



Histopathologic Patterns of Breast Lesions in Hawassa University Comprehensive Specialized Hospital, Sidama Region, Ethiopia: A Six-Year Retrospective Study (September 2015 G.C to August 2020 G.C.)

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Abstract

Background: The breast is a site of a broad array of pathological alterations. Both benign and malignant lesions can occur in the breast. Various studies have reported benign breast disease to be more common than malignant breast lesions.

Objective: The main objective of this study is to describe histopathologic patterns of breast lesions, HUCSH from September 2015 to August 2020 G.C.

Method: Retrospective cross-sectional study was conducted from September 2015 G.C to August 2020 G.C. Data were extracted from reports of histologically diagnosed breast mass submitted to HUCSH pathology department in the study period. The specimens were collected from mastectomy, lumpectomy (excisional biopsy), and incisional biopsy. All data were entered and analyzed through SPSS 20.0 and Microsoft Excel 2016. Then, the findings were presented using text, tables, and charts.

Result: A total of 235 breast lesions were analyzed in this study. 120 cases (51%) of them were benign breast lesions with mean age of 27.9 years. Fibroadenoma was the commonest benign lesion to be sampled. There were 115 (49%) malignant breast cases with mean age of 42.7 years. Invasive ductal carcinoma NOS was the commonest histologic type among malignant categories. 38(49.4%) of Invasive ductal carcinoma NOS were Grade II at the time of presentation. Majority (47.8%) of breast carcinoma cases presented at advanced stage. Lymph node metastasis was found in 50.4% of cases.

Conclusion: Our study shows majority of breast diseases are benign in early reproductive years. Breast cancer occurred at relatively younger age group. Advanced stage at presentation is major concern. Awareness must be created among women in the study area to avoid the late presentation.

Abbreviations

BBD: Benign Breast Disease; ER: Estrogen Receptor; HIC: High-Income Country; BRCA: Breast Cancer Gene; IHC: Immunohistochemistry; HDI: Human Development Index; PR: Progesterone Receptor; HER: Human Epidermal Growth Factor Receptor; HUCSH: Hawassa University Comprehensive Specialized Hospital; WHO: World Health Organization; GLOBOCAN: Global Cancer Incidence, Mortality, and Prevalence; DCIS: Ductal Carcinoma *in situ*; LCIS: Lobular Carcinoma *in situ*; ADH: Atypical Ductal Hyperplasia; ALH: Atypical Lobular Hyperplasia; FNAC: Fine Needle Aspiration Cytology; NOS: Not Otherwise specified

Introduction

Human breast is a modified sweat gland of ectodermal origin that produces milk. It is covered by skin and subcutaneous tissue and it rests on the pectoralis muscle from which it is separated by fascia. During embryogenesis, breast tissue develops in both sexes along the paired milk lines, which extend from the axilla to the inguinal region [1].

Breast tissue responds to hormonal and other influences throughout life, and, as a result, it may display a wide range of "normal" appearances: The immature and largely resting breast before puberty; the developed breast of reproductive life, the actively secreting breast of lactation and the involuted postmenopausal breast. The breast is composed of two major structures (ducts and

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lobules), two types of epithelial cells (luminal and myoepithelial), and two types of stroma (interlobular and intralobular). Each of these elements is the source of both benign and malignant lesions [2,3].

The breast is a site of a broad array of pathological alterations. Breast lesions are heterogeneous diseases that consist of several entities with remarkably different characteristic features. Both benign and malignant lesions can occur in the breast. Advances in imaging techniques and increased use of fine-needle aspiration cytology have greatly assisted the preoperative evaluation of breast lesions. However, in a large proportion of cases, differentiation between benign and malignant lesions still rests on histopathological examination [4].

Various studies have reported benign breast disease to be more common than malignant breast lesions. The range of BBD in various studies is between 59.5% and 76.6% with fibroadenoma being the most common BBD. Malignant breast lesions accounted for between 23.4% to 40.5% in previous studies [5,6].

The most important risk factors are gender (99% of those affected are female), age, lifetime exposure to estrogen, genetic inheritance, and, to a lesser extent, environmental and lifestyle factors. There is a concern (but no proof) those environmental contaminants, such as organochlorine pesticides and certain plastics, have estrogenic effects on humans that may increase the risk of breast cancer [3].

According to GLOBOCAN 2020, Female breast cancer has now surpassed lung cancer as the leading cause of global cancer incidence in 2020, with an estimated 2.3 million new cases, representing 11.7% of all cancer cases. Breast cancer is the most common form of cancer in women and is listed as the second leading cause of cancer death among women. According to the Addis Ababa, cancer registry report breast cancer is the most common cancer type in its both incidence and mortality. This may not be the case in every part of the country as a study done in Gondar University reveal cervical cancer, breast cancer, and lymphoma to be the top three causes of cancer in females [2,7].

