

BREAST DISEASES: COMPARING THE INITIAL CLINICAL DIAGNOSIS WITH THE DEFINITIVE HISTOLOGICAL REPORT.

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ABSTRACT

Background: Breast lump is a common clinical presentation of breast lesions. The physical characteristics associated with breast lumps are very vital in making a clinical diagnosis of breast disease.

Objective: To evaluate the accuracy of the initial clinical diagnosis (as obtained from the physical characteristics of the breast lump) with the definitive histopathological report of the various breast lesions.

Methodology: A one-year prospective study of all consecutive patients with palpable breast lumps presenting at the general surgery out-patient clinic of a tertiary health institution. Patients were evaluated clinically and then followed up until the histology reports were obtained following open surgical biopsy. The data were entered into a database and statistical analyses carried out using the Statistical Package for Social Sciences (SPSS) version 17.0.

Results: Of the 110 patients evaluated, 47.3% had malignant breast lesions while 52.7% others had benign lumps. Fifty-four individuals had masses greater than 5cm in their widest diameter, 13 of which were benign and 41 malignant. Thirty-five subjects had axillary lymphadenopathy, 30 were malignant while five were histopathologically benign. Forty-seven tumours were hard: 3(6.4%) benign and 44(93.6%) malignant. Of the 37 patients with attached growths, 3(8.1%) had benign disease while 34(91.9%) were malignant. Out of 52 cases with malignancy, 23(44.2%) had no cutaneous involvement while 29(55.8%) manifested at least one skin change. Only 4(6.9%) people out of 58 with benign diagnosis had skin changes.

Conclusion: The physical characteristics of breast masses still accurately reflect the histopathological diagnosis.

Key words: Breast masses, Physical features, Histological diagnosis.

INTRODUCTION

Breast disease ranges from benign to malignant. Benign breast tumours are more common than the malignant ones.¹ Breast cancer however, is the most common malignancy affecting women in many parts of the world with an estimated 2.1 million new cancer cases diagnosed in 2018 worldwide.² This disease is the leading cause of cancer death followed by colorectal and lung cancers for incidence and vice versa for mortality.²

Breast cancer in Nigeria and other developing countries is characterized by late presentation and poor outcome due to ignorance, superstition, self-denial, the fear of mastectomy and unavailability of treatment facilities.³⁻⁵ Breast cancer presents a decade earlier in Nigerian women and indeed other black women, with worse biological behavior and poor prognosis.⁶⁻¹¹ Black women encounter a lower incidence of breast cancers than their Caucasian counterpart but the hospital incidence is rising.^{7,12}

The diagnosis of breast diseases can be achieved, like for other clinical conditions, using clinical history, physical

examination and investigations which include cytological or histological studies for confirmation. Breast lump, which is one of the commonest presentations of breast lesions, is commonly detected by means of self-breast examination, clinical breast examination and radiological investigations using mammography/ultrasonography. Physical characteristics associated with breast tumours are very vital in making a clinical diagnosis of either a benign or malignant breast lesion. Some of these features include the size of the growth, consistency, attachment, pain, nipple retraction and discharge. Others are skin changes and regional lymph nodal status. The combined evaluation of these physical characteristics of a breast lump is the main ingredient in making specific clinical diagnosis of a breast disease.

This study aims to compare the accuracy of the initial clinical diagnosis with the definitive histopathological report of the various breast conditions.

MATERIALS AND METHODS

This is a one-year prospective study of all the consecutive patients with palpable breast lesions presenting at the

general surgery out-patient clinic of a tertiary health facility. Approval was sought from the Ethical committee of the University Teaching Hospital before the commencement of the study. The survey was carried out at no extra cost to the subjects. The procedure was duly explained to the patients, including the benefits and possible complications. Thereafter, their informed written consent was obtained. Those who withheld consent were excluded from the study but their overall treatment was not affected. Patients who were recruited into the study had clinical evaluation. They were further followed up until their histology reports were retrieved for specimens obtained from an open surgical biopsy performed by the author.

The data were entered into a database and statistical analyses carried out using the Statistical Package for Social Sciences (SPSS) version 17.0. (IBM Corporation and others 1989, 2012). The results were presented in tables and where appropriate in a bar chart. Where appropriate, chi-square test was used to test for level of significance of variables. Confidence interval was calculated at 95% level and significance was at 5% probability level ($P < 0.05$). Student t-test was used to compare the age means.

