Patterns of Breast Diseases Among Women Attending Breast Diseases Diagnosing Center in Erbil City/Iraq

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Abstract

Background and Objectives: Breast diseases in women, whether benign or malignant, are very commonly encountered. The pattern of breast diseases varies within countries. The aim of this study was to identify the patterns of breast diseases and their association with different variables in women attending breast diseases diagnosing center in Erbil city/Iraq.

Material and Methods: A cross-sectional study conducted at breast diseases diagnosing center in Erbil city from 1st of April till 1st of December /2017. A random sample of 500 women of all age groups and with complete records was recruited. The women were classified according to their final diagnosis into 3 categories: normal, benign and malignant breast disease. The level of significance was <0.05.

Results: Benign breast diseases diagnosed among (63%) women while malignant breast diseases comprised (13.2%).The most common presentation was mastalgia and mass (39.2%), mastalgia (37.6%), and mass alone (23.2%). Fibro-adenoma (26.2%) was the commonest benign condition with highest incidence (76.9%) in age group less than 20 years. Malignant breast diseases were increasing with age. Benign breast disease associated (p <0.001) with Nulliparity. Breast cancer reported (p <0.001) more among lactating women.

Conclusions: Benign conditions are the most common diagnosis affecting mainly younger women. Breast cancer though diagnosed less frequently and affecting older age groups, yet its seriousness mandating a thorough assessment of women of different presentations especially that of mass alone or with mastalgia.

Keywords: Benign breast diseases, malignant breast diseases, mastalgia

1. Introduction

Breast diseases are a common heterogeneous group of illnesses alternating from self -limiting inflammatory diseases to life threatening invasive cancers (Guray & Sahin, 2006). Breast diseases are viewing an escalating trend worldwide (Rasheed, Sharma, Mohsin-ul-Rasool, Hafiz, & Bashir, 2014). This can be due to increasing community consciousness of breast cancer which is currently the most common female malignancy worldwide (Parkin, Bray, Ferlay, & Pisani, 2005). The greatest common cause of breast problems in females is benign breast diseases which is 10 times more common than breast cancer in the western world (Hatim, Laxmikant, & Mulla, 2017), internationally they account for approximately 90% of the clinical presentations related to the breast (Okoth, Galukande, Jombwe, & Wamala, 2013). While benign breast diseases are mainly perceived in women of reproductive age, the incidence is common mostly in the second decade with attainment on its greatest at fourth and fifth decade of life (Aslam et al., 2013; Chalya et al., 2016). Benign breast diseases includes a variety of histological entities typically sub divided into non-proliferative breast lesions, proliferative breast lesions without atypia, and proliferative breast lesions with atypia (Okoth et al., 2013), furthermore fibroadenoma, fibrocystic change and breast abscess account for most of benign lesions in most studies in developing countries (Chalya et al., 2016). Certain types of benign breast diseases are a significant risk factor for a later breast cancer (Okoth et al., 2013). Women with benign proliferative or atypical breast lesions consume a two- fold risk of developing breast cancer in western populations (Chalya et al., 2016). The pattern of breast diseases and their etiology differs among different countries and ethnic groups (Aslam et al., 2013). The most common symptoms of breast diseases are pain and palpable breast lumps, meanwhile other clinical features might be encountered including nipple discharge,

nipple deformity such as retraction and occasional skin changes (Chalya et al., 2016). Risk factors for benign and malignant breast diseases comprise; nulliparity, low parity, low age at first delivery and late menopause, emphasizing the fact towards excessive circulating estrogen levels (Aslam et al., 2013). Genetics and environment, the reproductive experience, the consequence of endogenous and exogenous hormones in women, the variation in immune status and host vulnerability, and the biologic elements of breast carcinoma, suspected to play an important role in breast carcinoma development. Additionally breast carcinoma occurs more frequently in women with a family history of the disease and it is evident currently that specific mutations are accountable for 5% of the breast cancers (Naeem et al., 2008).