More than 95% of breast malignancies are Adenocarcinoma that arises from the ductal or lobular system early as a carcinoma in situ, but at a time of clinical detection, the majority (>70%) will breach the basement membrane and invade the stroma. Invasive carcinoma can be divided into several clinically important subclasses based on morphological and molecular bases. It has varieties of morphologic types and only one-third can be morphologically classified into special histologic types. The remaining two-third are grouped ductal or No Special Type (NST) [3].

This study aims to describe the different histopathologic patterns of breast lesions [8,9].

Methods

Study area

The study was conducted in HUCSH, pathology department. Hawassa is the capital city of Sidama Regional State located 275 km south of Addis Ababa, the capital city of Ethiopia. It is Woina dega in its climatic condition and has 436,992 populations [10]. The city has two governmental and five private primary hospitals and several public and private clinics and pharmacies. It has one governmental university, many other governmental and private colleges. HUCSH was established and started its full function in 2005. It is the one referral hospital in the region serving as a teaching hospital for Hawassa College of Medicine and Health Sciences, with a catchment

population of 18 million people and it serves about 53,384 patients of all types per year. The department of pathology is one of the specialized departments in Hawassa University and examines blood, biopsy, and cytology specimen from private and public health facilities from within and outside the region.

Study design and period

A 6 yr institution-based retrospective descriptive cross-sectional study was done from September 1st, 2015 to August 30th, 2020 G.C.

Population

Source population: All patients who submitted biopsy specimens to the pathology department for histopathologic diagnosis from September 2015 to August 2020 GC.

Study population: All patients who have breast biopsy report from pathology department of HUCSH from September 2015 to August 2020 GC.

Inclusion criteria: All breast hard copy reports having Specific histopathologic diagnosis in the study period.

Exclusion criteria: Breast hardcopy reports with non-specific diagnosis.

Reports from none breast proper lesions.

Sample size and sampling technique/sampling procedures

All available samples of breast biopsy cases within the study period (September 2015 to August 2020 GC) which strictly meet the inclusion criteria are included.

Data collection procedures

The hard copy of all cases with histopathologic diagnosis of breast lesion was retrieved after being identified by biopsy code number and the reporting format was collected by trained data collectors. From the reporting format data about patient age, histopathology diagnosis and TNM stage, grade, side of involvement, size and clinical presentation was extracted by the principal investigator using a structured data collection checklist. Additional medical record charts were extracted such as imaging results, clinical presentation, operation notes, and metastatic sites. The histological categorization of breast tumors was done according to WHO classification of breast tumors 5th edition.

Operational definitions

Breast lesion: Abnormal change in the integrity and intensity of breast tissue.

Benign breast lesions: Non neoplastic and neoplastic breast lesions those are not cancerous.

Malignant breast disease: Neoplastic breast diseases those are cancerous.

Early-stage breast carcinoma: Stage I and Stage II breast carcinoma at diagnosis.

Advanced stage breast carcinoma: Stage III and Stage IV breast carcinoma at diagnosis.

Histopathologic diagnosis: The specific type of diagnosis made on biopsy specimen.

Transitioned countries - Countries with Higher HDI.

Transitioning countries - Countries with Low or medium HDI.

Result

In this study a total of 235 breast cases were analyzed. Among 235 cases majority (51%) of them were benign breast lesions and 49% of them were malignant. The overall mean age of the patients with breast lesion was 34.96 years with SD ± 13.4 years with a wide age range of 15 to 90 years. Females account for 96.6% of the case and males account for only 3.4% of the case making the female to male ratio to be 28:1 (Figure 1, 2).

In our study Majority of the breast lesions occurred in the left breast (51.1%) followed by right breast (46.4%). There were three bilateral cases and three of them occurred in benign breast lesions (Figure 3). In three cases the laterality was unknown.

Majority of benign breast lesions measure 2 cm to 5 cm along their widest diameter while majority of malignant breast disease measure >5 cm along their widest diameter (Table 1).

In this study we found strong association between tumor size and biologic behavior (Table 2). As compared to Reference size of <2 cm, those between 2 cm to 5 cm have three times higher chance of being malignant (P value=0.003, OR=3.6, CI=1.5-8.6) and those >5 cm have eight times higher chance of being malignant (P value <0.001, OR=8.2, 95% CI=3.38-19.95). Similar strong association was found between age of patients and biological behavior with (P value <0.001, OR=10.6, 95% CI of 5.803-19.703). According to this result patients above the age of 30 years have 10 times higher chance of being diagnosed with breast carcinoma as compared to patients below the age of 30 years.

Among the 120 benign breast lesions the commonest to be sampled was fibroadenoma, seen in 54.2% of the cases followed by inflammatory breast lesions (20%), fibrocystic change (6.7%), Lactational adenoma 4.2%, Gynecomastia (4.2%), phyllodes tumor (4.1%), sclerosing adenosis (2.6%), apocrine adenoma (1.7%), Intraductal papilloma (0.9%), galactocele (0.9%) and lipoma (0.9) (Table 4).

