22.9%) in 50-59 years. 46 (19.2%) in 30-39. A large number of patients (91.3%) with malignant breast lesions were found in the 4th -7th decade of life with peak at the 5th decade of life.

Only five cases representing 0.7% of the cases were in male patients, three of these were malignant while two were benign.(Table 2)

Figure 6

Table 2 ; Gender distribution of breast lesions

Cytological diagnosis	Female	Male	Total
Benign	378	2	380
Inflammatory	55	0	55
Malignant	235	3	238
Suspiciously malignant	72	0	72
Normal	12	0	12
Total	752(99.3%)	5(0.7%)	757(100.0%)

DISCUSSION

There has been an increasing use of fine needle aspiration cytology as diagnostic tool in the preoperative assessment of patients with breast lesions [9] . This is due to high level of awareness among the clinicians of the role of fine needle aspiration cytology, as a useful diagnostic tool and a necessary adjunct to clinical examination in the assessment of breast lumps [4,5] . The gains of FNAC include its low cost, early detection of sinister lesions in the breast, the simplicity of the method and the fact that the procedure is well tolerated by the patients [10] . There is no limit to the number of passes, an unsatisfactory aspirate can easily be repeated and the result given within few hours.

The majority of the cases seen in this series were in the young adults and middle age groups which show the significant awareness among these individuals of the risk of

breast cancer and their desire for early detection of the lesion. A high proportion of patient diagnosed with breast cancer were also seen in this group.

Benign lesions of the breasts were the most common lesion seen accounting for 42.4% of all cases. This is in consonance with findings by Taye et al and Costa et al who also reported a predominance of benign lesions in their studies [11], [12]. However, a higher percentage of 74% and 62.7% were reported respectively.

In a large series of patients with breast complaints seen at the surgical outpatient department, 60% had benign disease, 30% no disease and 10% had cancer. [13]. Only 1.5% of cases in our series had no disease and these were seen mostly within 20-29years age group.

Inflammation of the breast often presents as a palpable breast lesion with varying degree of pain and tenderness. FNAC for inflammatory breast lesion may serve as diagnostic and therapeutic procedure in some patients especially those with breast abscess. [14]. Most of the patients with inflammatory lesion had breast abscess and mastitis were breast feeding. FNAC for inflammatory breast lesion is also important to distinguish it from an inflammatory carcinoma [15].

Malignant breast lesions were seen predominantly at the 5th decade of life. This is consistent with most studies from Nigeria and other part of Africa. [16], [17], [18], [19]. Cytologically, diagnostic accuracy for malignancy has been reported between 70.8% and 97.1%. [5,8,14]

A diagnosis of malignancy is rendered based on cellularity, loss of cohesiveness, nuclear atypia and cellular pleomorphism and absence of myoepithelial cells.(Fig 2e,f). Occasionally well formed ducts may be seen [14]. Cytological grading of malignant cells is also possible, but this was not done in this study. Some studies have shown that cytological grade of breast tumours does correlates well with histological grade [20].

Breast aspirate that are positive for cancer cells can also be subjected to further tests like immunocytochemistry for oestrogen and progesterone receptors and Her-2/neu. This is important for treatment, follow-up and prognostication and will be a subject of further study.

This study further confirms the predominance of benign breast lesions in the young, malignant lesions were more predominant in the 4-5th decade of life. However, both

diagnosis cut across all age group and every case should be treated on its own merit.

FNAC has improved decision making, the selection of patients for biopsy of mammary lesions and has contributed to saving time in the clinical management of breast lumps [21]. It is a veritable tool for early diagnosis of breast cancer in a low resource setting such as ours.

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