

Histological Characteristics of Breast Lesions in Uyo, Nigeria

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ABSTRACT

Background: The breast is a common site for pathologies which predominantly involves the female breast. While benign diseases are more common, malignancies are of utmost concern for the patient, clinician, and the pathologist. **Aim:** The aim of this study is to audit the clinical and pathological features of patients with breast lumps in a tertiary center in Nigeria. **Materials and Methods:** This is a retrospective observational study of histologically diagnosed breast lumps over a period of 8 years. **Results:** Lumps were common in the 20–39 years age group (>50%), with a mean age of 34.95 years. Females accounted for 759 (98.1%) of cases. In 467 (60.4%) cases, the lumps measured >5 cm and only 175 (22.6%) cases presented to the surgeon within 12 weeks of noticing a breast lump. Ninety-one (11.8%) cases also presented with axillary lymph nodes, breast pain 79 (10.2%), peau d' orange 56 (7.2%), and ulceration 47 (6.1%). Benign breast disease (BBD) occurred in 401 (51.8%) cases and malignant breast diseases (MBD) occurred in 344 (44.3%) of cases. **Conclusion:** BBD and MBD are common among the young in Uyo. Lumps are the primary complaint and late presentation is the norm.

KEYWORDS: Breast lump, late presentation, young females

INTRODUCTION

The breast is a highly modified apocrine sweat gland, composed of both epithelial and connective tissue components and the range of diseases which affect it could be inflammatory or neoplastic (benign or malignant).^[1] Diseases of the breast account for a significant proportion of general surgery workload globally making the breast one of the most commonly biopsied tissues currently.^[2,3] Reports by Global Cancer Incidence, Mortality and Prevalence (GLOBOCAN) show that breast cancer is the most common cancer among women with an estimated 1.67 million new cases diagnosed in 2012.^[4] There is an increased awareness of breast cancer among females and many attribute breast symptoms to cancer, leading to a heightened anxiety levels.^[5] Various studies have reported benign breast disease (BBD) to be more common than malignant breast lesions.^[1,5-11] The range of BBD in various studies are between 50.4% and 84% with fibroadenoma being the most common BBD.^[1,5-11] Malignant breast lesions accounted for between 11.8% to 49.6% in previous studies.^[1,5-12] Previous African studies

reported 15.7% in Jos, 21.3% in Lagos, and 33.9% in Kano (all in Nigeria), and 32.7% in Ghana.^[5,9,11,12] Studies from Asian countries reported rates of 11.8%, 32.5%, and 49.6% in Karachi; Pakistan, Saudi Arabia, and India, respectively, whereas a Caribbean study (in Jamaica) observed a rate of 23.4%.^[1,6-8] Invasive ductal carcinoma is the most commonly seen histological variant of malignant neoplasm of the breast and seen mainly in the fifth decade.^[1,5-12] The common symptoms associated with breast lesions are breast pain, nipple discharge, and palpable masses.^[1,6] This study is aimed to audit the clinicopathologic features of patients with breast lumps at University of Uyo Teaching Hospital in South South Nigeria as such have not been done previously to the best of the knowledge of the authors and to see how these findings compare with other studies within and outside Nigeria.

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MATERIALS AND METHODS

This is a retrospective study of all breast specimens that were histologically diagnosed in the Histopathology Department of University of Uyo Teaching Hospital over an 8-year period from January 1, 2008 to December 31, 2015. This histopathology laboratory is the only facility where histopathology services are rendered in Akwa Ibom State and as such renders services to the host hospital and many privately owned hospitals within the State. The specimens included excision biopsies, incision biopsies, core needle biopsies, and mastectomy tissues. These breast specimens were received in 10% buffered formalin, auto-processed. Paraffin-embedded sections (at 2–3 μm) were routinely stained with hematoxylin and eosin stains. Data were extracted from the departmental registers, patient request forms, duplicate copies of histology reports of all cases, and case notes/files of patients. Information extracted include age, sex, duration of symptom before the presentation, side of breast affected, the maximum diameter of a breast lump, the clinical diagnosis made by the unit consultant, type of biopsy done, and histology diagnosis. The tumors were classified using the 2005 WHO International Classification of breast tumors and graded using Nottingham modification of Bloom and Richardson grading system.^[13,14] Data were analyzed using predictive analytical software, version 17 (IBM, SPSS Inc., Chicago, IL, USA).