The mean age for benign breast lesions was 27.97 years with standard deviation of ± 10.7 years and with wide age range of 15 to

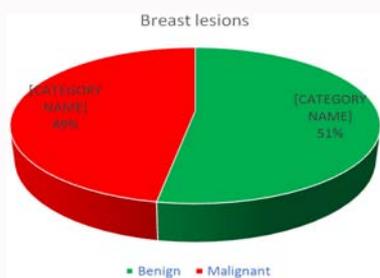


Figure 1: Distribution of breast lesions based on their biologic behavior.

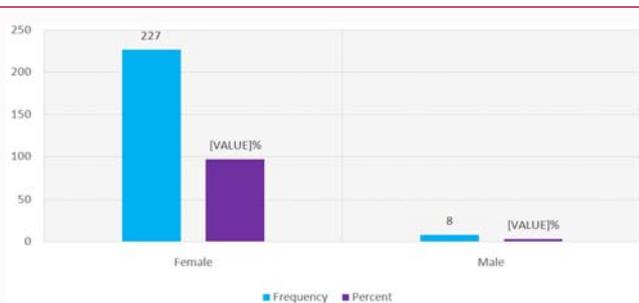


Figure 2: Gender distribution of breast lesion.

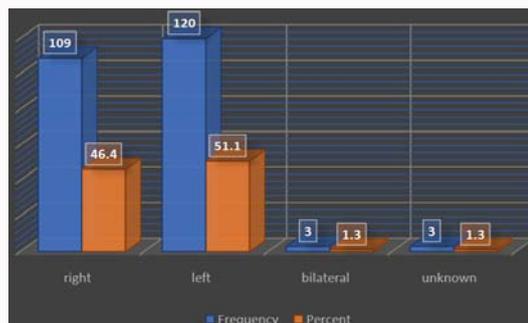


Figure 3: Laterality of breast lesions.



Figure 4: Laterality of benign breast lesions.

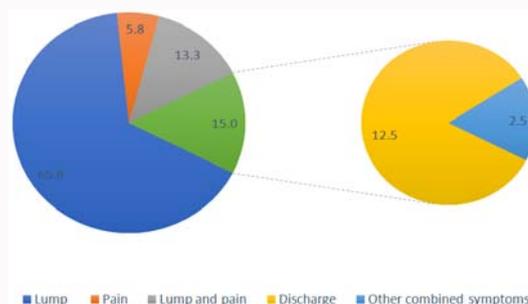


Figure 5: Clinical presentation of benign breast lesions.

Table 1: Size distribution of breast lesions.

Tumor size	Biologic behavior	
	Benign	Malignant
<2 cm	34 (28.3%)	8 (7%)
2-5 cm	56 (46.7%)	48 (42.1%)
>5 cm	30 (25%)	58 (50.9%)
Total	120	114

70 years. Majority of the cases (40%) occurred between the age group of 21 to 30 years closely followed by age group of 10 to 21 years. In our study 92.5% of benign breast lesions occurred below 40 years of age (Table 3). The mean size of benign breast lesions in our study was 4.3 cm and the maximum and minimum size of the lesions along their widest diameter was 0.5 cm and 16 cm respectively (Table 5). Majority (46.7%) of benign breast lesions measure 2 cm to 5 cm followed by those measuring <2 cm (28.3) and only 25% of the benign breast lesions measure above 5 cm (Table 1).

In this study 50% of benign breast lesions were seen in the right breast, 48% in the left breast and only 2% of the cases were bilateral (Figure 4). The commonest presenting symptom was breast lump (65.8%) followed by pain and lump (13.3%), discharge (12.5%), pain

Table 2: Binary logistic variation between biologic behavior of breast lesions, tumor size and age.

Tumor size	Biologic behavior		OR	95% CI	P-value
	benign	Malignant			
<2 cm	34 (28.3%)	8 (7%)	1		
2-5 cm	56 (46.7%)	48 (42.1%)	3.6	1.54-8.62	0.003
>5 cm	30 (25%)	58 (50.9%)	8.2	3.38-19.95	<0.001
Total	120	114			
Age					
<30 years	86 (71.6%)	22 (19.1)	1		
> 30 years	34 (28.4%)	93 (80.9)	11	5.803-19.703	<0.001

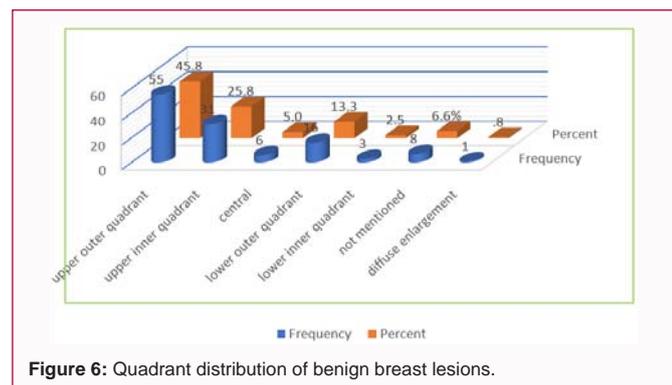


Figure 6: Quadrant distribution of benign breast lesions.

