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HISTOPATHOLOGICAL PATTERN OF BENIGN BREAST DISEASE AMONG FEMALE PATIENTS IN ABIA STATE UNIVERSITY TEACHING HOSPITAL, ABA, SOUTH EASTERN NIGERIA

[1]Ngwogu, K.O., [1]Offiah, S. A.U, [2]Ngwogu, A.C., [1] Ekperi, O.
Departments of [1]Histopathology, [2]Medical Microbiology, College of Medicine and Health Sciences, Abia State University, Uturu, Nigeria.
Corresponding Author: **ngwogukenneth@yahoo.com**

ABSTRACT

Benign breast disease (BBDs) constitutes majority of breast complaints in females. This study aims at determining the prevalence and histopathologic pattern of BBDs in our centre. This was a retrospective study based on diagnosed breast lesions from January 2012 to December, 2016. Out of 305 archival results and slides retrieved, 214 (70.1%) were benign in nature. The ratio of benign to malignant lesions was 2.34:1. The mean age of the patients was 28.6 years and 95% of them were premenopausal. Breast lump was the most frequent presentation in 46% of patients. The left breast was more frequently affected than the right. Fibroadenoma (50.46%) was the most frequently diagnosed BBD followed by fibrocystic changes (21.96%). While fibroadenoma had a peak occurrence in the second and third decade, fibrocystic change had a peak occurrence in the third and fourth decade. Other lesions were tubular adenoma (6.07%), benign phylloides (3.3%), fat necrosis (3.3%), lipoma (2.33%), atypical ductal hyperplasia (1.86), epidermal cyst (1.86) and breast abscess (1.40). In conclusion, BBDs are more common than malignancies and occur mainly in women less than 30 years of age. All cases of breast lesions must be carefully evaluated to exclude possibility of breast cancer.

Key Words: Benign breast disease, histopathological, patterns, Aba, Nigeria.

INTRODUCTION

Benign breast diseases (BBD) are the most common cause of breast problems in females, and are frequent than the malignant diseases (Khemka *et al*, 2009).Benign breast disease are about ten times more common than breast cancer in developed countries (Krishnaswamy, 2003). About a quarter of women during their lifetime will suffer from a benign breast disorder that requires some form of treatment. Globally BBD are the most common lesions, accounting for 90% of the clinical presentation related to breast (Murillo, 2002; Pollitt and Gateley, 2004). In Nigeria BBD constitute about 70-79% of breast lesions (Echejoh *et al*, 2011; Anyikam *et al*, 2008; Irabor and Okolo, 2008). These BBD are diverse, ranging from disorders of development, inflammatory lesions, proliferative diseases of epithelium and stroma to different types of neoplasms (Kumar *et al*, 2010; Tavassoli and Devilee, 2003). Hormones and growth factors act on the epithelial and stromal elements of breast leading to aberrations in normal development and involution that account for the majority of benign breast diseases (Santen and Mansel, 2005; Houssami *et al*, 2001; Chalya *et al*, 2016).

The incidence of BBD begins to rise during the second decade of life and peaks in the fourth and fifth decade of life (Donegan, 2002, Shaaban *et al*, 2002; Okoth *et al*, 2013). The common symptoms include pain, palpable breast lumps, nipple discharge and nipple deformity (Echejoh *et al*, 2011; Okoth et al, 2013). The triple assessment consisting of clinical

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evaluation, breast imaging and fine needle aspiration cytology (FNAC) has been recommended as a diagnostic tool for evaluation of patients with palpable breast lumps (Hught *et al*, 1998; Mande *et al*, 2004). When the three assessments are performed adequately with good results, the triple assessment diagnostic accuracy approaches 100% and definitive treatment can be started before histology (Mande *et al*, 2004). The treatment of breast disease in the developing countries poses a major challenge due to late presentation on account of social taboo, illiteracy, unawareness of lesion resulting in delay in diagnosis, especially in malignancy as well as in BBDs (Olu-Eddo *et al*, 2011 and Chalya *et al*; 2016).