1.1 Justification of the Study

Breast diseases being a common problem affecting all women throughout their life since adolescence till postmenopausal age and the variability of breast diseases reflected in its wide range of presentations extending from just self-limiting inflammatory lesions to markedly serious life threatening cancers, rendering studies that explore the patterns of these diseases in our locality to be a matter of high concern.

1.2 Aim of the Study

To determine the patterns of breast diseases among women attending breast diseases diagnosing center in Erbil city

1.3 Specific Objectives of the Study

1). To identify the demographic, personal, obstetrical & gynaecological characteristics of women and their association with breast diseases

2). To identify the mode of presentations of different categories of breast diseases

2. Materials and Methods

2.1 Study Design

A cross-sectional study.

2.2 Study Setting and Duration

This study was conducted at breast diseases diagnosing center in Erbil city for the period from 1st of April 2017 till 1st of December /2017. Erbil is a governorate in Kurdistan region at the north of Iraq. The breast diseases diagnosing center is the only public center in Erbil city providing services free of charge for all women referred from different health facilities of urban or rural areas.

2.3 Study Population and Sampling

All the women (1500) who had been attended breast disease diagnosing center for the period from Jan 2012 to Dec 2016 were eligible to be included in the study. The sample size had been calculated using the formula (Naing et al., 2006):

$$ss = \frac{Z\,2 * (p) * (1-p)}{c^2}$$

Z= (1.96 for 95% confidence level)
p=0.5
c = confidence interval, (0.05)

$$ss = \frac{(1.96)^2 * (0.5) * (1-0.5)}{0.0025} = 384$$

Accordingly 500 women were selected randomly using a systematic randomization method through utilizing the serial number of their records so as one of every three subsequent serial numbers (1, 4, 7, 10…etc.) had been assigned to be included. When the data of the selected record found to be incomplete it was substituted with the record of the following serial number without interfering with the initially chosen numbers

2.3.1 Inclusion Criteria

Women of all age groups and having complete records.

2.3.2 Categorization of Study Population

The women recruited in this study were classified, according to their final diagnosis, into three categories: firstly; normal findings, secondly; benign breast diseases (BBD) that further classified into proliferative benign breast diseases (PBBD) including: fibroadenoma, intraductal papilloma, non proliferative benign breast diseases (NPBBD) including: breast cyst, fibroadenotic breast changes, fibrocystic breast changes and those with miscellaneous benign breast diseases including: mastitis**,** breast abscess, ductectasia lipoma, galactocele, fatty necrosis, hematoma, and accessary breast. Thirdly; malignant breast disease either primary or with secondary axillary lymph node metastasis (Sabel, 2017).

2.4 Data Collection

2.4.1 Source of Data

The records that were already structured and completed for every client visiting the center had been utilized.

2.4.2 Component of Data

History: demographic and personal history including age, marital status and smoking. Gynaecological and obstetrical history including menstrual history, menopause, age at menopause, parity, age at 1st delivery and lactation (with duration of at least 6 months).

Clinical presentation: including both chief complain; Mastalgia, mass or mass with mastalgia, and associated symptoms; discharge, skin changes, nipple retraction and axillary swelling.

Confirmation of breast diseases: The final diagnosis was obtained from the records which was ascertained by either ultrasonography, mammography and/ or cytological examination whether obtained by fine needle aspiration cytology FNAC or core biopsy.

Statistical analysis: Data were analyzed using the Statistical Package for Social Sciences (SPSS, version 22). Chi square test and Fisher's exact test were used to assess the associations between different variables. A p value of < 0.05 considered the level of significance in this study

3. Results

Five hundred women involved in this study, their mean age $\pm$ SD was 38.42 $\pm$ 12.00 years, the median was 39 years. The age range was 13 to 70 years.

