

## Pattern of Histopathological Diagnosis of Breast lesions in Gombe, Nigeria

\*Mayun A A FMCPATH, \*Pindiga U H FWACP, \*\* Babayo U D FWACS

\*Department of Histopathology, University of Maiduguri, Teaching Hospital, Maiduguri, Nigeria \*\*Department of Surgery, University of Maiduguri Teaching Hospital, Maiduguri, Nigeria

**Abstract**

**Background:** Diseases of the breast are common and include problems, related to pregnancy and lactation, abscesses and other inflammatory conditions, non-neoplastic proliferative disorders and neoplasms. No known previous histopathological analysis has been done in our setting to classify breast lesions. The purpose of this study is to review all cases of breast diseases seen in the department over a six-year period and to determine the pattern of histological diagnosis of breast diseases in our setting.

**Methods:** This was a hospital based retrospective study where our bench record books were used to identify all the breast lesions after which the Haematoxylin and Eosin stained slides and the request cards were retrieved. The slides were reviewed based on the diagnostic criteria by Juan Rosai.

**Results:** A total of 291 breast lesions were seen in the department. One hundred and seventy three (59.5%) of these were inflammatory, non-neoplastic proliferative and benign neoplastic disorders, while 118 (40.5%) were malignant neoplasms.

Fibroadenoma was the commonest benign breast lesion with 69 (23.7%) cases. Of all the malignancies, invasive ductal carcinoma was the most frequent (68.6%). Breast cancer was found most frequently in the 4<sup>th</sup> decade (32.2%), followed by the 5<sup>th</sup> decade (24.6%) of life.

**Conclusion:** Female breast cancer was quite common in this study and most of our patients presented with advanced disease.

**Key Words:** Breast lesion, Fibroadenoma, invasive ductal carcinoma

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**INTRODUCTION**

Diseases of the female breast are common and include problems related to pregnancy and lactation; abscesses and other inflammatory conditions, non-neoplastic proliferative disorders and neoplasms.<sup>1</sup> The most common breast symptom is pain (mastalgia) and may be cyclical with menses or non-cyclical.<sup>2</sup> The second most common breast symptom is a palpable mass (lump).<sup>2</sup> Benign breast diseases constitute the majority of all

breast lumps<sup>3</sup> and in America, fibroadenoma is more common in the Black population than White.<sup>4</sup>

Multiple epidemiologic studies have classified benign histologic changes in the breast and determined the subsequent risk these changes confer on the later development of invasive cancer.<sup>5,6,7</sup> Non proliferative changes do not increase the risk of cancer.<sup>5</sup> Proliferative disease is associated with a mild increase in risk.<sup>5,7</sup> Proliferative disease with atypia confers a moderate increase in risk while carcinoma in situ is associated with a substantial risk if untreated.<sup>5,7</sup>

The major risk factors for the development of breast cancer are hormonal and genetic (family history). Breast carcinomas can, therefore be divided into sporadic cases, possibly related to hormonal exposure, and hereditary cases, associated with family history or germ-line mutations. Hereditary cancer has received intense scrutiny in order to unravel the specific genetic mutations.<sup>2</sup>

About 25% of familial cancers (or around 3% of all breast cancers) can be attributed to two highly penetrant autosomal dominant genes: BRCA1 and BRCA2. They act as tumour suppressor and DNA repair genes.<sup>8</sup> They are also said to be cell cycle regulators. Loss of these functions due to mutations confers the risk of malignancy.

The major risk factors for sporadic breast cancer are related to hormonal exposure: gender, age at menarche and menopause, reproductive history, breast feeding, and exogenous oestrogens. The majority of these cancers occur in postmenopausal women and over express oestrogen receptors.<sup>9</sup>

Oluwole and co-workers in Ife, Nigeria worked on the histological pattern of breast diseases and found out that fibroadenoma constituted 48%; carcinoma, 21%; breast abscess, 8.6% while fibrocystic disease had 5.5%.<sup>10</sup>

Adeniji and co-workers reviewed benign breast diseases in Ile-Ife and observed that fibroadenoma was the most common lesion followed by fibrocystic disease.<sup>11</sup>

Adesunkanmi and Agbakuru also found fibroadenoma and fibrocystic disease as the first and second most common benign breast diseases in Ilesha, Nigeria.<sup>12</sup>

Histological analysis of breast lumps in Calcutta, India by Chaudhuri and co-workers revealed fibroadenoma as the most common benign lesion while carcinoma was the most frequent malignancy.<sup>13</sup>

A histopathological review of breast diseases in Karachi, Pakistan showed that infiltrating ductal carcinoma had the highest frequency (37%) followed by fibroadenoma (17%).<sup>14</sup>

No known previous histopathological study was done in our setting to classify all breast diseases. The purpose of this study is to determine the histopathological pattern of breast diseases in our setting.

