

The spectrum of breast diseases in Nigeria north central: a histopathological survey

Abstract

Breast diseases to most patients are sources of uncertainty and apprehension. The diseases of the breast are a heterogeneous group of lesions consisting of both benign and malignant. This study from North Central Nigeria is aimed at examining these diverse lesions. 249 breast biopsies with histopathological diagnosis seen at Benue State University Teaching Hospital, Makurdi, Nigeria between October, 2012 and January 2017 were examined. The cases were retrieved from the data base of the histopathology department with the patients request forms. The patient's bio data was extracted from the request form including age, sex and histopathological diagnosis. The 249 breast biopsies with diagnosis accounted for 8.1% of all tissue specimens diagnosed within the study period. 244 cases were females and 5 cases were males. The breast lesions are seen from second decades of life. Benign Breast Diseases (BBDs) accounted for 54% of cases while malignant breast diseases (MBDs) accounted for the remaining 46%. The commonest BBD is fibroadenoma accounting for 54.1% of all BBDs. The commonest histological type of breast cancer is invasive ductal carcinoma (88.6%). The incidence of breast diseases especially malignancy is on the increase in our environment with most patients presenting at advanced stages of the disease. There is a need to increase advocacy with screening of patients at increased risk in order to get the patient at an early stage that will help improve prognosis.

Keywords: Benign breast Diseases, (BBDs), malignant breast diseases (MBDs).

Introduction:

In most patients male or female, a lump in the breast is a source of apprehension and uncertainty. Diseases of the breast especially in female breasts are very common in clinical practice. With increasing public awareness of breast cancers which is the most common female malignancy worldwide [1], the diseases of the breast especially cancer has become a source of global concern since it causes one of the highest morbidity and mortality in women (2).

In Nigeria with the overall yearly new cases of breast cancer are on the increase because more people report to the hospital due to the increasing awareness due to health education. A report from Ibadan cancer registry showed that breast cancer has overtaken cervical cancer in hospital based incidence (3). A review of solid cancers in Zaria showed that breast cancers were second only

32 to cervical cancer (4). Afolanya et al in Ilorin reported new cases of breast cancer as constituting
33 22.41% of new cancer cases registered in 5 years in Ilorin (5) and Nggada et al in Maiduguri also
34 shows the burden of cancer in the Nigerian population. In their retrospective study of University of
35 Maiduguri Teaching Hospital Cancer Registry data, breast cancer constituted 13.9% of all cancer
36 cases (6).

37 Most lesions of the breast are benign with a wide spectrum depending on the age of presentation.
38 With these in mind we aimed at determining the prevalence and classifying the spectrum of female
39 breast diseases in Nigeria north central.

40 **Materials and methods**

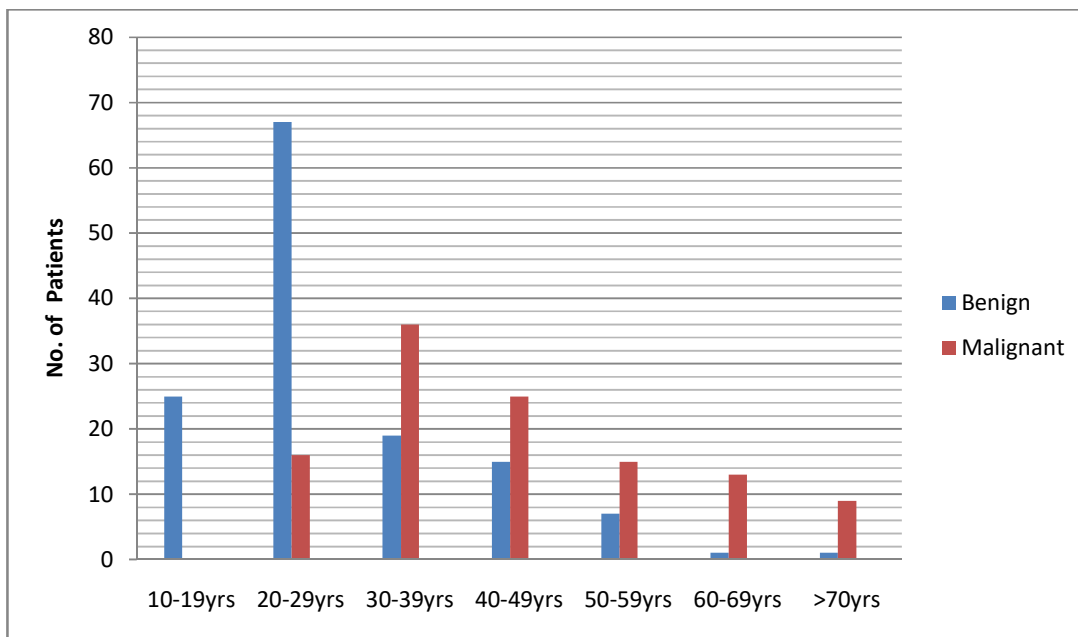
41 This is a retrospective review of all consecutive breast lesions seen at Benue State University
42 Teaching Hospital, Makurdi, Nigeria between October (2012) and January (2017). They were all
43 retrieved from the database of the Histopathology department along with the patients request
44 forms. The demographic information and histopathological diagnosis was extracted from the request
45 form. Each patient had initial biopsy and later mastectomy if result was malignant. The biopsies were
46 either Fine Needle Aspiration Cytology (FNAC), excisional, Tru-cut or Incisional. For each patient both
47 biopsy and mastectomy result were regarded as one case. The data were analyzed using simple chart
48 and table.