Simple frequencies were determined for categorical variables and mean was evaluated for continuous data. All reports with ambiguous histological conclusions were excluded from the study. Twelve cases were excluded on account of missing/inadequate identification parameters (such as sex, age, and diagnosis).

RESULTS

A total of 774 breast specimens were received over a period of 8 years, forming 16% of all 4838 surgical

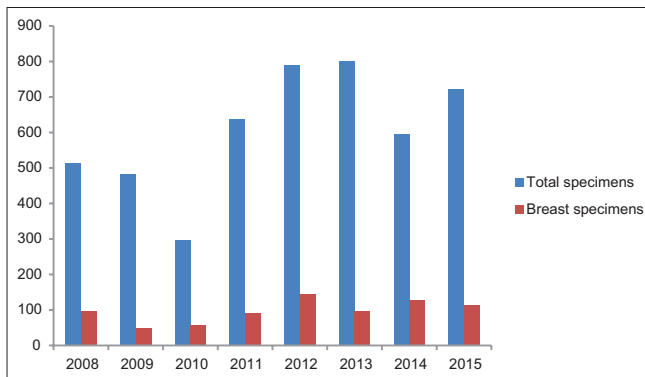


Figure 1: Distribution of breast specimens as a proportion of all pathological specimens received over 8 years

pathology specimens received in the histopathology laboratory as shown in Figure 1.

Table 1: Demographic and clinical features of patients presenting with breast diseases

Variables	Frequency (%)
Age group	
10-19	95 (12.3)
20-29	226 (29.2)
30-39	174 (22.5)
40-49	139 (18)
50-59	86 (11.1)
60-69	44 (5.7)
70-79	10 (1.3)
Total	774 (100)
Gender	
Female	759 (98.1)
Male	15 (1.9)
Side	
Left	354 (45.7)
Right	325 (42)
Bilateral	42 (5.4)
Size of primary lesion (cm)	
<2	9 (1.2)
≥2-<5	155 (20)
≥5-≤10	225 (29.1)
>10	242 (31.3)
Duration of lump at presentation	
0-3 months	175 (22.6)
4-6 months	98 (12.7)
7-11 months	57 (7.4)
1 year	85 (11)
2 years	71 (9.2)
3-5 years	30 (3.9)
5-9 years	26 (3.4)
≥10 years	11 (1.4)
Type of surgical specimen	
Excision biopsy	421 (54.4)
Tru-cut biopsy	220 (28.4)
Mastectomy	45 (5.8)
Incision biopsy	23 (3.0)
Subcutaneous mastectomy	2 (0.3)
Symptoms at presentation	
Breast lump	760 (98.2)
Lymph node involvement	91 (11.8)
Breast pain	79 (10.2)
Peau d' orange	56 (7.2)
Ulceration	47 (6.1)
Nipple retraction	41 (5.3)
Recurrence	23 (3)
Nipple discharge	18 (2.3)
Other symptoms	50 (6.5)

Other symptoms include: Pregnant/lactating women (20), weight loss (12), paraplegia (5), pleural effusion/ breathlessness (7), family history (2), jaundice (1), anemia (1), abdominal swelling (1), ovarian cancer (1)