In recent years, benign lesions of the breast have assumed increasing importance because of the public awareness of breast cancer (Echejoh *et al*, 2011; Olu-Eddo *et al*, 2011; Okoth *et al*, 2013). These benign diseases are a recognized important risk factor for later breast cancer (Olu-Eddo *et al*, 2011). It is widely believed among researchers that breast cancer risk is increased in patients with atypical ductal and atypical lobular hyperplesia (Dupont *et al*, 2006; Hartmann *et al*, 2005; Jensen *et al*, 1989). Dupont *et al* (2006), reported a relative risk of 3.1 for subsequent breast cancer in women with atypical lobular hyperplasia. A four to five fold increased risk for breast cancer has been associated with atypical ductal hyperplesia mostly in the ipsilateral breast within 10-15 years of diagnosis. It is therefore pertinent for surgeons, pathologists, oncologists and radiologists to recognize benign lesions, both to distinguish them from in situ and invasive breast cancer and to assess a patients risk of developing breast cancer, so that the most appropriate treatment modality for each case can be established (Guray and Sahin, 2006; Chalya *et al*, 2016).

Although the number of patients with BBD is substantial, breast cancer has attracted more attention because it is more fearsome and fatal (Abhijit *et al*, 2013). Consequently, many patients with BBD receive little attention from clinicians or may not be seen by them. There is a definite paucity of information regarding BBD in the South Eastern Nigeria, particularly in this center due to lack of published local data in this region. This study was therefore designed to define the hospital prevalence and evaluating the histopathology pattern of BBD in this centre.

MATERIALS AND METHODS

Study Area/Setting: Study was carried out at the histopathology department of Abia State University Teaching Hospital Aba, between 1st January 2012 and 31st December, 2016.

Ethical Consideration: Ethical approval was obtained from ethical committee of Abia State University Teaching Hospital, Aba.

Sample Collection and Sample Analysis: All the original request forms and histopathological reports on the breast specimens received within this study period at the Histopathology department with their slides were retrieved from the archives and reviewed. The cases of benign breast lesions formed the focus of this retrospective study. From the request forms, histopathological reports and surgical day books of the department, clinical and demographic data regarding age, sex, nature of specimen, hospital numbers, laboratory numbers were extracted. New slides were made from formalin fixed, paraffin-embedded tissue blocks and stained with Haematoxylin and Eosin (H & E) where necessary for appropriate diagnosis and classification. Cases of breast lesions with incomplete data and cases of which we were unable to trace their slides or blocks were excluded from study.

Statistical Analysis: Data analysis was done using statistical package for social sciences (SPSS version 16). Comparison of mean was done using the student – t test. The level of statistical significance was taken as $p < 0.05$.

RESULTS

Out of 305 histopathologically diagnosed breast lesions, 214 (70.1%) was benign in nature. The ratio

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of benign to malignant lesions was 2.34:1. Table 1 shows the age distribution of benign breast diseases seen in the study. The age range of benign breast diseases was 13 – 65 years while the peak incidence age range was the third decade (81; 37.90%). The mean age of the benign breast lesions was 28.6 SD± 5.3 years

Table 1: Age Distribution of Benign Breast Diseases

Age	Female	Percent (%)
11-20	59	27.60
21-30	81	37.90
31-40	44	20.60
41-50	21	9.80
51-60	7	3.30
61-70	2	0.90
Total	214	100.00

The majority of the patients (58.40%) were in the age group 21 years to 40 years. The commonest presentation of breast diseases was breast lump (46%), followed by breast pain while the least was breast abscess (Table 2). Left breast was affected in 53% of the patients; right in 32% and 15% of the patients had symptoms in both breasts (Tables 3). Fibroadenoma was the most common benign breast disease as well as the most common fibroepithelialtumour encountered in this study. Fibroadenoma accounted for 108 cases (50.46%) of total benign breast diseases (Table 4).