49 **Results**

50 A total of 249 histologically diagnosed breast lesions were seen accounting for 8.1% of all tissue
51 specimens diagnosed within the study periods. Of all the 249 cases, 5 were males. The breast lesions
52 are seen from second decade of life (figure 1). Benign breast disease accounted for 135 cases
53 (54.21%) while 114 cases (45.79%) were malignant lesions.

54 The commonest BBDs were fibroadenomas accounting for 54.2% of BBDs. Others are fibrocystic
55 change (26.3%), fibroadenoma with fibrocystic changes; post inflammatory change and intraductal
56 papilloma (3.8% each); tubular adenoma (2.3%); atypical lobular hyperplasia (1.5%); breast abscess
57 (1%); granular cell tumor and gynaecomastia (0.7% each).

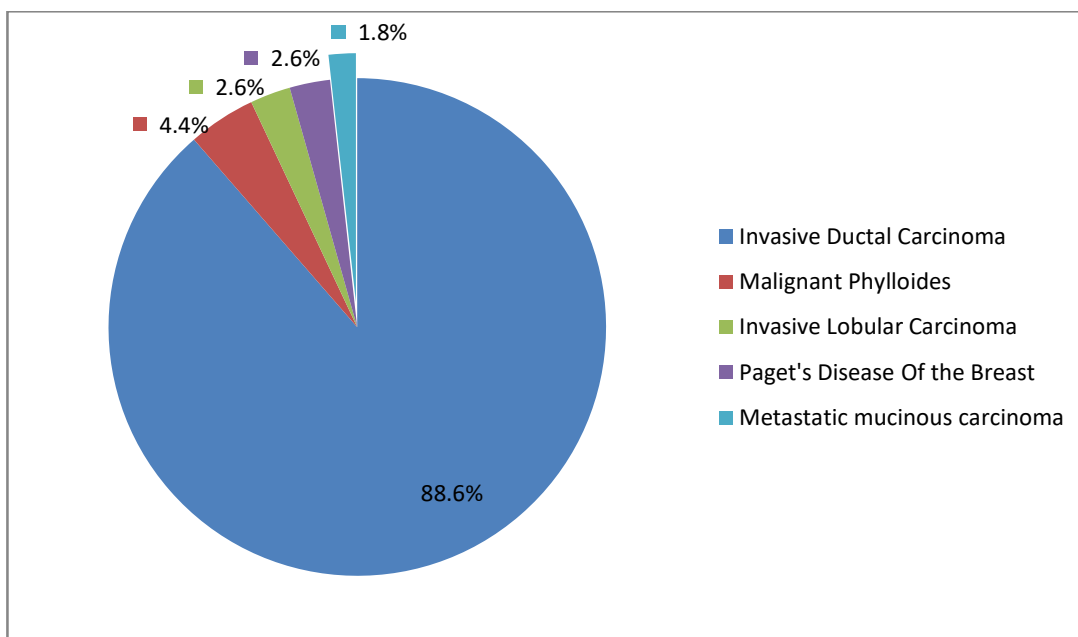
58 The commonest histopathological type of breast cancer is invasive ductal carcinoma which
59 accounted for 88.6% of malignant breast lesions (figure 2); malignant phylloides (4.4%); Invasive
60 Lobular carcinoma (2.6%); Paget disease of the breast (2.6%) and metastatic mucinous carcinoma
61 (1.8%). One of the cases of invasive ductal carcinoma was in a male patient. The peak age of
62 occurrences for MBDs in this study was 30-39 years.