Table 2: Histologic diagnosis and characteristics of breast lesions

Category	Diagnosis	Frequency (%)	Mean age
Inflammatory lesions	Fat necrosis	10 (1.3)	44.9
	Acute mastitis	9 (1.2)	32.78
	Granulomatous mastitis	6 (0.8)	34.17
	Chronic mastitis	3 (0.4)	26.67
	Duct ectasia	1 (0.1)	40
	Periductal mastitis	1 (0.1)	22
	Total	30 (3.9)	
Benign lesions	Fibroadenoma	253 (32.7)	23.52
	Fibrocystic change	76 (9.8)	32.25
	Tubular adenoma	15 (1.9)	22.67
	Lipoma	7 (0.9)	44
	Lactating adenoma	6 (0.8)	32.83
	Gynecomastia	6 (0.8)	37.50
	Sclerosing adenoma	6 (0.8)	33.17
	PASH	4 (0.5)	32.75
	Benign phyllodes	4 (0.5)	36.25
	Fibrolipoma	4 (0.5)	39.75
	Ductal hyperplasia	4 (0.5)	21.67
	Atypical ductal hyperplasia	3 (0.4)	38.33
	Borderline phyllodes	2 (0.3)	36
	Gigantomastia	2 (0.3)	31.50
	Granular cell tumor	2 (0.3)	28
	Intraductal papilloma	2 (0.3)	51.50
	Others	5 (0.5)	
	Total	401 (51.8)	
Malignant breast lesions	IDC	310 (40)	44.15
	Carcinoma <i>in situ</i>	11 (1.4)	46.30
	Malignant phyllodes	6 (0.8)	41.17
	Invasive lobular carcinoma	5 (0.6)	41
	Mucinous carcinoma	5 (0.6)	51.80
	Medullary carcinoma	2 (0.3)	38.50
	Papillary carcinoma	2 (0.3)	43.50
	Adenosquamous carcinoma	1 (0.1)	43
	Pagets disease	1 (0.1)	65
	Squamous cell carcinoma	1 (0.1)	45
	Total	344 (44.3)	
	Nottingham's grading of ductal carcinomas	Grade I	18 (2.3)
Grade II		113 (14.6)	
Grade III		51 (6.6)	
Total		182 (23.5)	
Male breast lesions	Gynecomastia	6 (0.8)	
	Fibrocystic change	4 (0.5)	
	Benign phyllodes	1 (0.1)	
	Lipoma	1 (0.1)	
	Neurofibroma	1 (0.1)	
	Mucinous carcinoma	1 (0.1)	
	IDC	1 (0.1)	
	Total	15 (1.8)	

Others include a single case of each of the following; dermatofibroma, neurofibroma, inclusion cyst, epithelial polyp, blunt duct adenosis. PASH=Pseudoangiomatous stromal hyperplasia, IDC=Invasive ductal carcinoma

Table 1 shows the demographic data and various clinical features of breast masses seen. Age group 20–29 years closely followed by 30–39 years group accounted

for more than 50% of all cases, with a mean age of 34.95. Females accounted for 98.1% of cases. The left breast (45.7%) was slightly more involved than the right

Table 3: Comparison of major findings between the current and previous studies

Study	Duration (years)	Sample size	Mean age	Mean tumour size (cm)	Percentage cancer cases	Cancer mean age	Common cancer type/percentage	NOTT grade/percentage	Percentage fibroadenoma	Percentage fibrocystic	Percentage inflammation (mm)
Current study	8	774	34.95	6.2	44.3	45.9	IDC/90.1	II/62.1	32.7	9.8	3.9
Nwafor and Keshinro ^[11]	4.5	1205	31.7	4.5	21.3	45.5	IDC/92.2	III/50.6	48.5	16.7	4
Ibrahim <i>et al.</i> ^[12]	10	1566	-	-	33.9	42	IDC/59.5	I/59.5	30.5	16.8	-
Edmund <i>et al.</i> ^[9]	5	4109	-	4.5	32.7	50.3	IDC/93.6	II/49.6	-	-	-
Jamal ^[8]	15	1084	-	-	32.5	48.49	IDC/88	-	25	12	11
Aslam <i>et al.</i> ^[11]	3	254	25.18	-	11.8	45.66	IDC/100	-	71.3	1.2	11.8
Vishal <i>et al.</i> ^[7]	5	252	-	3.7	49.6	53.39	IDC/88	II/58	44	-	-
Shirley <i>et al.</i> ^[6]	3	1189	36.5	-	23.4	-	IDC/69.5	-	32.8	-	-
Pervin <i>et al.</i> ^[10]	2	100	27	-	42	-	IDC/69	-	31	-	-

NOTT=Nottingham grading system, IDC=Invasive ductal carcinoma

breast (42%). The majority (60.4%) of the breast masses measured >5 cm in their widest diameters. About 22.6% of the patients presented to the surgeon within 3 months of noticing the lump, however, 28.9% of the patients presented after at least a year or more. Excision biopsy was the most common surgical intervention (54.4%). Common presenting complaints were as follows: breast lump (98.2%), lymph node swelling (11.8%), breast pain (10.2%), peau d orange (7.2%), and ulceration (6.1%).