RESULTS

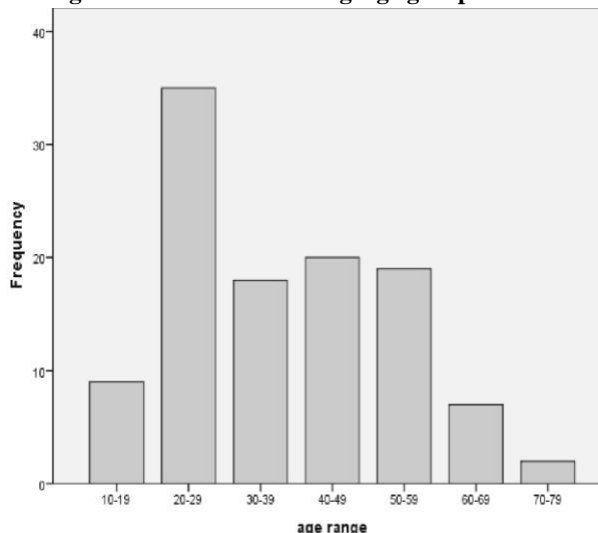
A total of 180 people were enrolled into the study. Sixty-seven individuals defaulted from open surgical biopsy due to various reasons. Only the 113 cases who had open biopsy with accompanying histology reports were further evaluated. Of these 113 patients with histology reports, 2 showed normal breast tissues and another 1 had inadequate specimen. Those 3 subjects were consequently excluded from the study leaving only 110 patients who were used for the comparative aspects of this work and to draw conclusions.

Histology revealed that malignancies constituted 47.3% of cases while benign lesions were seen in 52.7% of the 110 patients. Of all the malignancies, invasive ductal carcinoma was the most frequent diagnosis, representing 41.8% of the entire series and 88.5% of all cancers in the study. Also, of the 58 people with benign breast disease, fibroadenoma was the most frequent, constituting 29.1% of the entire study cohort and 55.2% of all the benign conditions. Fibrocystic disease was the next most frequent benign pathology in this report. It represented 14.5% of the overall lesions and 27.6% of the benign lesions. Inflammatory disease of the breast made up 5.5% of this survey and 10.3% of all the benign pathologies (Table 1).

Histology Report	Frequency	Percent
Fibroadenoma	32	29.1
Invasive ductal ca	46	41.8
Mastitis	6	5.5
Fibrocystic change	16	14.6
Adenosis	2	1.8
Paget's disease	1	0.9
Adenoma	1	0.9
Metaplastic ca	5	4.5
Total	110	100.0

Table 1: Frequency distribution of histology reports.

Figure 1: Bar chart showing Age group distribution



Age: The age of the patients studied ranged from 16 -73 years (mean 36.9 years \pm SD 14.5). The age group distribution of the cases is shown in figure 1. The mean age for the benign group was 28.71 years \pm 11.21 while for the malignancies it was 46.08 years \pm 12.20 (Table 2). The t-value is -7.78 and the p-value 0.00.

Sex: A total of 52 patients had malignant disease, 51 of whom were females with 1 male. The remaining 58 subjects had benign lesions all of whom were females.

Side of lump: Forty-nine (44.5%) of the patients had lump on the right breast; 22 of them benign while 27 were malignant. Fifty-six (50.9%) of the cases had growths on the left side; 32 of them benign and 24 malignant. Five (4.5%) of the subjects had lesions bilaterally; 4 of them were benign while 1 had a malignant disease (Table 3). Chi-square (X^2) is 3.135, $p = 0.21$.

Table 2: Group Statistics (Age means)

Histology	N	Means	Std. Deviation	Std. Error Mean
Age Benign	58	28.71	11.208	1.472
Patient Malignant	52	46.08	12.202	1.692

Quadrants of the breast: Forty-one (37.3%) of the patients had lumps located in the upper-outer quadrant (UOQ), 23 of them benign and 18 malignant. Nineteen (17.3%) individuals had growths in the upper-inner quadrant (UIQ), 14 benign and 5 malignant. Nine (8.2%) of the patients had tumours in the lower-outer quadrant (LOQ), 8 of which were benign and 1 malignant. Another 9 (8.2%) cases had lumps in the lower-inner quadrant (LIQ), 6 benign and 3 malignant. Sixteen (14.5%) subjects had growths occupying the entire breast, 1 benign and 15 malignant. Another 16 (14.5%) patients had lesions involving multiple quadrants, 6 benign and 10 malignant. Of the 52 individuals with malignant pathologies on histology, 18 (34.6%) were located in the UOQ, 5 (9.6%) in the UIQ, 1 (1.9%) was situated in the LOQ, 3 (5.8%) were in the LIQ, 15 (28.8%) involved the entire breast while 10 (19.2%) were present at multiple sites (Table 3). Chi-square (X^2) is 24.312, $p = 0.00$.