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64 Figure 1: Bar chart showing age distribution of breast lesions.

65 Figure 2: Malignant breast diseases



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67 Pie chart showing histopathological types of MBDs

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70 Discussion

71 Breast lumps pose health concerns and cosmetic hazards especially in females. The breast exhibits a
72 wide spectrum of diseases affecting the patient from teenage throughout adult life. With increasing
73 awareness about breast malignancy in our environment, the incidence and prevalence rate of breast
74 lesions are on the increase.

75 As in most studies within and outside Nigeria, BBDs are more common than MBDs in Makurdi,
76 though the proportion is lower than in most published works in Nigeria. In this study BBDs
77 comprised 54% of all breast lumps. This is lower than 72.4% of 2011 Benin Study (7), 71.2% of 2014
78 Warri Study (8), and 68.3% of 2014 Bayelsa study (9). Our figure compared favorably with findings
79 from Gombe, Nigeria with 59.5% (10). Though BBDs are generally the predominant breast lesions in
80 most centers in Nigeria, there are some variations in their actual incidence from place to place.
81 Factors like health education and information and accessibility to health care facility may play a role
82 in this.

83 In Lagos, breast cancer was responsible for most of deaths and accounted for 28% (11) of deaths in a
84 study done at providing data on the pattern of cancer deaths at Lagos University Teaching Hospital
85 using the Hospital and autopsy death registers. In a population based cancer registries study in
86 Nigeria, breast and cervical cancers were the commonest cancers among women (12).

87 The commonest benign lesions in this study is Fibroadenoma accounting for 54.1% of all BBDs. This
88 is higher than 43.1% for fibroadenoma in Benin, Nigeria study that reviewed 25 years of histological
89 results (7) but lower than the 97% found for work done in Sokoto Nigeria on breast lesions (13).
90 Fibroadenoma often feels like a marble within the breast (14). Fibroadenomas are one of the most
91 common benign tumours of the breast in women under 30 years of age (15). In adolescent
92 population, the overall incidence of fibroadenoma is 2.2% (16) and accounted for 68% of all breast
93 masses and 44-94% of all biopsied breast lesions in North America (17, 18).

94 Fibrocystic changes (FCCs) were the second most common BBDs in our study. This study
95 found fibrocystic change as 26.3% of BBDs. This is consistent with an Eastern and Northern Nigerian
96 studies where it accounted for 22.9% and 25.4% cases of the BBDs respectively (19, 20).
97 Inflammatory lesions (inflammatory changes, breast abscess and fat necrosis) constituted 7.9% of
98 cases seen in this work. This is comparable to 6% seen in Kano (21) and 4.69% in Ife (22). These
99 figures may be underestimated in our environment where most patients that presented with
100 inflammatory lesions are treated with antibiotics without biopsies.

Intraductal papillomas which are benign growth within dilated ducts and consisting of multiple branching fibrovascular cores were seen in 3.8% of our cases. The incidence compares favorably to work done by Ciloti et al where the incidence is approximated to 2-3% (23). They usually present with nipple discharge with an average age of occurrence of 48 years (24). In our study its peak age of occurrence was 40-49 years.

Other less common lesions including tubular adenoma, atypical lobular hyperplasia and granular cell tumour and gynaecomastia together accounted for 4.9% of BBDs in this work. Tubular adenomas are benign breast lesions that tend to occur during the reproductive age, usually solitary and well circumscribed. Atypical lobular hyperplasia has histologic features similar to lobular carcinoma in situ with the only difference being the extent and degree of epithelial proliferation. Granular cell tumor, are uncommon BBDs originating from Schwann cells of the peripheral nervous system. It constituted 0.7% of our BBDs, an incidence that is lower than other work (25). A case of gynecomastia, representing 0.7% of the BBDs was seen in our work. They represent an imbalance between estrogens that stimulates breast tissue and androgens which counteract these effects.

MBDs accounted for 46% of all breast lesions in our study. This is high compared to work done by Nggada HA et al in 2011 in Maiduguri that recorded 39.1% (26). Increasing awareness of breast diseases and advocacy by NGOs in Makurdi can account for this.