Table 1. Detailed final diagnosis of the studied sample

	Frequency	(%)
Normal	119	(23.8)
Benign breast diseases (BBD)	315	(63.0)
PBBD*		
-Fibro-adenoma	131	(26.2)
-Intraductal papilloma	1	(0.2)
NPBBD**		
-Breast cyst	43	(8.6)
-Fibroadenotic breast changes	23	(4.6)
-Fibrocystic breast changes	16	(3.2)
Miscellaneous breast disease		
-Mastitis	28	(5.6)
- Ductectasia	25	(5.0)
-Breast abscess	24	(4.8)
-Lipoma	11	(2.2)
-Galactocele	7	(1.4)
-Fatty necrosis	4	(0.8)
-Hematoma	1	(0.2)
-Accessary breast	1	(0.2)
Malignant breast diseases	66	(13.2%)
-Primary cancer	55	(11.0)
-Cancer with lymph node metastasis	11	(2.2)
Total	**500**	**(100.0)**

*Proliferative benign breast diseases.

**Non- Proliferative benign breast diseases.

The most prevalent benign breast diseases in the studied sample were fibro-adenoma (26.2%) and breast cyst (8.6%) as presented in Table 1. Regarding malignant conditions, (11%) of women presented with primary cancer, and (2.2 %) presented as cancer with lymph node metastasis. Other details were presented in the mentioned table.

Table 2. Association of age, marital status and smoking with the final diagnosis

	Final diagnosis						
	Normal	PBBD	NPBBD	Miscellaneous	Malignant	Total	p
	No.	No.	No.	No.	No.	No.	
	(%)	(%)	(%)	(%)	(%)	(%)	
Age (years)							
< 20	1	20	4	1	0	26	
	(3.8)	(76.9)	(15.4)	(3.8)	(0.0)	(100.0)	
20-29	13	48	14	23	1	99	
	(13.1)	(48.5)	(14.1)	(23.2)	(1.0)	(100.0)	
30-39	18	44	18	30	21	131	< 0.001
	(13.7)	(33.6)	(13.7)	(22.9)	(16.0)	(100.0)	
40-49	49	18	31	33	24	155	
	(31.6)	(11.6)	(20.0)	(21.3)	(15.5)	(100.0)	
≥ 50	38	2	15	14	20	89	
	(42.7)	(2.2	(16.9)	(15.7)	(22.5)	(100.0	
Marital status							
Ever married	113	92	65	99	59	428	
	(26.4	(21.5)	(15.2)	(23.1)	(13.8)	(100.0)	
Unmarried	6	40	17	2	7	72	< 0.001
	(8.3)	(55.6)	(23.6)	(2.8)	(9.7)	(100.0)	
Smoking							
Yes	4	1	4	2	5	16	
	(25.0)	(6.3)	(25.0)	(12.5)	(31.3)	(100.0)	
No	115	131	78	99	61	484	0.081*
	(23.8)	(27.1)	(16.1)	(20.5)	(12.6)	(100.0)	
Total	119	132	82	101	66	500	
	(23.8)	(26.4)	(16.4)	(20.2)	(13.2)	100.0)	

It was evident in Table 2 that the prevalence of malignant breast diseases increased with increasing age and the prevalence was highest (22.5%) among those aged ≥ 50 years, while none of those aged less than 20 years found to have malignant diseases. Meanwhile the prevalence of PBBD decreased significantly (p < 0.001) with increasing age. The prevalence of malignant breast diseases was higher among the ever married women (13.8%) compared with (9.7%) of the unmarried women. On the other hand the most common conditions among the unmarried women were PBBD (55.6%), compared with (21.5%) among the ever married women. No significant association had been detected between smoking and the final diagnosis (p = 0.081).

