

Original article

Retrospective Histopathological Study of Breast Biopsies of Breast Lesions among Patients Attending Al-Bayda Medical Center

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ABSTRACT

Background and aims. Histological tissue diagnosis of breast lumps plays an important role in patient management. This study was aimed to analyze the histopathological spectrum of various breast lesions with the distribution of breast diseases in different age groups and gender from breast's lesions among patients attending to Al-Bayda medical Center. **Methods.** Retrospective study was performed in the department of pathology over a period of three years from August 2018 to December 2020. During this period a total of 186 breast specimens were received at department of pathology. Histopathological examination of specimens was done to know the spectrum of breast lesions. **Results.** Out of 186 cases, (182 cases with 97.79%) were female and (4 cases with 2.21%) were male. The patients' ages ranged from 19 years to 80 years, and the majority of the cases was unilateral lesions with 95.7% that much more common than bilateral lesions. Upon position of lesion, 101 cases with 54.30% at right, 77 cases with 41.40% at left side and 8 cases with 4.30% were bilateral. Overall breast lesions, 74.19% of cases were benign (proliferative and inflammatory) and 25.81% were malignant neoplasms. Among the 138 cases of benign breast neoplasms 34.78% of them were fibroadenoma which the most common benign breast lesion. While, out of 48 malignant breast lesions, 62.50% of them were be invasive ductal carcinoma that the most common malignant breast lesions. 74.19% of breast lesions were benign breast lesions, proving to be the majority in incidence. 25.81% of lesions were malignant breast lesions. **Conclusion.** Benign lesions were common in second to fourth decade and malignancy in fifth and sixth decades.

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INTRODUCTION

Breast tissue is a modified sweat gland which exhibits a wide spectrum of pathological lesions, usually presenting as palpable masses ranging from inflammatory, non-inflammatory, neoplastic and non- neoplastic lesions [1,2]. About 200,000 cases of breast disease diagnosed every year worldwide [3]. Breast lesions are more widespread among women than men, Breast disease patterns and their causes vary between different countries and ethnic groups [4]. Benign diseases can be classified into inflammatory, fibrocystic changes, epithelial and interstitial proliferation and neoplasms since common benign proliferative breast lesions include: fibro-adenoma, phyllodes tumor, lipoma, hamartoma, granular cell tumor, lactating adenoma and tubular adenoma. Inflammatory lesions which include: breasts abscess, acute mastitis, granulomatous mastitis, mammary duct ectasia, fat necrosis and fibrocystic changes.

Fibrocystic disease considers the most frequent benign disorder in women between 20 and 50 years of age, while malignant lesions ductal cancer, lobular cancer, colloidal cancer, mucinous and medullary carcinomas [5]. Benign breast diseases are more prevalent as compared to malignant and inflammatory, as seen throughout the world [6]. Fibroadenoma were higher frequency of population that almost explains it half of all benign diseases. Frequencies of Benign lesions are common at 20 years at the peak of 40 and 50 years of life [7,8]. Risk factor for benign and malignant breast disease Low parity, no birth, young people in late first birth Emphasizes the facts about menopause and excessive circulation estrogen levels [6]. Due to increased public awareness about cancer and recognition of the facts that benign disorders can later on progress to breast cancer, benign diseases of the breast have gained an increased importance specifically in Western world [9,10]. The situation is reversed in developing countries. Such as social taboo, illiteracy, ignorance of patients is present at their advanced stage of illness. This situation leads to a delay in diagnosis, narrowing the circle of options for definitive treatment breast lesions [11].

Breast cancer has emerged as the most common type of cancer in most populations [12]. The incidence of cancer has increased from 12.7 million in 2008 to 14.1 million in 2012, and this trend continues. It may continue in the future. The most commonly identified cancers were lung (1.82 million) followed by breast cancer (1.67 million) [12, 13]. It has rapid replacement of cervical cancer as the most common cancer in Indian women [14]. The Libyan breast cancer incidence was evaluated as 18.8 to 20.7 per 100,000 female individuals according to previous studies [15-17]. Breast cancer has a poor prognosis if it is diagnosed late. However, if it is diagnosed at an early stage, i.e. before it becomes invasive, its morbidity and mortality can be decreased [18]. This study was aimed to analyses the histopathological spectrum of various breast lesions and to study distribution of breast diseases in different age groups and gender at El-Bayda Medical Center.