Table 2 clinical presentations of breast diseases

Presentation	Number of patients (n=214)	Percent
Lump in the breast	98	46
Breast pain	62	29
Pain with modularity	30	14
Nipple discharge	11	5
Nipple retraction	9	4
Abscess		2
TOTAL	214	100

Table 3: Presentation of lesions on the breast

Presentation	Number of patients	Percent
Left	113	53
Right	69	32
Bilateral	32	15
Total	214	100

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Table 4: Frequency distribution of benign breast diseases

Histologic types	Frequency	Percent (%)
Fibroadenoma	108	50.46
Fibrocystic change	47	21.96
Tubular adenoma	13	6.07
Benign phylloides	8	3.33
Fat necrosis	8	3.33
Lactating adenoma	5	2.33
Mammary duct ectasia	5	2.33
Lipoma	5	2.33
Atypical ductal hyperplasia	4	1.86
Intraductal papilloma	3	1.40
Epidermal cyst	4	1.86
Breast abscess	3	1.40
Dermato fibroma	1	0.46
Total	214	100.00

Fibroadenoma occurred most within the second and third decades of life in this study. Fibrocystic change formed the second most common benign breast lesion accounting for 47 (21.96%) of all cases, occurring most in the third and fourth decade of life (Table 6), with a mean age of 36.4years. Inflammatory lesions of the breast accounted for 16 (7.40%) of the total benign breast lesion with most occurring within the 4^{th} and 5^{th} decades of life (Table 4). These include fat necrosis 8, mammary duct ectasia 5, and breast abscess 3. A few lesions of the breast skin were seen which include epidermal cysts 3, dermatofibroma. Four cases of atypical ductal hyperplasia were seen in this study while five patients had lipoma. Fibrocystic change is the most common epithelial lesion seen and occurring most in the third and fourth decade of life. Tubular adenoma is the second most common epithelia lesion seen but unlike fibrocystic lesion appears during the second and third decade of life only (Table 6).

Table 5: Age distribution fibroepithelial / stromal lesions

Age in years	11-20	21-30	31-40	41-50	51-60	61-70	Total
FIBROEPITHELIAL LESIONS							
Fibroadenoma	50	46	10	2	-	-	108
Benign phylloides	4	4	-	-	-	-	8
Benign phylloides	-	-	-	-	-	-	-
STROMAL LESIONS	-	-	-	-	-	-	-
Lipoma	-	-	1	1	3	-	5

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Table 6: Age distribution of epithelial lesions.

Age in years	11-20	21-30	31-40	41-50	51-60	61-70	Total
Fibrocytic change	2	10	14	15	4	2	47
Tubular adenoma	5	7	1	-	-	-	13
Intraductal papilloma	-	-	3	-	-	-	3
Atypicalductal hyperplasia	-	1	3	-	-	-	4
Lactating adenoma	2	2	1	-	-	-	5

DISCUSSION

Globally, benign breast disease (BBD) constitutes the most common lesions, accounting for about 90% of the clinical presentations related to the breast (Murillo, 2002; Pollitt and Gateley, 2004). They include a heterogenous group of conditions ranging from aberrations in the normal physiology to frank diseases (Santen and Mansel, 2005; Houssami *et al* 2001). In this study, BBDS accounted for 70.1% of all breast lesions. This is similar to studies elsewhere in Nigeria, namely Makurdi, Enugu, Kano and Calabar where BBDS accounted for 67.0%, 68.8%, 73% and 73.4% of all breast lumps respectively (Echejoh *et al*, 2011; Anyikam *et al*, 2008; Ochicha *et al*, 2002; Otu, 1990). On the other hand, lower figure of 59.5% (Mayun et al, 2008) were seen in Gombe while much higher figures of 87% (Adesunkanmi and Agbakwuru, 2001; and 89.4|% Irabor and Okolo, 2008) were recorded in Ilesha and Ibadan respectively.

The majority of patients in this study were in the second and third decade of life and more than 95% of them were premenopausal. The overall mean age of occurrence of BBDS in this study was 28.6years. These findings are similar to those of other studies where patients presenting with BBDS were less than 30years (Chalya et al, 2016; Okoth *et al*, 2013). Studies by Olu- Eddo *et al*,(2011) revealed a mean age of occurrence at 27.5years in Benin, Nigeria. The reason for the increase in the incidence of BBDS in this age group is not clear but may be due to some physiological and pathological hormonal effects on the female breast as well as vulnerability to infection among locating mothers due to poor hygiene (chalya *et al*, 2016).