Table 3. Association of gynecological history with the final diagnosis

	Final diagnosis						
	Normal	PBBD	NPBBD	Miscellaneous	Malignant	Total	p
	No.	No.	No.	No.	No.	No.	
	(%)	(%)	(%)	(%)	(%)	(%)	
Menstrual history							
Regular	64	110	54	73	34	335	
	(19.1)	(32.8)	(16.1)	(21.8)	(10.1)	(100.0)	
Irregular	22	20	17	18	13	90	
	(24.4	(22.2)	(18.9)	(20.0)	(14.4)	(100.0)	< 0.001
Menopause	33	2	11	10	19	75	
	(44.0)	(2.7)	(14.7)	(13.3)	(25.3)	(100.0)	
Total	119	132	82	101	66	500	
	(23.8)	(26.4)	(16.4)	(20.2)	(13.2)	(100.0)	
Age at menopause (years)							
< 45	7	0	3	1	2	13	
	(53.8	(0.0)	(23.1)	(7.7)	(15.4)	(100.0)	
45-50	14	2	5	4	9	34	0.862*
	(41.2)	(5.9)	(14.7)	(11.8)	(26.5)	(100.0)	
>50	12	0	3	5	8	28	
	(42.9)	(0.0)	(10.7)	(17.9)	(28.6)	(100.0)	
Total	33	2	11	10	19	75	
	(44.0)	(2.7)	(14.7)	(13.3)	(25.3)	(100.0)	

*By Fisher's exact test.

Table 3 showed that the prevalence of malignant diseases was (25.3%) among menopausal women while the prevalence in the whole sample was (13.2%). At the same time, nearly half (44%) of the menopausal women found to be normal. Around one third (32.8%) of those with regular menstrual history had PBBD (p < 0.001). The same table showed no significant association between age at menopause with the final diagnosis (p = 862).

Table 4. Association of obstetrical history with the final diagnosis

	Final diagnosis						p
	Normal	PBBD	NPBBD	Miscellaneous	Malignant	Total	
	No.	No.	No.	No.	No.	No.	
	(%)	(%)	(%)	(%)	(%)	(%)	
Parity							
Nulliparous women	5	17	10	4	3	39	
	(12.8)	(43.6)	(25.6)	(10.3)	(7.7)	(100.0)	
1-3	39	51	22	34	23	169	
	(23.1)	(30.2)	(13.0)	(20.1)	(13.6)	(100.0)	< 0.001
> 3	69	24	33	61	33	220	
	(31.4)	(10.9)	(15.0)	(27.7)	(15.0)	(100.0)	
Total	113	92	65	99	59	428	
	(26.4)	(21.5)	(15.2)	(23.1)	(13.8)	(100.0)	
Age at first delivery							
less than 18 years	23	10	12	16	5	66	
	(34.8)	(15.2)	(18.2)	(24.2)	(7.6)	(100.0)	
18-30	76	61	39	76	42	294	0.074
	(25.9)	(20.7)	(13.3)	(25.9)	(14.3)	(100.0)	
More than 30	9	4	4	3	9	29	
	(31.0)	(13.8)	(13.8)	(10.3)	(31.0)	(100.0)	
Total	108	75	55	95	56	389	
	(27.8)	(19.3)	(14.1)	(24.4)	(14.4)	(100.0)	
Lactation							
Yes	25	31	23	46	37	162	
	(15.4)	(19.1)	(14.2)	(28.4)	(22.8)	(100.0)	< 0.001
No	83	44	32	49	19	227	
	(36.6)	(19.4)	(14.1)	(21.6)	(8.4)	(100.0)	
Total	108	75	55	95	56	389	
	(27.8)	(19.3)	(14.1)	(24.4)	(14.4)	(100.0)	