Table 3: Clinical findings and Histology cross-tabulation

Physical features	Histology type		Total	P-value
	Benign	Malignant		
Side of lump				
Right	22	27	49	0.21
Left	32	24	56	
Bilateral	4	1	5	
Total	58	52	110	
Quadrant of the breast				
Upper outer quadrant	23	18	41	0.00
Lower outer quadrant	14	4	19	
Lower inner quadrant	8	1	9	
Whole breast	6	3	9	
Multiple quadrants	1	15	16	
Total	6	10	16	
Total	58	52	110	
Size range				
<2cm	6	0	6	0.00
2-5cm	39	11	50	
>5cm	13	41	54	
Total	58	52	110	
Consistency				
Firm	54	6	60	0.00
Hard	3	44	47	
Cystic	0	1	1	
Soft	1	1	2	
Total	58	52	110	
Tenderness				
Yes	6	11	17	0.12
No	52	41	93	
Total	58	52	110	
Multiplicity				
Solitary	49	47	96	0.35
Multiple	9	5	14	
Total	58	52	110	
Attachment				
Free	55	18	73	0.00
Attached	3	34	37	
Lymphadenopathy				
Yes	5	30	35	0.00
No	53	22	75	
Skin Changes				
Peaud' orange	2	18	20	0.00
Ulceration	2	11	13	
Nipple retraction	0	12	12	
Metastatic skin nodule	0	1	1	
Skin dimpling	1	6	7	
No skin change	54	23	77	

Size of lump: Six patients had lumps which were less than 2cm in their widest diameter. All were benign. Fifty cases had tumours between 2 and 5cm, 39 of them were histologically benign while 11 were malignant. Fifty-four people had palpable lesions greater than 5cm in their widest diameter, 13 benign and 41 malignant. Of the 52 cases with malignancies, 41 had lumps greater than 5cm in diameter therefore indicating advanced stages of the disease (Table 3). Chi-square (X^2) is 35.978, $p = 0.00$.

Nodal status: Thirty-five patients had palpable ipsilateral axillary lymphadenopathy, 30 were histologically confirmed malignancies while 5 had benign disease. Chi-square (X^2) is 30.434, $p = 0.00$. Of the 5 subjects with benign tumours, 3 had mastitis, 1 was fibrocystic disease and the other a fibroadenoma. Seventy-five individuals had no palpable axillary node (Table 3).

Tenderness: Among the 110 study population, 17(15.5%) had tender breast mass while 93(84.5%) were non-tender. Of the 17 tender lesions, 6(35.3%) were benign while 11(64.7%) were malignant. Chi-square (X^2) is 2.452, $p = 0.12$. Among the 52 malignant lumps, 11(21.2%) were tender but 41(78.8%) were non-tender (Table 3). All the 6 benign tender tumours were confirmed to be mastitis on histology.

Multiplicity of lumps: Of the 110 cases, 96(87.3%) had solitary breast lump while 14(12.7%) had multiple growths. Among the 14 patients with multiple breast pathologies, 9(64.3%) had benign breast disease while 5(35.7%) were malignant. Chi-square (X^2) is 0.860, $p = 0.35$. Of the 52 people with malignancies, 47(90.4%) had solitary breast lesions while 5(9.6%) had multiple breast lumps (Table 3).

Attachment: Among the 110 study cohort, 37(33.6%) had breast masses with some attachments while 73(66.4%) had mobile lumps. Of the 37 patients with attached growths, 3(8.1%) had benign diagnosis while 34(91.9%) were malignant. Chi-square (X^2) is 44.532, $p = 0.00$. Of 52 cases with malignancies, 34(65.4%) had tumours with some fixity while 18(34.6%) were mobile (Table 3).