The most common presentation of BBDS in this study was breast lump, accounting for about 46 percent while pain accounted for only 29 percent. Similar high breast lump presentations have been noted in other studies (Memon *et al*, 2017). However studies in India (Krishnaswamy *et al*, 2003) revealed that breast pain was present in more than 50 percent of patients while breast lump was present in about one-tenth of the patients. The incidence of breast pain in our study was similar to findings reported elsewhere (Chalya *et al*, 2016; Navneet *et al*, 2012; Adesunkami and Agbakwuru, 2001; El-Wakeel, 2003). The low incidence of nipple discharge (5%) observed in our study has also been reported by Chalya *et al* (2016) and Leis *et al* (1985).

The left breast was more frequently affected in our study that the right. This is in tandem with studies by Raju *et al* (1985) who reported that the left breast was involved in the majority of cases. However other studies show that the right breast was frequently more affected (Kumar *et al*, 2010; Abhijit *et al*, 2013; Chalya *et al*, 2016). Bilateral breast lesions were seen in 32 (15%) of the patients in this study. The reason for this anatomic site distribution could not be fully established.

Fibroadenoma was the most common benign breast disease in this study. Our finding was consistent with most of the available literature on BBDs (Adesunkami and Agbakwuru, 2001; Mayun *et al*, 2008; Kumar *et al*, 2010). The peak incidence of fibroadenoma in this study ranged from the second to

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the third decade of life, which was consistent with the findings of other studies (Adesunkami and Agbakwuru, 2001; Mayun *et al*, 2008, Kumar *et al*, 2010; Abhijit *et al*, 2013; Chalya *et al*, 2016).
Also in other previous studies in Ilesha and Port Harcourt, Fibro adenoma accounted for 46.2% and 51% of all BBDs respectively. In this study a sharp decline in the occurrence of fibroaderoma was observed after the third decade. However, lower prevalence rates of fibroadenoma were seen is Kano, Pakistan and Jamaka where it accounted for 28.8%, 29.4% and 33% respectively (Ochicha *et al*, 2002; Memon *et al*, 2007; Shirley *et al*, 2008). Older studies had documented a racial predilection of Negroes to fibro adenoma (Oluwole and Freeman, 1979).The high prevalence of fibroadenoma in this and other Africans studies may be modulated by genetic, environmental, socio-cultural and demographic factors (Olu-Eddo and Ugiagbe, 2011; Chalya *et al*, 2016).

Fibrocystic change was the second most common BBD in this study accounting for 21.96% of the total. This finding agrees with most studies in Nigeria (Anyikam *et al*, 2008; Irabor and Okolo, 2008; Echejoh *et al*, 2011; Olu-Eddo and Ugiagbe, 2011; Adeniyi *et al*, 1997). A much higher figure of 42.2% was however reported in Ilesha, Nigeria. Also other studies outside Nigeria reported fibrocystic change as the second most common BBDs, after fibroadenoma (Khanzada *et al*, 2009). In other studies elsewhere in Kano, Pakistan, USA and Italy fibrocystic change emerged the most common BBD with prevalent rates of 34.3%, 66.3%, 47% and 43.2% respectively, (Ochicha *et al*, 2002; Memon *et al*, 2007; Donegan *et al*, 1995; Ciatto *et al*, 1998). Our study results show that majority (65%) of fibrocystic change occurred in the 3rd and 4th decades of life with a mean age of occurrence of 36.4 years. This results therefore supports the belief that fibrocystic change affects the older females more when compared to fibroadenoma. In addition, fibrocystic change has attracted much attention because of high frequency and the ability of some of its sub-types to mimic the clinical and radiographic appearance of carcinoma (Jeje et al, 2010).