(5.8%) and other combined symptoms (Figure 5).

In this study majority of the benign breast lesions tend to involve the Upper outer quadrant (45.8%) followed by upper inner quadrant (25.8%), lower outer quadrant (13.3%), central (5%), lower inner quadrant (2.5%) and diffuse enlargement was seen in 1% of the cases. The quadrant was not mentioned in 8 cases (Figure 6).

The mean age for fibroadenoma was 24.35 year with a range of 30 years. Eight cases (7%) showed complex features. Majority of the cases (46.2%) were seen in younger age group (Age <20). The average size measured was 3.9 cm, majority of the cases (53.8%) have 2 cm to 5 cm in size (Table 6). For one case the size was not documented.

Inflammatory lesions were the second most common cause of benign breast lesions in our study. The mean age for the patients was 32.54 years with age range of 37, the minimum age was 18 years and the maximum age was 55 years. The most common inflammatory lesion to be identified was chronic nonspecific mastitis (37.5%) followed by Granulomatous inflammation (29.2%), acute mastitis (16.7%), abscess (12.5%) and acute on chronic mastitis (4.2%) (Figure 7). Most of the patients are between the age group of 31 to 40 years and the average size at presentation was 3.9 cm.

In this study 8 cases of male breast disease were evaluated. 62.5% of them were diagnosed to have Gynecomastia and 37.5% of them were diagnosed with ductal carcinoma Nos. All of the three breast carcinomas were Invasive ductal carcinoma NOs. The mean age of male breast carcinoma at presentation was 52.7 years with minimum

Table 3: Age distribution of breast lesions.

Biologic behavior	Age group						Total
	11-20	21-30	31-40	41-50	51-60	>60	
Benign	38 (31.7)	48 (40%)	25 (20.8)	4 (3.3%)	3 (2.5%)	2 (1.6)	120
Malignant	1 (0.9%)	21 (18.2%)	39 (33.9%)	33 (28.7%)	14 (12.2)	7 (6.1%)	115

Table 4: Histomorphologic distribution of benign breast lesions.

Histopathologic pattern	Frequency	Percent
Fibroadenoma	65	54.2
Inflammatory breast lesion	24	20
Fibrocystic change	8	6.7
Gynecomastia	5	4.2
Lactational adenoma	5	4.2
Phyllodes tumor	5	4.10%
Sclerosingadenosis	3	2.5
Apocrine adenoma	2	1.7
Intraductal papilloma	1	0.8
Galactocele	1	0.8
Lipoma	1	0.8
Total	120	100%

Table 5: Age distribution of benign breast disease.

Histopathologic pattern	Age group					
	11-20	21-30	31-40	41-50	51-60	>60
fibroadenoma	25	24	6	2	0	0
complex fibroadenoma	5	1	2	0	0	0
gynecomastia	2	0	1	0	0	2
inflammatory breast lesion	2	9	10	1	2	0
fibrocystic change	1	5	2	0	0	0
benign phyllodes	1	1	1	1	0	0
apocrine adenoma	1	0	1	0	0	0
sclerosing adenosis	1	1	1	0	0	0
intermediate grade phyllodes tumor	0	1	0	0	0	0
lactational adenoma	0	5	0	0	0	0
intraductal papilloma	0	1	0	0	0	0
galactocele	0	0	1	0	0	0
lipoma	0	0	0	0	1	0
Total (percent)	31.70%	40%	20.80%	3.30%	2.50%	1.70%

age of 48 and maximum age of 58 years. The minimum and maximum size was 3.5 cm and 10 cm respectively with average size of 5.9 cm. Twenty five of the cases were Grade I at time of presentation and seventy five percent of the case were Grade II at presentation. The mean age and average size for gynecomastia was 49.5 years and 4.75 cm respectively.

In this study there were 115 malignant cases. Among the malignant cases ductal carcinoma NOS was the commonest to be sampled (67%) followed by lobular carcinoma (12.2%), mixed ductal and lobular carcinoma (7.8%), mucinous carcinoma (3.5%), metaplastic carcinoma (3.5%), ductal carcinoma *in situ* (2.5%), malignant phyllodes tumor, microinvasive carcinoma, lobular carcinoma *in situ* and papillary carcinoma each account for 0.9% of the cases (Table 7).

Table 6: Age and size distribution status of fibroadenoma.