METHODS

This is a descriptive retrospective study performed in the department of pathology at El-Bayda Medical Center, Libya over a period of three years from august 2018 to December 2020. During this period, a total of 186 breast specimen were received and standard formalin fixed paraffin embedding (FFPE) tissue processing protocols were followed and "3- 4" μ m thick sections were cut and stained with Haematoxylin and Eosin stains for histopathological analysis. The study was approved by Ethical Committee and informed consent was obtained.

Statistical analysis was carried out in Minitab software (version17). All descriptive data were interoperated in Tables; the numerical data were shown as number and percentage. To find the significant difference between the observed variable studied, a P value was taken as level of significance at <0.05.

RESULTS

During a period of thirty-six months a total of 186 breast specimens were received at Department of pathology. Histopathological examination of specimens was done to know the spectrum of breast lesions. Out of 186 cases, (182 cases with 97.79%) were female and (4 cases with 2.21%) were male. The patients' ages ranged from 18 years old to 80 years old. The mean age for all the patients at diagnosis was 30 years. In terms of age groups, (as each group consists of 10 year intervals), the highest prevalence was noted in age groups 41-50 and 31-40 years, followed by 21-30. The lowest prevalence was observed in the age group of 61-80 years (Table 1). The majority of the cases was unilateral lesions with 95.7% that much more common than bilateral lesions. Upon position of lesion, 101 cases with 54.30% at right, 77 cases with 41.40% at left side and 8 cases with 4.30% were bilateral (Table 2). In term of age group: the majority of cases were found at age group 41-50, followed by 31-40 in all position without significant difference. Meanwhile benign cases were found more than malignant cases and in right side more than left side with significant difference between benign and malignant (Table 3)

Table 1. Age distribution for 186 patients, number with percentage for each gender separately (No. (%)).

Age (Years)	Male. No. (%)	Female. No. (%)
>20	0 (0)	17 (9.14)
21-30	2 (1.08)	26 (13.99)
31-40	2 (1.08)	48 (25.81)
41-50	0 (0)	62 (33.33)
51-60	0 (0)	17 (9.14)
61-70	0 (0)	11 (5.91)
71-80	0 (0)	1 (0.54)
TOTAL	4 (2.15)	182 (97.85)

Table 2. Age distribution for 186 patients, number with percentage of Breast lesions upon their positions for each gender separately

Age (Years)	Right. No. (%)	Left. No. (%)	Both. No. (%)	Total. No. (%)
20>	10 (5.35)	6 (3.23)	1 (0.54)	17 (9.14)
21-30	13 (6.99)	13 (6.99)	2 (1.08)	28 (15.05)
31-40	27 (14.52)	21 (11.29)	2 (1.08)	50 (26.88)
41-50	29 (15.59)	30 (16.13)	3 (1.61)	62 (33.33)
51-60	12 (6.45)	5 (2.69)	0 (0)	17 (9.17)
61-70	9 (4.84)	2 (1.08)	0 (0)	11 (5.91)
70-80	1 (0.54)	0 (0)	0 (0)	1 (0.54)
TOTAL	101 (54.30)	77 (41.40)	8 (4.30)	186 (100)
Percentage upon position	95.7%		4.30%	
Pearson Chi-Square = 2.660, P-Value = 0.850				

Table 3. Percentage number of benign and malignant Lesion upon their position

Type of lesion	Right. No. (%)	Left. No. (%)	Both. No. (%)	Total. No. (%)
Benign	65 (34.95)	65 (34.95)	8 (4.30)	138 (74.19)
Malignant	36 (19.35)	12 (6.45)	0 (0)	48 (25.81)
Total	101 (54.30)	77 (41.40)	8 (4.30)	186 (100)
Pearson Chi-Square = 4.103, DF = 1, P-Value = 0.043				

Table 4 presented percentage number of different diagnosis of breast lesions upon their positions (Right, left and both). I.D.C was found with 13% only in right side, while, fibroadenoma was found a highest with 12.4% followed by FCD at right and left side. Overall, 186 patients, 138 cases of benign lesion characteristics obtained from histological reports were outlined upon age group in Table 5. Fibroadenoma cases were found in 32 cases that were distributed among 20-30 age groups. About 15 of these cases were classified as F.C.D alone. Meanwhile, 48 cases of malignant lesion characteristics obtained from histological reports were outlined upon age group in Table 6. Most cases was recorded at age group 31-40 followed by 41-50 and 51-60.