The peak age of presentation for MBDs in our work is 30-39 years with 31.6% of the studied breast lumps occurring in this age group. There was no case between 10-19 years. Breast cancer is rare before the age of 20 years and relatively uncommon before the third decades of life (6, 27). Compared to findings in the UK, breast cancer incidence is strongly related to older age with the highest incidence rates overall being in older people. In the UK between 2012 and 2014, on an average each year, almost half (48%) of cases were diagnosed in people aged 65 and over (28, 29, 30, 31). When our data and that of UK are adjusted for age specific incidence only 29.3% of MBDs in our work are between ages 60 and above compared to 48% of UK work. Though reproductive risk factors like short menstrual cycles, ovulatory infertility and early menarche has been cited for higher incidence rates in older people, work still needs to be done in our environment to account for this relatively younger incidence age. This study cases are majorly invasive ductal type. The average age at diagnosis is 61 years for white women, 56 for Hispanics, and 46 for African American women (32).

The incidence of breast cancer is increasing in our environment with most patients presenting at advanced stages of the disease. The incidence of breast cancer is four to seven times higher in the United States and Europe and it is estimated that by 2020, 70% of cases will be in developing

countries, stemming from adoption of Western social lifestyles, including delayed pregnancy, fewer pregnancies and decreased breast feeding (23).

Conclusion:

Breast cancer has come to stay in Nigeria, a developing nation. Since most of our patients tend to present late, there is **a need** for increased advocacy combined with screening of patients at risk. It is only when we are able to get our patient at an early stage that will help improve the prognosis. In addition there should be improved diagnostic facilities in our centers like immunohistochemistry to analyze **the estrogens**, progesterone and Herceptin -2 receptors which will guide our management, which is usually multi disciplinary involving surgeons, oncologists, radiotherapists, plastic surgeons, clinical psychologists, nurses among others.

Disclosure of potential conflicts of interest:

The authors indicate no potential conflicts of interest

Ethical Clearance:

Ethical clearance obtained from the ethical committee of BSUTH.

Reference:

1. Berg JW, Hunter PVO. Breast cancer supplement 1995; 75: 257-269.
2. Mary G and AysegulSahin. The Oncologist 2006,11.345-449
3. Adebamawo C O, Ajayi O O. Breast cancer in Nigeria. West Afr J Med 2000; 10:179-191.
4. Rafindadi M I. A study of 1959 solid cancer seen in pathology department, ABUTH, Zaria over a six year period. Nigeria J. Surg 1998; 5: 45-48.
5. Afolanya EAO, Ibrahim OOK, Ayilara CT, Cancer pattern in Ilorin: An analysis of Ilorin cancer registry statistics. The Tropical Journal of Health Sciences. 2012; 9: 42-47..
6. Nggada HA, Yawe K-D T, Abdulazeez J, Khalil M A. Breast cancer Burden J 2008; 14 (3) 284-286.
7. Olu-Eddo AM, Ugingbe E E. Benign breast lesion in an African population: A 25 year histopathological review of 1864 cases. Niger Med J; 2011; 52:211-6.
8. Furae GD et al. Benin breast lesion in Warri Southern Nigeria. A spectrum of histopathological analysis. Ann Nigerian Med 2014; 8: 28-31.
9. Stanley C V and Etenwa PU. Benin breast lesion in Bayelsa State, Niger Delta, Nigeria. 5 year multicentivehistopathological audit. The Pan African Medical Journal; 2014: 19: 394. Doi 10: 116041/panj.