Tubular adenoma was the third most common BBD in this study, accounting for 6.0% of the total. Similar to fibroadenoma, they occurred most in the 2nd and 3rd decade of life. The frequency of tubular adenoma in this study is much higher than 1.5% in Benin (Olu-Eddo and Ugiagbe, 2011) and 2.2% in Bayelsa State, Nigeria (Uwaezuoke and Udoye, 2014).

Benign phylloidestumours have been described as rare fibroepithelialtumours that account for about 1% of all breast neoplasms (Parker and Harris 2001). They occur in patients more than 40 years of age with definite rarity in childhood and adolescents in developed countries (Ohene-Yeboah, 2005; Rosai, 2004). Contrary to these reports, benign phylloides accounted for 3.3% of the total BBDs in this study. This is similar to the studies in Enugu where benign phylloides accounted for 3.9% of BBDs (Anyikam *et al*, 2008). All of our patients with benign phylloides were aged below 30 years of age, similar to findings by Nzegwu *et al*, (2008), Irabo and Okolo (2011), Memon *et al*, 2007. Our findings, therefore, run contrary to earlier reports that this tumour occurs in patients about 50 years of age (Ohene – Yeboah, 2005). It would appear therefore that benign phylloidestumour occurs in a relatively younger population in our environment bringing about a changing pattern of benign breast lumps in females.

The frequency of atypical ductal hyperplesia in this study is low at 1.86%. This is similar to studies in Benin, Nigeria, which reported a prevalence of 2.4 % (Olu-Eddo and Ugiagbe, 2011). Previous studies indicate that atypical ductal hyperplesia and atypical lobular hyperplasia are proliferative lesions with atypia and therefore have premalignant potential (Dupont *et al*, 2006; Hartmann et al, 2005; Okoth *et al*, 2013). Varying risk of development of invasive carcinoma in patients with benign proliferative breast lesions with atypia has been reported in different studies (Olu-Eddo and Ugiagbe 2011; Okoth *et al*, 2013, Dupont *et al*, 2006, Hartman, 2006; Iyer, 2000). Routine mammographic screening of high risk individuals aimed at early detection of microscopic lesions may increase the detection of

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atypical hyperplesia. Early institution of appropriate management may decrease the prevalence and mortality associated with invasive cancer.

Stromal tumours in this study accounted for 2.33% of all cases and were predominantly lipoma. Worldwide, stromal tumours are rarely encountered in BBDs (Tavassoli and Devilee, 2003). Studies in Benin reported a frequency of 0.8% (Olu-Eddo and Ugiagbo, 2011) while Uwaezuoke and Udoye (2014) reported a prevalence of 2.6% in Beyelsa State, Nigeria. In Pakistan, stromal tumours accounted for only 0.68% of BBDs.

Breast abscess in our study accounted for 1.40% of all cases. Studies in Ife and Kano, Nigeria, reported higher values at 4.6% and 6.0% respectively. The low frequency of breast abscess in this study may not reflect the true clinical incidence of the disease. Most patients with breast abscesses in developing countries are lactating mothers who may be associated with poor hygiene conditions (Jeje *et al*, 2010). The frequency of breast abscess in this study may be underestimated because most of them are incised and drained on outpatient basis without histopathological referral or diagnosis.

In this study, there were 5 (2.33%) lumps arising from the skin and these were predominantly epidermal cysts 4 (1.86%) and dermatofibroma 1 (0.46%). This is similar to the study in Benin in which the predominant lumps in the skin were epithelial cysts (Olu-Eddo and Ugiabe, 2011). Skin lesions in Ibadan accounted for 0.3% of cases. Excision biopsy and confirmation of the true histologic nature of these lesions is critical in patient management and follow up.

CONCLUSION

Benign breast diseases are more common than malignancies in our environment and are seen more often in young women less than 30 years of age. Fibroadenoma and fibrocystic change are the predominant variety. Greater awareness and availability of adequate screening facilities including mammograph and histopathological services will go a long way towards early detection and treatment of atypical lesions, thereby reducing the chances of progression of these lesions to invasive cancer.

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