Table 4. Percentage number of Different Diagnosis of Breast lesions upon their positions (Right, left and both)

Diagnosis	Right. No. (%)	Left. No. (%)	Both. No. (%)	Total. No. (%)
<i>Breast abscess</i>	2 (1.08)	4 (2.15)	0 (0)	6 (3.23)
<i>Duct ectasia</i>	6 (3.23)	1 (0.54)	0 (0)	7 (3.76)
<i>Fat necrosis</i>	3 (1.61)	3 (1.61)	0 (0)	6 (3.23)
<i>Fibroadenoma</i>	23 (12.37)	23 (12.37)	2 (1.08)	48 (25.81)
<i>F.C.D</i>	19 (10.22)	15 (8.06)	2 (1.08)	36 (19.35)
<i>G. Mastitis</i>	5 (2.68)	15 (8.06)	0 (0)	20 (10.75)
<i>Gynecomasia</i>	0 (0)	0 (0)	4 (2.15)	4 (2.15)
<i>I.D.C</i>	25 (13.44)	5 (2.69)	0 (0)	30 (16.13)
<i>I.L.C</i>	7 (3.76)	0 (0)	0 (0)	7 (3.76)
<i>I.P.C</i>	1 (0.54)	1 (0.54)	0 (0)	2 (1.08)
<i>Malignant Phyllodes</i>	1 (0.54)	1 (0.54)	0 (0)	2 (1.08)
<i>Medullary carcinoma</i>	1 (0.54)	1 (0.54)	0 (0)	2 (1.08)
<i>Mixed Tumor</i>	1 (0.54)	1 (0.54)	0 (0)	2 (1.08)
<i>Mucinous carcinoma</i>	0 (0)	3 (1.61)	0 (0)	3 (1.61)
<i>Bening phylloides</i>	2 (1.08)	3 (1.61)	0 (0)	5 (2.69)
<i>Sclerosing adenosis</i>	5 (2.69)	1 (0.54)	0 (0)	6 (3.23)
TOTAL	101 (54.30)	77 (41.40)	8 (4.30)	186 (100)
Pearson Chi-Square = 11.848, DF = 8, P-Value = 0.158				

FCD: Fibrocystic disease of breast, G. Mastitis: granulomatous Mastitis, IDC: Invasive ductal carcinoma, ILC: Invasive lobular breast cancer and IPC: Intracystic papillary carcinoma

Table 5. Relation of different type of being lesion diagnosis with different age groups (No. (%))

Age (Years)	Breast abscess	Duct ectasia	Fat necrosis	Fibroadenoma	F.C.D	G. Mastitis	Benign phylloide	Gy.CO	S.A	TOTAL
>20	0 (0)	0 (0)	0 (0)	16(11.6)	0 (0)	0 (0)	1 (0.8)	0 (0)	0 (0)	17 (12.3)
21-30	1(0.72)	1 (0.72)	1 (0.72)	16(11.59)	4 (2.90)	1(0.72)	1(0.72)	2(1.45)	0 (0)	27(19.57)
31-40	1(0.72)	2 (1.45)	1 (0.72)	12(8.70)	12(8.70)	2(1.45)	0 (0)	2(1.45)	4(1.45)	36(26.09)
41-50	4(2.90)	3 (2.17)	4 (2.90)	4 (2.90)	15(10.87)	14(10.14)	2(1.45)	0 (0)	2(1.45)	48(34.78)
51-60	0 (0)	1 (0.72)	0 (0)	0 (0)	3 (2.17)	2 (1.45)	1(0.72)	0 (0)	0 (0)	7 (5.07)
61-70	0 (0)	0 (0)	0 (0)	0 (0)	1 (0.72)	1 (0.72)	0 (0)	0 (0)	0 (0)	2 (1.45)
71-80	0 (0)	0 (0)	0 (0)	0 (0)	1 (0.72)	0 (0)	0 (0)	0 (0)	0 (0)	1 (0.72)
TOTAL	6(4.35)	7 (5.07)	7 (5.07)	48 34.78)	36 26.09)	20(14.49)	5(3.62)	4(2.90)	6(4.34)	138 (100)

F.C. D: Fibrocystic disease of breast, G. Mastitis: granulomatous Mastitis, Gy.co = Gynecomastia, and S.A = Seclerosig Adenosis

Table 6. Relation of different type of malignant lesion diagnosis with different age group (No. (%))