## MATERIALS AND METHODS

This study was a hospital based retrospective histopathological analysis of 291 breast lesions diagnosed in the department of histopathology of the Federal Medical Centre (F.M.C.), Gombe, Nigeria from May 2000, to May 2006 (6 years). The department receives biopsies from Gombe and neighbouring states like Adamawa, Taraba, Yobe and Bauchi.

The tissues were previously fixed in 10% formal saline, processed in an automatic tissue processor, and 5 micron thick paraffin-embedded sections were stained with Haematoxylin and Eosin (H&E).

Our bench books were used to identify all the breast lesions after which some of the H&E stained slides and request cards were retrieved. Paraffin-embedded tissue blocks were also retrieved where necessary to make new slides. The personal data and clinical information of the patients were extracted from the request forms.

The slides were reviewed by two of the authors that are histopathologists and the lesions were diagnosed and classified based on the diagnostic criteria set out by Juan Rosai.<sup>10</sup>

## RESULTS

A total of 291 breast lesions were reviewed out of which 173 (59.5%) were inflammatory, non-neoplastic proliferative, and benign neoplastic conditions, while 118 (40.5%) were malignant neoplasms. Table I. Amongst the benign lesions, fibroadenoma was the most frequent, with 69 (23.7%) cases, followed by fibrocystic change with 48 (16.5%) cases. Other benign lesions included; sclerosing adenosis, 18 (6.2%) cases; Lactating adenoma, 5 (1.7%) cases; benign phyllodes tumour, 2 (0.7%) cases; while ductal papilloma and ductal

hyperplasia had 1 (0.3%) case each. Fourteen (4.8%) cases of non-specific chronic inflammation and two (0.7%) cases of tuberculosis were recorded. Two (0.7%) cases each of galactocoele and fat necrosis, and one (0.3%) case of duct ectasia were also recorded. Two (0.7%) cases of benign sweat gland tumours of the breast were seen.

Invasive ductal carcinoma had the highest occurrence (68.6%) amongst the malignant tumours. This was followed by invasive lobular carcinoma (9.3%), medullary carcinoma (5.9%), and invasive papillary carcinoma (3.4%). There were three (2.5%) cases each of sarcomatoid carcinoma, in situ papillary carcinoma, and stromal sarcoma. Lobular carcinoma in situ and lymphoma constituted 2(1.7%) cases each; while mucinous carcinoma and malignant phyllodes tumour had 1 (0.8%) case each, table II. Majority of the cases i.e. 40 (33.8%) were in the fourth decade of life, followed by fifth decade which had 31 (26.3%) cases (table III). The third and sixth decades had 20 (16.9%) and 21 (17.8%) cases respectively.

Two (1.7%) cases occurred in the second decade while four (3.4%) cases occurred in the seventh decade.

Forty eight (40.7%) cases of breast cancer had axillary lymph node metastasis and most of them had breast masses over 2cm in diameter. A case of invasive ductal carcinoma associated with Paget's disease of the nipple was also recorded.

Table I: **Histological types of breast diseases seen in F.M.C. Gombe (May 2000-May 2006)**

Histological Diagnosis	Number of Cases	Percentage
Carcinoma	118	40.5
Fibroadenoma	69	23.7
Fibrocystic change	48	16.5
Sclerosing adenosis	18	6.2
Chronic inflammation	14	4.8
Lactating adenoma	5	1.7
Phyllodes tumour	3	1.0
Stromal sarcoma	3	1.0
Tuberculosis	2	0.7
Lymphoma	2	0.7
Galactocoele	2	0.7
Fat necrosis	2	0.7
Sweat gland tumour	2	0.7
Duct ectasia	1	0.3
Ductal papilloma	1	0.3
Ductal hyperplasia	1	0.3
<b>Total</b>	<b>291</b>	<b>100</b>