Age group	Tumor size			Total
	<2 cm	2-5 cm	>5 cm	
<20	3	18	9	30
20-30	10	12	2	24
31-40	2	5	1	8
41-50	1	0	1	2
51-60	0	0	0	0
>60	0	0	0	0
Total	16 (25%)	35 (54.7%)	13 (20.3%)	64

Table 7: Histomorphology patterns of malignant breast lesions.

Histopathologic pattern	Frequency	Percent
Ductal carcinoma	77	67
Lobular carcinoma	14	12.2
Mixed ductal lobular carcinoma	9	7.8
Mucinous carcinoma	4	3.5
Metaplastic carcinoma	4	3.5
Ductal carcinoma <i>in situ</i>	3	2.6
Malignant phyllodes tumor	1	0.9
Microinvasive carcinoma	1	0.9
Lobular carcinoma <i>in situ</i>	1	0.9
Papillary carcinoma	1	0.9
Total	115	100

The mean age at presentation for malignant cases was 42.47 years with SD of ± 12.03 years and wide age range of 20 to 70 years. Majority of the patients were between the age group of 31 to 40 (33.9%) and there was one case of ductal carcinoma which was diagnosed at the age of 20 year (Table 8).

In our study the average size at presentation was 5.75 cm. The minimum and maximum tumor size along the largest dimension was 0.8 cm and 15 cm respectively. Majority of the patients (50.4%) present with a lump which measure >5 cm (Table 9).

The most common clinical presentation for malignant breast lesions was breast lump (82.6%) followed by lump and pain (12.2%),

Table 8: Age distribution of malignant breast cases.

Histopathologic pattern	Age group						Mean age	Minimum age	Maximum age
	11-20	21-30	31-40	41-50	51-60	>60			
Ductal carcinoma	1 (1.3%)	15 (19.5%)	25 (32.5%)	22 (28.6%)	10 (12.9%)	4 (5.2%)	41.9	20	70
Lobular carcinoma	0	3 (21.4%)	5 (35.7%)	1 (7.1%)	4 (28.6%)	1 (7.1%)	43.5	24	80
Mixed ductal lobular carcinoma	0	1 (11.1%)	6 (66.7%)	2 (22.2%)	0	0	38.2	29	43
Malignant phyllodes tumor	0	0	0	1	0	0	50	50	50
Mucinous carcinoma	0	2 (50%)	1 (25%)	0	0	1 (25%)	40.7	28	66
Metaplastic carcinoma	0	0	0	3 (75%)	0	1 (25%)	59.3	49	90
Ductal carcinoma <i>in situ</i>	0	0	1 (33.3%)	2 (66.6%)	0	0	40.3	37	42
Microinvasive carcinoma	0	0	1	0	0	0		35	
Lobular carcinoma <i>in situ</i>	0	0	0	1	0	0		50	
Papillary carcinoma	0	0	0	1	0	0		42	
Total	1 (0.9%)	21 (18.3%)	39 (33.9%)	33 (28.7%)	14 (12.2%)	7 (6.1%)		115 (100%)	

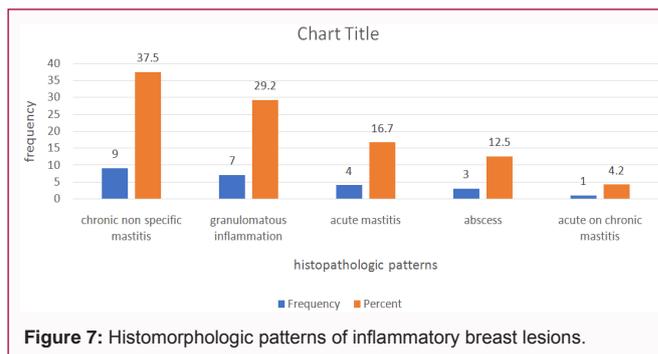


Figure 7: Histomorphologic patterns of inflammatory breast lesions.

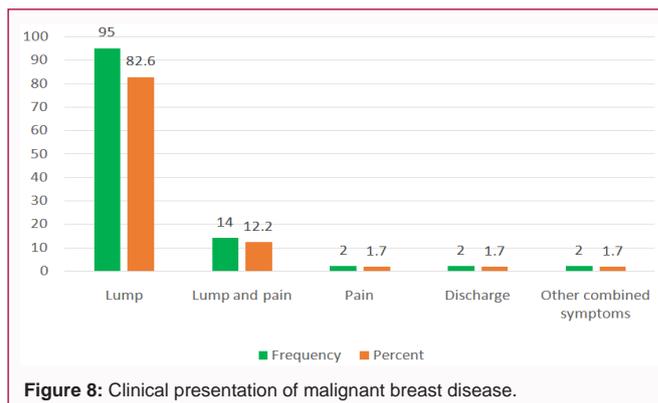


Figure 8: Clinical presentation of malignant breast disease.

pain (1.7%), discharge (1.7%) and other combined symptoms (1.7%) (Figure 8).