Table 4 showed that only (12.8%) of the nulliparous women were normal, while (26.4%) of the whole sample were normal. On the other hand (43.6%) of the nulliparous women had PBBD compared with (21.5%) in the whole sample. At the same time, the least prevalence of malignancy (7.7%) was among the nulliparous women (p < 0.001). No significant association was detected between age at first delivery and the final diagnosis (p = 0.074). More than one third (36.6%) of non-lactating women found to be normal compared with (15.4%) of lactating women (p < 0.001).
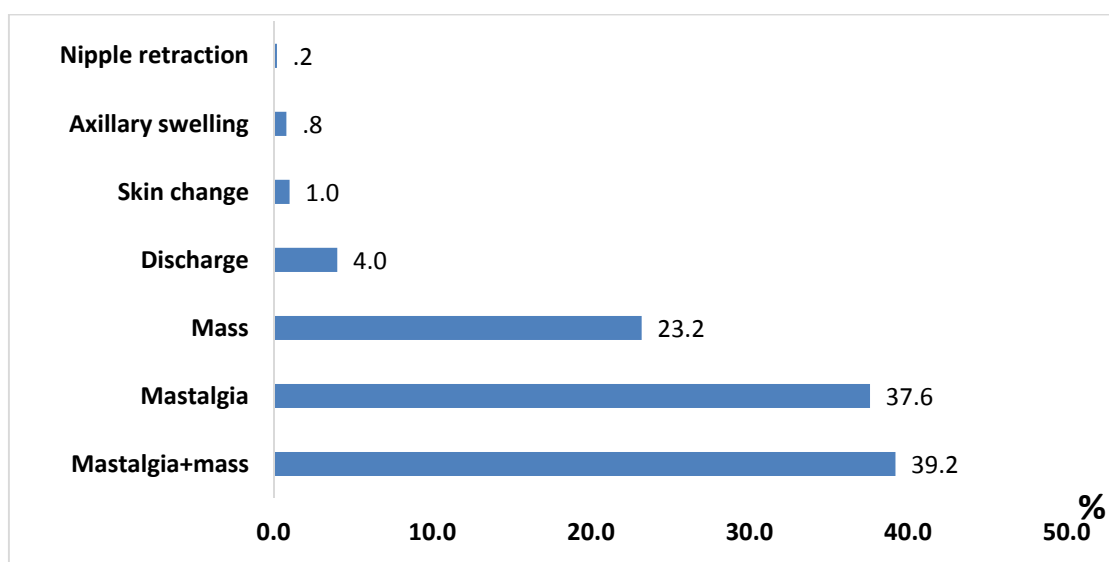
Figure 1. Chief complain and associated symptoms

The most common presentation was mastalgia and mass (39.2%), mastalgia (37.6%), and mass alone (23.2%). Meanwhile other symptoms including discharge (4%), skin changes (1%), axillary swelling (0.8%), and nipple retraction (0.2%) were less frequently reported as shown in Figure 1.

Table 5. Association of signs and symptoms with the final diagnosis

	Final diagnosis						
	Normal	PBBD	NPBBD	Miscellaneous	Malignant	Total	p
	No.	No.	No.	No.	No.	No.	
	(%)	(%)	(%)	(%)	(%)	(%)	
Chief complain							
Mastalgia	112	5	29	40	2	188	
	(59.6)	(2.7)	(15.4)	(21.3)	(1.1)	(100.0)	
Mass	1	57	13	13	32	116	< 0.001
	(0.9)	(49.1)	(11.2	(11.2)	(27.6)	(100.0)	
Mastalgia+mass	6	70	40	48	32	196	
	(3.1)	(35.7)	(20.4)	(24.5)	(16.3)	(100.0)	
Associated symptoms							
Discharge	3	1	3	12	1	20	
	(15.0)	(5.0)	(15.0)	(60.0)	(5.0)	(100.0)	
Skin change	0	1	1	1	2	5	
	(0.0)	(20.0)	(20.0)	(20.0)	(40.0)	(100.0)	
Nipple retraction	0	0	0	0	1	1	0.002
	(0.0)	(0.0)	(0.0)	(0.0)	(100.0)	(100.0)	
Axillary swelling	0	1	0	2	1	4	
	(0.0)	(25.0)	(0.0)	(50.0)	(25.0)	(100.0)	
No associated symptom	116	129	78	86	61	470	
	(24.7)	(27.4)	(16.6)	(18.3)	(13.0)	(100.0)	
Total	119	132	82	101	66	500	
	(23.8)	(26.4)	(16.4)	(20.2)	(13.2)	(100.0)	