**Table II: Histological types of malignant breast tumours**

Histological Type	Percentage	Number of cases
Invasive ductal carcinoma(NOS)	81	68.6
Invasive lobular carcinoma	11	9.3
Medullary carcinoma	7	5.9
Invasive papillary carcinoma	4	3.4
Sarcomatoid carcinoma	3	2.5
Insitu papillary carcinoma	3	2.5
Stromal sarcoma	3	2.5
Lobular carcinoma in situ	2	1.7
Lymphoma	2	1.7
Mucinous carcinoma	1	0.8
Malignant phyllodes tumour	1	0.8
Total	118	100

**Table III: Age distribution of 118 cases of breast cancer**

Age range(yrs)	No of cases	Percentage
1 - 10	0	0
11 - 20	2	1.7
21 - 30	20	16.9
31 - 40	40	33.9
41 - 50	31	26.3
51 - 60	21	17.8
61 - 70	4	3.4
Total	118	100

**DISCUSSION**

In this study, a total of 291 breast lesions were histologically reviewed and analyzed. Of these, 173 (59.5%) were benign while 118 (40.5%) were malignant. This is close to previous reports by Dogo and co-workers in Maiduguri,<sup>16</sup> and Mandong and co-workers in Jos.<sup>3</sup> Fibroadenoma was the most common benign lesion constituting 23.7% of all breast lesions, followed by fibrocystic disease which accounted for 16.5% of all breast diseases reviewed. This is similar to the findings in Jos,<sup>3</sup> Ile-Ife,<sup>11</sup> Ilesha,<sup>12</sup> and Calcutta, India<sup>13</sup> where fibroadenoma was the commonest benign breast lesion. It however contrasts with the Maiduguri study where fibrocystic disease was the most common benign lesion.<sup>16</sup> Our study showed that carcinoma was higher than both fibroadenoma and fibrocystic disease. This is similar to previous reports from Maiduguri<sup>16</sup> and Karachi, Pakistan.<sup>14</sup> It however disagrees with the finding by other workers who reported a higher incidence of fibrocystic disease and fibroadenoma than that of carcinoma.<sup>10,17</sup> Invasive ductal carcinoma was the most common breast cancer recorded within the review period accounting for 68.6% of all breast cancers. This is in agreement with other previous studies done elsewhere.<sup>3,10,16,18</sup> Invasive

lobular carcinoma was the second most common breast cancer recorded. This is similar to previous studies<sup>10,16</sup> but contrasts with other reports.<sup>3,14</sup>

Breast cancers occurred with the highest frequency within the fourth decade. This is in contrast to the findings in Maiduguri,<sup>16</sup> but similar to other reports elsewhere.<sup>18,19</sup>

Two (1.7%) of our breast cancer patients were below the age of 20 years. Dogo and co-workers also had 2 (1.3%) of their patients below the age 20 years. This is quite a disturbing trend and the reason is however still unclear.

Over forty per cent of our cases of breast cancer had axillary lymph node metastasis. Axillary lymph node status is the most important prognostic factor for invasive cancer in the absence of distant metastasis.<sup>2</sup> Clinical assessment of nodal involvement requires biopsy for accuracy.<sup>10</sup> It is generally held that the presence of regional axillary lymph node metastases indicates the distant metastatic potential of an individual breast cancer. This is true in a quantitatively predictive manner, i.e. the more involvement there is in axillary lymph nodes, the more likely that the carcinoma has distantly metastasized and will eventually lead to the death of the patient.<sup>19</sup>

Most of our patients with axillary lymph node metastases also had breast masses that were over 2cm in diameter. The size of carcinoma is said to be the second most important prognostic factor and is said to be independent of lymph node status.<sup>19</sup> Women with node negative carcinomas under 1cm in diameter have a prognosis approaching that of women without breast cancer.<sup>20,21</sup> Most patients with cancers over 2cm in diameter usually have lymph node metastasis and eventually succumb to the disease.<sup>21,22</sup>

Oestrogen and progesterone receptor determination could not be done in our center and this is very important in the management of patients with breast cancer. As with other steroid hormones, oestrogen and progesterone enter the cell and are bound to the binding proteins there, inducing changes in the oestrogen receptors (ER) which enhances its ability to induce DNA transcription in the nucleus. The measurement of these proteins can be accomplished by quantitative binding techniques using labeled oestradiol (E<sub>2</sub>) and measuring the amount of E<sub>2</sub> bound per mg of protein in tissues. Immunohistochemical determination can also be done although it gives a qualitative answer. Here a labeled antibody to ER is used to identify localization of the antibody to the nuclei of the neoplasm.<sup>22</sup> Oestrogen receptors and progesterone receptors (PR) are

indicators of breast cancer prognosis and predictors of response to hormonal manipulation therapy.<sup>22,23</sup>

The absence of facilities for immunohistochemistry in our centre has made it impossible for us to identify ER and PR positive carcinomas.