The left breast was the most commonly involved side (53%) followed by the right breast (44.3%) and Laterality unknown in three case (2.6%) (Table 9). Right upper outer quadrant was the most commonly involved quadrant (38.3%) followed by upper inner quadrant (17.4%) (Figure 9).

Mastectomy was the commonest type of biopsy for malignant case. It was done for 104 cases (90.4%). Lumpectomy (9.6%) was the second common form of biopsy (Table 10).

Out of 115 malignant cases, metastasis to lymph node was reported in 58 cases. Majority were diagnosed at PN1 (55.2%) followed by PN2 (31%) and PN3 (18.2%) (Table 11). The major lymph node group to

Table 9: Size distribution of malignant breast cases.

Histopathologic pattern	Tumor size			Mean size	Minimum size	Maximum size
	<2	2-5	>5			
Ductal carcinoma	4	33	40	5.5	1.3	12.5
Lobular carcinoma	2	5	7	5.6	2	12
Mixed ductal lobular carcinoma	1	3	5	6.1	2	13
Malignant phyllodes tumor	-	-	-	-	-	-
Mucinous carcinoma	1	2	1	5.2	0.8	12
Metaplastic carcinoma	0	1	3	10.8	3	15
Ductal carcinoma <i>in situ</i>	0	2	1	6.6	4	11
Microinvasive carcinoma	0	1	0	2.5		
Lobular carcinoma <i>in situ</i>	0	1	0	3		
Papillary carcinoma	0	0	1	7		
Total	8 (7%)	48 (42.1%)	58 (50.9%)	114		

Table 10: Laterality of malignant breast disease.

Laterality	Frequency	Percent
Left	61	53
Right	51	44.3
Unknown	3	2.6

Table 11: Pathologic stage of lymph node.

Pathologic	Frequency	Percent
pN1	32	55.20%
PN1mic	0	
PN1a	32	
pN1b	0	
pN1c	0	
pN2	18	31%
pN2a	18	
PN2b	0	
PN3	8	13.80%
pN3a	3	
pN3b		
pN3c	2	
total	58	100%

be involved was the ipsilateral axillary lymph node. There were two cases of supraclavicular lymph nodes involved by malignant cells.

Out of the total malignant cases, Pathologic T staging was done for all cases except 1 case. Majority of the patients presented pT3 (37.7%) closely followed by pT2 (33.3%), PT4 (18.5%) and PT1 (7%) (Table 12).

Out of 115 malignant cases staging was done for 98 cases. 16 cases could not be staged due to inability to assess the medical chart and in one case the pathologic T staging was not done. Majority of the patients presented at stage III (42.6) followed by stage II (31.3%), stage IV (5.2), stage I (3.5%) and stage 0 (3.5). Overall majority (47.8%) of them presented at advanced stage (Table 13).

In our study there were 77 cases of ductal carcinoma and histologic grading was done for all of them according to Nottingham grading system. Majority of the cases were Grade 2 (49.4%) followed

Table 12: Pathologic tumor stage.

Pathologic T stage	frequency	percent
Tis	4	3.50%
T1a	0	0
T1b	1	0.9
T1c	7	6.1
T1	8	7%
T2	38	33.3
T3	43	37.70%
T4a	15	13.20%
T4b	4	3.5
T4c	2	1.80%

Table 13: Stage at presentation of malignant cases.

Stage at presentation		Frequency	Percent
Stage 0		4	3.5
Stage I	Stage IA	4	3.5
	Stage IB	0	0
Stage II	Stage IIA	21	18.3
	Stage IIB	15	13
Stage III	Stage IIIA	25	21.7
	Stage IIIB	18	15.7
	Stage IIIC	6	5.2
Stage IV		6	5.2
Not staged		16	13.9
Total		115	100%

by grade 1 (28.6%) and grade 3 (22.1%) (Figure 10, 11).

Discussion

In the present study, there was higher frequency of benign breast disease (51%) as compared to malignant breast disease (49%). The rate of benign breast disease seen in our study is comparable with a study done in Indian (50.4%), Nigerian (55.7%) and slightly lower than another Indian study (58%) [11-13]. Higher proportion of benign breast lesions were documented in previous two studies in India [4,14], Nigeria [6] and Uganda [15] (Table 14).

Table 14: Comparison of biologic nature of breast lesions with other studies.