Table 5 showed that only (1.1%) of those who presented with mastalgia had malignant breast disease, compared with (27.6%) of those who presented with a mass, and (16.3%) who presented with a mass and mastalgia (p < 0.001). Significant association (p = 0.002) was detected between associated symptoms and the final diagnosis, nipple retraction was the single most important symptom associated with breast cancer.

4. Discussion

Breast diseases are common in women because estrogen cyclically stimulates breast development during their reproductive life. Although benign breast diseases constitutes the majority of breast problems yet it is a neglected entity since breast cancer being more serious and fearsome (Rasheed et al., 2014) so as far more attention is focused on the most common female malignancy worldwide (Parkin et al., 2005).

The breast diseases diagnosing center being the only public center in Erbil city dealing with breast diseases and the recruited study sample is randomly selected from a representative population renders the generalizability of the results of this study to be possible.

The pattern of breast diseases and their etiology varies among different countries and ethnic groups (Aslam et al., 2013).In this study the pattern of breast diseases among women attending breast diagnosing center in Erbil city /Iraq had been identified, thus nearly two thirds (63%) of them were diagnosed as benign breast diseases while 13.2% found to have breast cancer, these results were nearly similar to two studies conducted in Nigeria (Mayun, Pindiga, & Babayo, 2008; Uwaezuoke & Udoye, 2014) while other studies conducted in India (Rasheed et al., 2014) and Tanzania (Chalya et al., 2016) showed slightly higher proportions of both benign breast diseases; (80.7%), (80,4%) and that of breast cancer (22.2 %), (19.6%) respectively. This could be related to the demographic characteristics of the selected sample since only (17%) of the women in this study were above 50 years.

The most common benign breast disease (BBD) in this study found to be fibroadenoma (26.2%) which was consistent with the results of most of the available studies but with lower proportion; in India (45%) (A.Gupta, A.K. Gupta, Goyal, & Sharma, 2015), in Nigeria (45.6%) (Uwaezuoke & Udoye, 2014) and (52%) in a study done by (Naveen, Mukherjee, & Mahajan, 2013). While the second most common benign breast disease in this study found to be breast cyst (8.6 %), a study done in Africa (Femi, Nnaetio, & Ayedima , 2016) showed that breast cyst was the 5th benign disease but with a proportion of (14.0%). Mastitis found to be the 3rd most common BBD (5.6%) in our study meanwhile it was found in the same study done in Africa to be the 2nd most common BBD with a proportion of (19.3 %) (Femi et al., 2016) . Fibrocystic changes in the current study ranked as the 5th most common BBD (3.2%) compared to other studies conducted in Pakistan (Memon et al 2007) and in Jamaica (Shirley et al., 2008) both reported fibrocystic changes as the most common BBD in their series. while other study done in Nigeria found that fibrocystic breast changes to be the 2nd most common BBD (26.3%) (Uwaezuoke & Udoye, 2014).

4.1 Demographic and Personal Characteristics of Women With Breast Diseases

Benign breast diseases were primarily seen in women of reproductive age and thought to be largely hormonally induced (Aslam et al., 2013, Chalya et al., 2016,). The age of women in this study found to be significantly associated (p <0.001) with the different categories of breast diseases, The most predominant breast diseases (76.9%) among women less than 20 years and those aged between 20-29 years (48.5%), was PBBD including fibroadenoma as the most frequent one. A study done in india (Mallikarjuna & MARALIHALLI, 2015) found that Fibroadenoma was the commonest benign disease with highest incidence in age group 11-20 years (47.22%), while (Duray, 1984, Pike & Oberman, 1985) described fibroadenoma to be most likely to occur in adolescents and at the time of menarche. The lobules and stroma in the breast of women between adolescence and the mid-20s may respond to hormonal stimuli in an exaggerated fashion leading to the development of single and multiple palpable fibroadenomas (Abhijit, Anantharaman, Bhoopal, & Ramanujam, 2017).