Table 4: Skin changes and Histology type Cross-tabulation

Physical features	Histology type		Total
	Benign	Malignant	
Nil	54	23	77
1	1	4	5
1,2	0	4	4
1,2,3	0	2	2
1,3	0	6	6
1,3,4	0	1	1
1,5	1	1	2
2	2	4	6
2,3	0	1	1
3	0	1	1
3,5	0	1	1
5	0	4	4
Total	58	110	168

Legend: 1 = Peau d'orange; 2 = Ulceration; 3 = Nipple Retraction; 4 = Metastatic Skin nodule; 5 = Skin dimple

Skin changes: A lot of the patients had multiple skin changes (Table 4).

A total of 20 cases had peau d'orange. Two(10%) however were benign but 18(90%) were malignant. Thirteen people had skin ulceration 2(15.4%) of whom had benign conditions while 11(84.6%) were malignant. Twelve subjects had nipple retraction and all were malignant. Seven patients had skin dimpling, 1(14.3%) benign while 6(85.7%) were malignant. Chi-square (X^2) is 34.723, $p = 0.00$. Among the 52 patients with malignancies, 23(44.2%) had no skin change while 29(55.8%) had at least one skin change. Only 4(6.9%) of the 58 cases with benign lumps had skin changes (Table 3).

DISCUSSION

Biopsy and histopathological studies are still the 'gold standard' for making the definitive diagnosis of breast lesions. In this study, a total of 180 individuals were enrolled but only 113 patients had open biopsy with accompanying histology reports thereby giving a biopsy rate of about 62.8% and a default rate of about 37.2%. The biopsy rate was low. The reason for this could be that some of the patients with benign cysts were cured after undergoing a fine needle aspiration cytology (FNAC) and so did not require further treatment. Similarly, those with inflammatory lesions and breast abscesses fared well after receiving an incision and drainage followed by broad spectrum antibiotic cover. However, some other patients may have defaulted for unknown reasons.

Histology showed that malignancies constituted 47.3% while benign diseases were 52.7% of the 110 patients who were analyzed in this report. This ratio of benign to malignant diseases is quite low compared to what was obtained in other studies.^{9,13-15} Overall, however, there was a predominance of benign diseases over the malignant ones which is in consonance with existing knowledge. Fibroadenoma was the most common benign breast lesion in this survey followed by fibrocystic disease. The former constituted 29.1% of the entire series and 55.2% of all the benign conditions whereas fibrocystic disease represented 14.6% of the entire study cohort and 27.6% of all the benign pathologies. This finding is in agreement with what was found in other studies elsewhere that showed black women having a predominance of fibroadenoma over fibrocystic disease in contrast to Caucasians who had more fibrocystic disease of the breast than fibroadenomas.^{13,14-18} Of the malignant diseases, invasive ductal carcinoma was the most predominant^{17,18} diagnosis. It constituted 41.8% in this report and 88.5% of all the malignancies. This also agrees with the observation in other surveys which showed invasive ductal carcinoma as the most common breast malignancy.^{4,13,14}

The mean age for the benign disease in our report was 28.71 years +/-11.21 while that for the malignancies was 46.08 years +/-12.20 (Table 2). The t-value was -7.78 and the p-value was 0.00. This showed there was a statistically significant difference in the mean ages of the two groups. The 20 years difference in the peak age between the benign and malignant breast conditions is similar to what was reported by previous workers.¹⁴

Among the 110 patients under review, 49 cases had lump on the right breast while 56 others had growth on the left side. Five patients had lesions on both breasts. However, despite the fact there were generally more lumps located on the left breast, there were more malignant diseases on the right side. The number of malignant pathologies on the right was 27 whereas 24 were on the left breast but this difference was not statistically significant ($p = 0.21$). This finding confirmed that both breasts were equally affected and is consistent with the observation by another author³.

In our survey, of the 52 people with malignant diagnosis on histology, 18 (34.6%) were located at the upper outer quadrant (UOQ), five (9.6%) were in the upper inner quadrant (UIQ), 15 (28.8%) involved the entire breast whereas 10 (19.2%) affected multiple sites (Table 3). This identified the upper outer quadrant to be the site most commonly involved in breast cancer and is consistent with findings from another centre.¹¹ Among 16 patients with lumps involving the entire breast, 15 had malignant disease while only 1 person had a benign pathology. This suggests that when a breast lump occupies the entire breast, the diagnosis would most likely be a malignant lesion. This is similar to the observation made from work done at another University Teaching Hospital.¹⁹

In the current report, of the 52 cases with histopathologically confirmed malignant disease, 41 had growths greater than 5cm in their widest diameter indicating presentation at advanced stages of the disease. The explanation for this late presentation could be the asymptomatic nature of some breast cancers. Other

reasons may be ignorance or lack of awareness of breast cancer screening practices through the use of breast self-examination, clinical breast examination and radiological imaging with mammography/ultrasonography.²⁰⁻²⁵ These breast cancer screening methods have been shown to increase the likelihood of diagnosing breast cancers at an earlier stage.