Histopathology	Present study	Vishal et al.	Nwafor et al. [11]	Pervis et al. [13]	Mayun et al. [6]	Begum et al. [14]	Ssemmand et al. [15]	Kumbhakar et al. [4]
Benign	51%	50.40%	55.70%	58%	59.50%	72.80%	75%	76.60%
Malignant	49%	49.60%	44.30%	42%	40.50%	21.15%	21%	23.40%

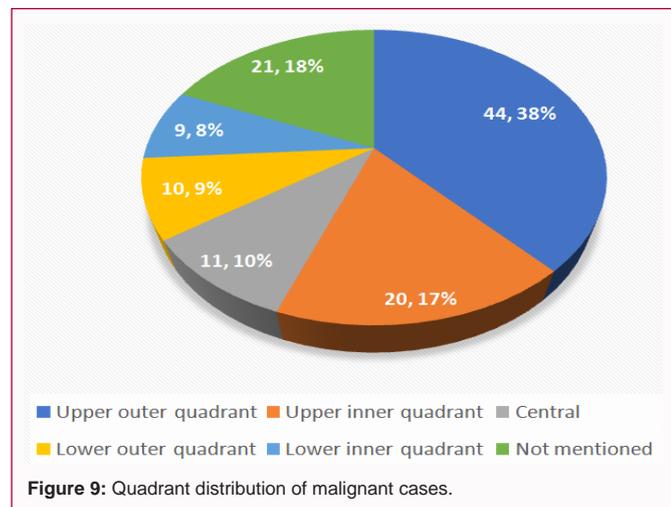


Figure 9: Quadrant distribution of malignant cases.

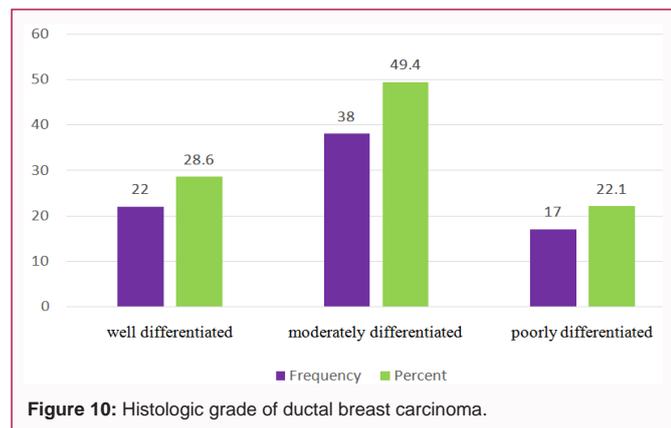


Figure 10: Histologic grade of ductal breast carcinoma.



Figure 11: Trends of benign and malignant cases.

In our study there was over 1000 benign breast lesions in the study period and among this only 120 cases were sent for histopathologic diagnosis. This was the reason for nearly comparable benign to malignant ratio.

Females account for 96.6% of the cases and only 3.4% of the cases were males. Previous studies in Jamaica, Yemen, India and Nigeria, females were affected in 93.3%, 95%, 97.3% and 97.8% of the cases

respectively and the above figures are in agreement with our current study [5,16-18]. In our study the overall mean age of the patients was 34.96 with SD of ± 13.4 and wide age range 15 to 90 years. The study is comparable with a study done in Jamaica in which case the overall mean age was 36.5 years with SD of ± 16.4 and age range of 10 to 93 years [5]. The overall mean age of our study is also comparable with Nigerian study with overall mean age of 34.95 years [11]. Slightly decreased mean age of 31.8 with more or less comparable age range of 11 to 88 was seen in Indian study [19].

In our study the common age group for benign breast lesion was between 21 to 30 years (40%) with second peak age group of 11 to 20 years (31.7%). The study is comparable with a study done in India with first peak age was 21 to 30 years (37.9%) and second peak age was 11 to 20 (35.7%) [19]. Another study in India also shows the peak age for benign breast lesion to be 21 to 30 (39.4%) [4]. In contrast to our study the peak age for benign breast lesion in Nepal study was between 31 to 40 years (40%) with second peak of 21 to 30 years (32%) [20].

In current study breast lump (74%) was the commonest clinical presentation of breast lesions, followed by breast lump associated with pain. This is similar to findings from Jamaica, India and Nigeria [5,11,17].

In our study fibroadenoma was the commonest benign lesion accounting for 54.2% of the benign lesion with mean age of 24.35 years and majority (40%) of the cases were found between the age group of 11 to 20 years followed by second peak age group of 21 to 30 years. This is consistent with studies done in Pakistan, India, Saudi Arabia, Nigeria and Nepal in which fibroadenoma was found to be the commonest benign lesion with frequency of 57.8%, 41.7%, 47%, 63.1% and 39.47% respectively [11,20-23]. Similarly study done in two different institution of India shows the peak age for fibroadenoma was 11 to 20 years [19,22].

The second most common benign breast lesion in our study was inflammatory breast lesion which account for 10.2% breast lesions. Similar figures of 11.9%, 8.1% and 8% was reported in Pakistan, India and Yemen [16,19,24]. The mean age at diagnosis was 32.54 year; the peak age was 31 to 40 years. This is in concordance with a study done in India in which the mean age was 32.9 and the age group was 21 to 40 years.