Table 2 shows the histologic diagnosis and characteristics of breast lesions. BBD were the most common (51.8%), with fibroadenoma (63.1%), and fibrocystic change (19%) accounting for most of them. The mean age of patients with fibroadenoma was 23.52 years. Malignant breast diseases (MBD) accounted for 44.3% of all breast tissue specimens. Invasive ductal carcinoma was seen in 90.1% of MBD, and the patients had a mean age of 44.15 years. Inflammatory breast lesions accounted for 3.9% of cases, with fat necrosis being the most common inflammatory lesion. Based on Nottingham grading of MBD, among the few graded specimens, Grade II was the most common. In males, gynecomastia was seen in 6 males (0.8% of all cases), whereas 2 cases (0.2% of all cases) were MBD.

Table 3 shows a comparison of the index study with various clinicopathologic studies from Nigeria and other countries.

DISCUSSION

A breast lump is the most common reason for seeking surgical consult among patients with breast complaints. Its discovery is often associated with heightened anxiety due to the increased awareness of breast cancer in the general population.^[3] Tissue diagnosis is an important adjunct in breast lump management. Breast specimens form a significant proportion of the histopathologists workload in our setting as breast specimens accounted for 16% of all specimens received during the period. This is higher than 4% reported in India.^[7] Lump in the breast was the most common presentation, and this is similar to findings from Parkistan, Jamaica, and Ghana.^[1,6,9] In Bangladesh, however, breast pain was the most common presentation.^[10] The lack of routine screening in developing countries may be the reason and as such the patient only knows there is a breast disease when a lump is big enough to be observed.

In the Ghanaian study, skin involvement (peau d' orange, breast edema, and ulceration) were seen in 96.6% of their cases, with 63.7% of the patients presenting within 11 months.^[9] In the index study, only 18.6% of cases had skin involvement, while only 42.7% of cases presented within 11 months. The lack of skin manifestation (which are usually discomfoting) may be one of the reasons for late presentation in the index study. Majority of the patients (64.7%) presented after 6 months of noticing the breast lump, similar to 64% observed by Atoyebi *et al.*, but higher than 52% reported by Anyanwu

et al.^[15,16] This shows a significant delay in presentation. Late presentation is very common and said to be universal among patients in the third world including Asian and Arab countries.^[17] Possible reasons for late presentation include; long distances to hospital, fear of surgery and anesthesia, fear of mastectomy, unavailability of treatment facilities, lack of awareness, fear of the consequences, strong belief in traditional medicine/alternative practitioners, religious charlatans (spiritual methods of treatment), poverty, poor education, fear, denial, painless nature of the breast lump, ignorance, and the fact that the patients thought the lump might disappear.^[17,18] To curb this, public health awareness should be improved, by adding talks on cancer during the numerous HIV prevention campaigns sponsored by government and donor agencies will go a long way in increasing the awareness.^[17] Doctors should be encouraged to examine a woman's breast on visitation to a health facility for opportunistic clinical breast examination, because studies have shown that majority of breast cancer patients attended a health facility within 6 months of presenting to a surgeon with a breast lump, without the doctor or nurse examining their breast.^[17] Some of the patients in the index study may have presented to health facilities previously on account symptoms such as abdominal swelling, jaundice, breathlessness, weight loss, and paraplegia, which were noticed on presentation, without making mention of breast disease to the health worker. When patients present late, especially in cancer cases, the following may arise; inadequate or incomplete recovery, which then contributes to a community perception that cancer is untreatable, which may lead to a vicious cycle of late presentation, high mortality rates, and distrust of orthodox medical establishments, which are then only utilized as a last resort.^[17]