Our series revealed that of 52 patients with malignant disease, 30 had positive ipsilateral axillary lymphadenopathy. This is not surprising owing to the late presentation of cases already highlighted in this report. Of note are the 5 women with benign breast lesions who had palpable axillary lymphadenopathies. Three of them had inflammatory disease of the breast, 1 was a fibroadenoma and the remaining 1 presented with fibrocystic disease of the breast. The presence of axillary lymphadenopathy in benign breast lesions could give a false presumption of breast cancer when dependent on clinical evaluation alone. This further emphasizes the need for using the 'triple assessment' in making diagnosis of breast lesions.²⁶⁻³⁰

The consistency of breast masses is very important in deciding clinically whether the lesion in the breast is benign or malignant. Benign breast lumps are generally soft to firm in consistency while the malignant tumours are generally hard.³¹ From the current survey, 60 growths were firm, 54(90%) of them benign and 6(10%) malignant. Another 47 breast lumps were hard, 3(6.4%) benign and 44(93.6%) malignant. This finding agrees with popular knowledge.³¹⁻³³

Tenderness in a breast mass would most often convey the impression of an inflammatory lesion.³¹ Although most malignant breast masses are not associated with tenderness, tenderness alone does not rule out malignancy and should not stop further evaluation for malignancy.³³ Pain and tenderness are known features of inflammatory breast cancer.³¹ In our series, only 17 lumps were tender, 6(35.3%) were benign and 11(64.7%) malignant. Of the 52 malignant lesions, 11(21.2%) were tender and 41(78.8%) were non-tender (Table 3). These findings are not statistically significant ($p = 0.12$). This showed that both benign and malignant breast lesions could be associated with tenderness.

There was no relationship between the multiplicity of breast masses with either benign or malignant diagnosis. Of the 14 patients with multiple breast lumps, 9(64.3%) had benign breast disease while 5(35.7%) were malignant ($p = 0.35$). This revealed that multiple breast tumours alone have no bearing to the final histological diagnosis.

Breast growths may be free or fixed to the surrounding structures. Attachment of a breast lump could be to the overlying skin or underlying chest wall structures. Attachment or fixity of breast lesions is one of the features which suggest malignancy.³⁰⁻³³ Among our patient population, 37 cases had attached breast masses, 3(8.1%) of whom had benign pathologies while 34(91.9%) were malignant ($p = 0.00$). Of the 52 patients with malignant growths, 34(65.4%) had lumps with attachment while 18(34.6%) were mobile (Table 3). This finding corresponds with the general belief that attachment and fixity of breast masses are more in keeping with breast malignancies.³⁰⁻³³

Skin changes may be associated with breast cancers especially when they are locally advanced.³⁰⁻³³

Skin changes such as peau d'orange, skin dimpling, ulceration, or nipple retraction are more in keeping with malignant breast pathologies than otherwise.³⁰⁻³³ Twenty of our patients had peau d'orange, 2(10%) were benign lesions while 18(90%) were malignant. Thirteen people presented with skin ulcerations, 2(15.4%) had benign pathologies while 11(84.6) were malignant. Twelve cases had nipple retraction and all were malignant. Seven subjects had skin dimpling, 1(14.3%) was benign and 6(85.7%) malignant. Of the 52 individuals with malignancies, 23(44.2%) had no skin changes while 29(55.8%) had at least one skin change ($p = 0.00$). These findings correlate well with the general view that the presence of skin changes usually suggest histologically malignant breast tumours.³⁰⁻³³

CONCLUSION

This study showed that the physical features of breast lumps bear some known relationship with the definitive histopathological diagnosis. This further reinforces the importance of a thorough clinical evaluation of breast lesions as a vital step in the diagnosis of breast diseases. It also serves as a template for the guided recommendation of further investigations.

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