- 164 10. Mayon A A, Pindiga u H, Babajo U D. Pattern of histopathological diagnosis of breast lesions in
165 Gombe, Nigeria. Niger J Med 2008; 17 (2): 159-62.
- 166 11. Olakaani RA, Adekoyejo AP, OlubANJI AO, Olatunji MA, Cancer mortality pattern in Lagos
167 University Teaching Hospital, Lagos. Nigeria Journal of cancer Epidermiology Vol.1.2015.
168 Article I & 842032. <http://dx.doi.org/10.1155/2015/8420-32>
- 169 12. JedyAgba E, Curado MP, Ogunbiyi O, Oga E, Fabunle T et al. Cancer incidence in Nigeria: a
170 report for population based cancer registries. Cancer epidermal. 2012 Oct. 36(5) e 2718, dsi
171 10.1016/i
- 172 13. Agbo PS, Oboivien M, GanaG (2013) "Breast cancer incidence in Sokoto Nigeria. International
173 Journal of development and sustainability vol2 No. 2 p. 1614-1622.
- 174 14. "Fibroadenoma of the Breast". American Cancer Society. Available online at
175 [https://www.cancer.org/cancer/breast-cancer/noncancers-breast-conditions/fibroadenoma-](https://www.cancer.org/cancer/breast-cancer/noncancers-breast-conditions/fibroadenoma-of-the-breast.html)
176 [of-the-breast.html](https://www.cancer.org/cancer/breast-cancer/noncancers-breast-conditions/fibroadenoma-of-the-breast.html)
- 177 15. Lee M, Soltanin HT. Breast fibroadenoma in adolescents: current perspectives.Dove press
178 (20/5) Vol. 20/5:6 p.159-163.
- 179 16. Santen RJ, Mansel R. Benign breast disorders. North England Journal of med. 2005: 393 (3).
180 275-285.
- 181 17. Cerrato F, Labour BI. Diagnosis and management of fibroadenoma in the adolescent breast.
182 Senin. Plast Surg. J.V15: 27(1); 23-25.
- 183 18. Chang DS, McGrath MH Management of benign tumours of the adolescent breast plastic
184 reconstruction surgery. 2007; 120(1): 13e-19e.
- 185 19. AdannaAnyikan, Martin A.Nzegwu, Ben C. Ozumba, IfeomaOkoye, Daniel B. Olusina. Benign
186 breast lesions in Eastern Nigeria. Saudi Medical Journal 2008; Vol. 29 (2) 241-244.
- 187 20. Ibrahim IM, Iliyasu U, Mohammed AZ. Histopathological review of breast tumours in Kano,
188 Northern Nigeria. Sub-sahara African Journal of Medecine: 2015; 2:47-51.
- 189 21. Ochicha O et al. Benign breast lesion in Kano. The Nigeria Journal of Surgical Research 2002. 4
190 91-2 0 1-5.
- 191 22. Oluwole S F, Adetunji A, Fadiran O A, Odesanni W U. Benign breast disease in Nigerian women
192 East Afr Med J. 1985; 62: 660-665.
- 193 23. Ciloti A, Bagnolesi P, Napsli v, Len R, Bar C. Solitary intraductal papilloma of the breast.
194 Anechographic study of 12 cases. La RadiologiaMedira 1991. 82 (5): 617-20.
- 195 24. Juan Rosai, Breast in Rosai and Ackermann's Surgical pathology. Elseview Mosby 2011 166.
- 196 25. Montagnese M D, Roshong-Derk S, Zaher A et al. Granulosa cell tumour of the breast Am Surg
197 2004; 70: 52-54

- 198 26. Nggada HA et al. The spectrum of female breast diseases among Nigerian population in Sahel
199 climate zone. Journal of Medicine and Medical Sciences 2011: 2 (10) 1157-1161.
- 200 27. Mcpherson K, Steel CM, Dixon JM. ABC of breast disease, Breast cancer-epidemiology risk
201 factors and genetic. BMS; 2000:321: 624-8.
- 202 28. Office for National Statistics. Data available on request at
203 [http://www.ons.gov.uk/peoplepopulationandcommunity/healthandsocialcardcondistions](http://www.ons.gov.uk/peoplepopulationandcommunity/healthandsocialconditionsanddiseases/bulletins/cancerregistrationstatistics)
204 [anddiseases/bulletins/cancerregistrationstatistics](http://www.ons.gov.uk/peoplepopulationandcommunity/healthandsocialconditionsanddiseases/bulletins/cancerregistrationstatistics).
- 205 29. Data provided on request by ISD Scotland and available at [http://www.isdscotland.org/health-](http://www.isdscotland.org/health-topics/cancer/publications)
206 [topics/cancer/publications](http://www.isdscotland.org/health-topics/cancer/publications)
- 207 30. Data provided on request by Welsh Cancer Intelligence and Surveillance Unit, Health
208 Intelligence Division Public Health Wales and available at [http://www.wcisu.wales.phs.uk](http://www.wcisu.wales.nhs.uk).
- 209 31. Data provided on request by the Northern Ireland Cancer Registry and available at
210 <http://www.gubac.uk/research-centers/mscr>.
- 211 32. Kumar V, Abbas A K, Aster J C. The breast In Robbins and Cotran pathologic basis of diseases
212 9th ed. Elsevier Saunders; 2015:1043-1071.

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