This study shows that female breast cancer is quite common in our environment and most of our patients come with advanced disease. Public enlightenment about self breast examination and mammographic screening are of paramount importance.

## References

1. Attah Ed B'. Human Pathology, a complete text for Africa. Ibadan University press 2000:281 282
2. Kumar V, Abbas AK, Fausto N. Robbins and Cotran Pathologic basis of Disease, 7<sup>th</sup> Ed, Philadelphia, Saunders 2004: 1122 1123
3. Mandong BM, Obekpa PO, Orkar KS. Histopathological pattern of breast Diseases in Jos, Nigeria. Postgrad Med J. 1998;5(4): 167 170
4. Oluwole SF. Analysis of benign breast lesions in blacks. Am J surg. 1979; 137: 786 789
5. Fitzgibbons PL, Henson DE, Hutter RVP, Benign breast changes and the Risk of subsequent breast cancer: an update of 1985 consensus statement. Arch Pathol Lab Med. 1998;122:1053 1056.
6. Jacobs TN, Byrne c, colditz G, et al. Radial scars and breast cancer risk: a Case control study. N Engl J Med. 1999; 340:330 432.
7. Page DL, Schuyler PA, Dupont WD, Jensen RA, Plummer WD Jr, Simpson JF. Atypical lobular hyperplasia as a unilateral predictor of breast cancer risk: a retrospective cohort study. Lancet. 2003; 361: 125 127.
8. Venkitaraman AR. Cancer susceptibility and the function BRCA1 and BRCA2. Cell. 2002; 108: 171 173.
9. Miller K. Estrogen and DNA damage: the silent source of breast cancer. J Natl Cancer Institute. 2003; 95: 100 104.
10. Oluwole SF, Fadiran OA, Odesanmi WO. Diseases of the breast in Nigeria. Br J Surg. 1987; 1987; 74(7): 582 585.
11. Adeniji KA, Adelosola KA, Odesanmi WO. Benign disease of the breast in Ile-Ife: a 10-year experience and literature review. Cent Afr. J Med. 1997; 43(5): 140 141.
12. Adesunkanmi AR, Agbkuru EA. Benign breast disease at Wesley Guild Hospital, Ilesha, Nigeria. West Afr J Med. 2001; 20(2): 146 151.
13. Chaudhuri M, Sen S, Sengupta J. Breast lumps: a study of 10 years. J Indian Med Assoc. 1995; 93(12) 455 457.
14. Siddiqui MS, Kayuri N, Gill MS et al. Breast disease: a histopathological analysis of 3279 cases at a tertiary care centre in Pakistan. J Pakistan Med Assoc. 2003; 53(3): 94 97.
15. Rosai J. Ackerman's Surgical Pathology, 7<sup>th</sup> Edition, Washington, Mosby company 1989: 1193 1255.
16. Dogo D, Pindiga HU, Yawe T. Pattern of breast lesions in North Eastern Nigeria. Trop J Med Res. 2000; 4(1): 14 17.
17. Funderburk WW, Rosero E, Leffall LD. Breast Lesions in blacks. Surgery Gynaecology and Obstetrics. 1972; 58. 135 137.
18. Out AA, Ekanem I, Khalil PMI, Attah Ed B', Ekpo MD: Characterization of breast cancer subgroups in an African population: British Journal of Surgery 1989; 77: 1182 1184.
19. American Joint Committee on Cancer. Cancer staging manual, 6<sup>th</sup> Ed., New York, Spriger 2002.
20. Berg J, Robbins GF. Factors influencing short and long term survival of breast cancer patients. Surgery, Gynaecology and Obstetrics. 1966; 122: 1311 1316
21. Mirza AN, Mirza NQ, Vlastos G, Singletary SE. Prognostic factors in node-negative breast cancer: a review of studies with sample size more than 200 and follow-up more than 5 years. Ann Surg. 2001; 10: 235 238.
22. Simpson JE, Page DL. Prognostic value of histopathology in breast. Semin Oncol. 1992; 19: 254-256
23. Miller WR, Anderson TT. Oestrogen and Progesterone and the breast. In: the menopause. London, Blackwell publishers; 1998: 234-246