In current study the mean age for breast carcinoma was 42.7 years and majority (33%) the patients who were diagnosed with breast carcinoma were between the age group of 31 to 40 years. Fairly similar mean age of 42, 45.5 and 45.6 year was reported in two different hospitals of Nigeria and Pakistan [11,24,35]. However in contrast to our study higher mean age of 58.7 and 51.7 were reported in Finland and Iraq [26,27]. In concordance to our study the common age group for breast carcinoma in Addis Ababa was 30 to 39 [28] and higher age group of 41 to 50, 51 to 60 and 40 to 49 was reported in two hospitals in India and Nigeria respectively [4,18,19].

Invasive ductal carcinoma of no special type is the most common type of breast carcinoma in our study. It accounted for 67% of the

histologic type in this study. This is comparable to studies in Addis Ababa, Jamaica, and India which found invasive ductal carcinoma of no special type constituting 79.2, 69.5 and 71.5% of all malignant breast tumors [4,5,28].

In this study mean age for male breast carcinoma at presentation was 52.7 years which is in agreement with 52.6 year mean age that was documented in southern Indian study [29]. In our study the mean age for males were higher than the mean age for females.

In this study the left breast was the most commonly involved side (52.2%) and the upper outer quadrant was the most commonly involved anatomic site (69%). This is in concordance with a study done in Nigeria where the left breast was the commonly involved side in 51% of the cases [30]. In contrast to this study a study done in Addis Ababa reveal the right breast was the most commonly involved side [28].

It has been suggested that tumor size is crucial for breast carcinoma staging to determine the invasiveness of tumor, and it is one of the most important prognostic factors in breast carcinoma as investigated in previous study [31]. In our study the average tumor size for breast carcinoma was 5.75 cm which in agreement with a study in Addis Ababa which show average tumor size of 6.3 cm [28]. In this study 93% of the tumors measure >2 cm and this is in concordance with previous study in Addis Ababa which shows 92% of the tumors were >2 cm [28]. In contrast to our study a study done in Cuba reveals tumor size <2 cm is more prevalent (49.2%) than intermediate and large size tumors. The difference could be due to well established screening programs in Cuba and increased awareness [32].

Various studies describe that high-grade tumors have more propensity for metastases to the regional lymph nodes, frequent systemic recurrences and have a high mortality compared to those with low grade tumors [29]. In our study majority 38% of the tumors were Grade II followed by Grade I (28.6) and Grade III (22.1%). Similar to our study studies in Addis Ababa, Nigeria and India shows frequency of grade II tumors to be 46.2%, 50.6% and 59.5% respectively [18,28,29]. In contrast to our study a study done in Nigeria by found Majority (75%) of Ductal carcinoma NOs were Grade III at time of presentation.

Lymph node metastasis was found 50.4% of breast cancer in our study. Relatively similar figures of 52.05% and 58.9% were reported in two different hospital in India [4,29]. In contrast to our study relatively high rate (64.4%) of lymph node metastasis was reported in Addis Ababa study [28].

The stage at diagnosis is a major determinant of survival from breast cancer; early-stage disease is associated with a better prognosis than late-stage disease [33]. In our study majority of breast cancer presented at stage III (42.6%) and overall 47.8% presented at late stage (stage III & IV). This is in concordance to many studies in India [4], Angola [34] and Nigerian hospitals where late presentation accounted for 54.97%, 56.1% and 76.2% respectively [30]. This is contrast with a study done in turkey and Austria where 52.8% and 55.9% of the breast cancer patients presented at early stage (stage I & II) [35-44].

Conclusion

Breast disease commonly affects females with female to male ratio of 28:1. Benign breast diseases (51%) were more common than malignant breast disease (49%). The peak age for benign breast lesion was between 21 to 30 years with mean age of 27.9 years. Fibroadenoma

was the commonest variant among the benign category. Majority (46.7%) of benign breast lesions measures 2 cm to 5 cm along their widest diameter and the average size for benign breast lesions was 4.3 cm.

Majority of breast lesions occurred in the left breast and upper outer quadrant was the most commonly involved anatomic location. Breast lump was the most common clinical presentation for both benign and malignant breast disease.

Breast carcinoma occurred in comparatively younger age group with peak age of 31 to 40 years and mean age of 42.7 years. The average size at presentation was 5.75 cm and majority (50.4%) of breast carcinoma cases measure >5 cm along their widest diameter. Invasive ductal carcinoma NOs was the commonest histologic type among malignant categories.

Most cases (47.8%) of breast carcinoma presented at an advanced stage. Majority (38%) of the ductal carcinomas NOs cases were Grade II at the time of presentation. Half of patients (50.4%) have lymph node metastasis at the time of the diagnosis.

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