Studies have shown BBD to be predominant, and fibroadenoma is the most common. Fibroadenoma was the most commonly seen BBD (63.1%), with a mean age of 23.52 years and accounted for 32.7% of all specimens in the index study. This is similar to findings from previous studies in Jamaica, India, Saudi Arabia, Bangladesh, Lagos, and Kano which gave a range of 25%–48.5%.^[6-8,10-12] However, in the Karachi (Pakistan) study, fibroadenoma accounted for 71.3% of all breast lesions, although no reason was given for this very high rate.^[11] The small sample size of 254, short duration of 3 years and the mean age of 25.18 years may have contributed. Fibroadenoma is a very common tumor, though relatively little is known about its etiology and risk factors. Breast stromal and epithelial cells contain estrogen and progesterone receptors. Hence, these tumors often proliferate during pregnancy and regress after menopause.^[19] The use of oral contraceptives before age

20 appears to increase the risk of fibroadenoma.^[20] The following do not affect the incidence of fibroadenoma; age at menarche and menopause, parity, breastfeeding, diet, and smoking.^[21] Fibroadenoma represent a long-term risk for breast carcinomas, and that risk is increased in women with complex fibroadenomas, ductal hyperplasias, young age, or a family history of breast carcinoma.^[22] BBD is known risk factor for breast cancer, and the relationship is preferentially associated with atypical parenchymal lesions.^[23] In the index study, very few (0.4%) BBD with atypical changes were seen, as such females in our setting do not run the risk of breast cancer from BBD.

MBD was seen in 44.3% of all cases, and the mean age of victims was 45.9 years. This rate is close to 42% in Bangladesh and <49.6% in India.^[7,10] The index rate is far higher than rates reported in other parts of Nigeria (15.7%, 21.3%, and 33.9%), Ghana (32.7%), Saudi Arabia (32.5%), Pakistan (11.8%), and Jamaica (23.4%).^[1,6,8,9,11,12] The mean age is close to that of previous studies.^[11,12,15] The reason for this high rate is not yet apparent, though the sample size may play a contributory role. The implication of this finding is that awareness should be increased in our locality, and further work (community-based) should be done to understand the local prevalence. Histologically, MBD could be invasive ductal carcinoma (NST: no special type), lobular carcinoma, tubular/cribriform carcinoma, mucinous (colloid) carcinoma, medullary carcinoma, papillary carcinoma, metaplastic carcinoma, or malignant phyllodes tumor.^[24] Invasive ductal carcinoma (NST) is by far the most common MBD in all studies (accounting between 59.5% and 92.2%) including the index study.^[7,9-12] In a study with small sample size, the only histologic type of MBD seen was invasive ductal carcinoma (NST).^[11] MBD cases with special types of invasive carcinomas (tubular, mucinous, lobular, papillary, and adenocystic) do better than cases with no special type.^[24-26] However, recent studies have shown that histologic subtype is a minor prognostic factor, while factors such as invasive carcinoma versus carcinoma *in situ*, distant metastases, lymph node metastases, tumor size, locally advanced disease, and lymphovascular invasion mainly determine the fate of a particular case.^[24-26]

The average size of breast masses was 6.2 cm, which is higher than average sizes reported in Lagos, Ghana, and India.^[7,9,11] The size of the primary tumor is an important independent prognostic factor of breast cancer.^[25] Large primary tumors are associated with a worse survival rate.^[26] Majority of the cases (62.1%) were Grade II lesions. The grade of a tumor is said to correlate with

the 5-year survival and that higher grades are associated with poorer survival rates.^[27] The combination of moderate-to-high grade lesions in our patients and larger size of tumors means that the morbidity and mortality of breast disease patients will be high in our environment, though no study on mortality of breast disease patients have been done locally.

The limitations of this study include its small sample size, its retrospective nature and lack of information about important risk factors such as occupation, socioeconomic status of patients, level of education, history of use of oral contraceptives, ages at menarche; first live birth; menopause, number of children, and length of breastfeeding, which would have aided clinicopathological correlation and give a bearing to the occurrence and incidence of breast diseases. Immunohistochemistry and tumor-node-metastasis staging were also not done.

CONCLUSION

This study, however, affirms that breast diseases in developing countries are characterized by the late presentation, occurrence at relatively young ages and probably dismal mortality as also reported by Anyanwu.^[17] It also provides baseline descriptive data of breast disease patterns in Uyo, South Southern Nigeria.

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Conflicts of interest

There are no conflicts of interest.

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