Age (Years)	I.D.C	I.L.C	I.P.C	Malignant Phylloides	Medullary carcinoma	Mucinous carcinoma	TOTAL
>20	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
21-30	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (2.1)	1 (2.1)
31-40	10 (20.8)	1 (2.1)	0 (0)	1 (2.1)	1 (2.1)	1 (2.1)	14 (29.2)
41-50	7 (14.58)	1 (2.1)	0 (0)	1 (2.1)	1 (2.1)	1 (2.1)	12 (25)
51-60	8 (16.66)	1 (2.1)	2 (4.16)	0 (0)	0 (0)	0 (0)	12 (25)
61-70	5 (10.42)	4 (8.33)	0 (0)	0 (0)	0 (0)	0 (0)	9 (18.75)
71-80	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
TOTAL	30(62.50)	7 (14.58)	2 (4.16)	2 (4.16)	2 (4.16)	3 (6.25)	48 (100)

IDC: Invasive ductal carcinoma, ILC: Invasive lobular breast cancer and IPC: Intracystic papillary carcinoma

Results from histopathology were illustrated in Figures 1-4. Figures 1 showed intraductal papilloma that showed multiple branching papillae with fibrovascular core growing in dilated duct which is lined by benign ductal epithelial cells and myoepithelial cells. Figure 2 showed fibroadenoma that illustrated biphasic proliferation of interlobular stromal compressing of ductal epithelial components that give intracanalicular growth pattern of fibroadenoma. In Figure 3 was showed Invasive lobular carcinoma which showing tumor cells discohesive, small monomorphic and lacking marked atypia which arrange in linear fashion (single files) within fibrous stroma. While figure 4 showed Invasive duct carcinoma that illustrated solid nest of malignant neoplastic cells invading the surrounding breast tissue

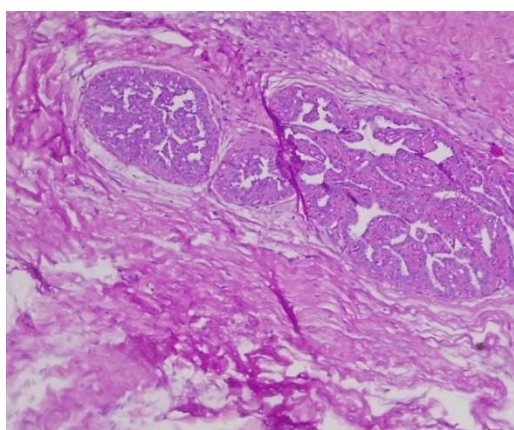


Figure 1: Intraductal papilloma that showed Multiple branching papillae with fibrovascular core growing in dilated duct which is lined by benign ductal epithelial cells and myoepithelial cells (x50) Hematoxylin & eosin stain

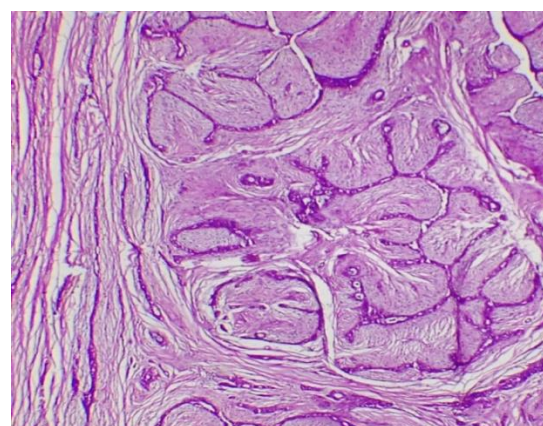


Figure 2: Fibroadenoma :Biphasic proliferation of intralobular stromal compressing of ductal epithelial components that give intracanalicular growth pattern of fibroadenoma (x50) Hematoxylin & eosin stain

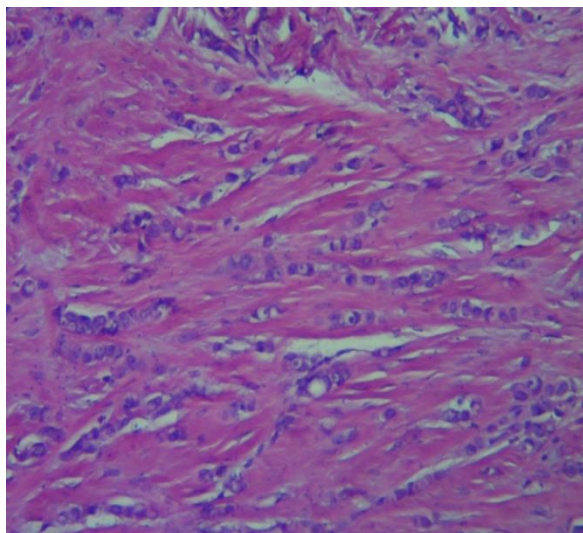


Figure 3: Invasive lobular carcinoma : Tumor cells discohesive ,small monomorphic and lacking marked atypia which arrange in linear fashion (single files)within fibrouse stroma (x40 Hematoxylin & eosin stain)

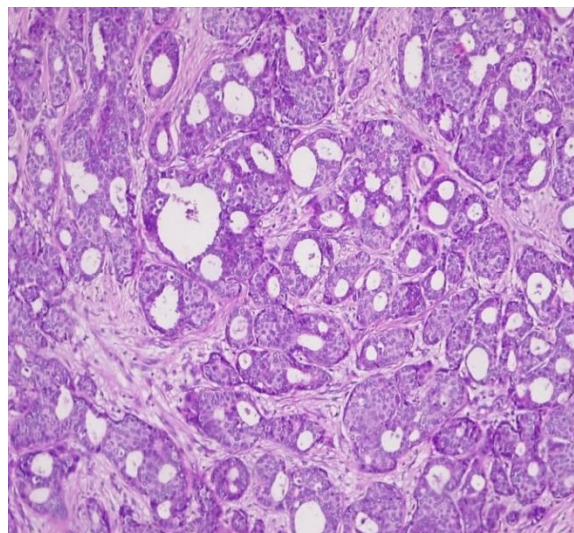


Figure 4: Invasive duct carcinoma: Solid nest of malignant neoplastic cells invading the surrounding breast tissue (x50) Hematoxylin & eosin stain

DISCUSSION

Diseases of the breast are common and include problems related to pregnancy and lactation, abscess and other inflammatory conditions, non-neoplastic proliferative disorders and neoplasms [19]. Breast lesions formed of all specimens, received and processed by the pathology laboratory. The anxiety and fear associated with increased awareness of breast cancer has significantly improved the health seeking behavior of patients with breast lumps [11]. In this study one hundred and eighty-six case were studied over a three years' period (2017- 2019) at El-Bayda City. Over all cases, the data have gathered represented in 186 cases the ratio between benign to malignant was 1 to 0.35. Compression to study by Kumar et al in Indian observed that rural population the benign breast diseases are five to ten times more common than malignant diseases [20]. In another study, Memon et al referred that in West Bengal the ration is as high as 10:1 [21]. The benign lesions of the breast are the most common lesions throughout the world [22-24]. Previous finding in Saudi Arabia is in line with the result in present study as 74.19% of cases were benign and 25.81% were malignant. It also was in agreement by comparing the incidence of breast lesions occurrence in between male and female [25]. Current study found that, cases are most common in female patients by 97.19% than in male patients by 2.2% and this in agreement with Dnyaneshwar et al. who found that 97.08% was female patients and 2.91% male patients in India [26]. Regarding the benign breast lesions in current study data found that the right side breast lesions were more common than the left side breast lesions. These findings in the present study are opposite to the studies done before [27, 28].

The mean age of incidence of breast lesions in this study was 41-50 years. The majority of benign breast lesions were found in women of reproductive age up to 40 years in the previous study at same Medical Center [22]. A study conducted in the United States showed that 7% of women with breast cancer were diagnosed before the age of 40 years, and this disease accounts for more than 40% of all cancers among women in this age group [29]. The high incidence peak was in 2nd & 3rd decay of life, the reason for this high frequency is not clearly understood but it may be due to hormonal effects and changes during this period of development. In the current study out of 186 cases 48 case was reported by histo-pathologist as benign breast lesions we recognized that fibro-Adenoma is the most common predominant lesion as in agreement with most available studies [19, 20, 22]. Fibro cystic diseases were second most common condition in 15 case with a high incidence peak at the 4th & 5th decay this finding is similar to previous studies [22, 30]. The present study showed that invasive ductal carcinoma is the most common predominant malignant breast lesion disease with a percentage of 62.50 % among the studied malignant breast lesions and that in line with [26, 31]. According to age distribution for malignant breast lesion this study revealed that the age between 31-40 years has the highest frequency occurrence of invasive ductal carcinoma disease. Gynaecomastia constituted in 4 cases with 2.90% incidence while Hatim et al reported an incidence of 4.3% of gynaecomastia [32]. Bagle et al reported 2.25%

incidence of gynaecomastia [33]. From current study, noticed out many results and findings which would be useful for early detecting and follow ups for a better prognosis since we will help out in early prediction and exploration of the disease in its early stages.

CONCLUSION

In conclusion, this study has shown that benign breast lesions are common, while invasive ductal carcinoma is the commonest malignant lesion involving mainly age groups between 31-40 years.

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Conflict of Interest

There are no financial, personal, or professional conflicts of interest to declare.

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