Women with age ≥ 50 years presented in this study with the highest proportions of breast cancer (22%), this result could be matched to a study done in Palestinian Arab Kindred and Jewish population that reported mean ages of breast cancer 51.5 and 55.9 years respectively (Nissan et al., 2004) while other two studies conducted in two different cities in Iraq ;one in kirkuk (Mahmoud, 2014) and the other in Baghdad (Al-Alwan,1998) revealed that the peak age frequency of breast cancer was among patients aged 40-50 years.There are considerable variations in the risk factors other than age such as genetics, racial, social, cultural, hormonal and dietary habits may play a role in the etiopathogenesis of breast cancer (Mir et al., 2017).

Highest proportions of PBBD including fibroadenoma was diagnosed among those unmarried (55.6%) vs (23.6%) of married ones, which may be related to the age group of those with fibroadenoma being mostly less than 20 years, such finding did not revealed in a study done in China (Coriaty Nelson, Ray, Gao, & Thomas, 2002). Whereas

miscellaneous benign breast disease (MBBD) reported mostly in this study among married women (23.1%) vs (2.8%) of unmarried, since most frequent diseases included within this category ;breast abscess, mastitis, galactocele, are mostly related to lactation and in our country all lactating mothers are married. On the other hand the high frequency of malignant breast disease (MBD) founded among married group (13.8%) which was so much different from a study done in Ghana in which high frequency of MBD reported among unmarried group (53.1 %). (Adjei, 2012).

Whether smoking is considered a risk factor or protective factor for breast diseases including breast cancer is a matter of discrepancy among different studies. A study done in the New England region of the north eastern United States concluded that current smokers, but not former smokers, were at reduced risk for all benign breast diseases (Berkowitz et al., 1985) whereas smokers tend to have lower levels of endogenous estrogen than do non- smokers, and because fibroadenoma is believed to be stimulated by estrogen, an association between smoking and fibroadenoma considered to be biologically rational (Coriaty Nelson et al., 2002). Yet In a study done in Switzerland showed no substantial effect of ever, former, or current smoking on either fibrocystic breast disease or fibroadenoma (Goehring & Morabia, 1997). In our study only 16 (3.2%) out of 500 women were smoker which make it difficult to elicit such association between smoking and breast diseases, which was also not observed in a similar study with similar women behavior toward smoking done in Mazandaran in north of Iran (Naieni et al., 2007). The highest proportion (31.3%) of smokers in our study were reported among those with malignant breast diseases, meanwhile a study in Serbia proposed smoking as a risk factor for breast cancer and showed that people who quit smoking when over 50 years of age were at a higher risk (Rollison, Brownson, Hathcock, & Newschaffer , 2008), however another study done among Turkish women showed an inverse association between cigarette smoking and breast cancer risk. Cigarette smoking might protect against breast cancer due to its antiestrogenic effects (Ozmen et al., 2009) but it has so many potential side effects associated with an increased risk of other types of cancer so as to undermine its use as a protective measure for breast cancer.

4.2 Association of Gynecological History and Obstetrical History with Breast Diseases

The higher proportions of women in this study with menstrual cycle whether regular or irregular diagnosed to have PBBD, compared with menopausal ones (p<0.001).This result found to be consistent with a study done in china (Coriaty Nelson et al., 2002.) that furthermore had reached to a conclusion rendering the development and persistence of fibroadenoma to be dependent on the presence of ovarian hormones, otherwise women who had experienced menopause were at reduced risk of fibroadenoma. Otherwise menopause found to be associated with higher proportion of breast cancer (25.3 %) vs (10.1%) of those with regular menstrual cycle, which was concordant with a study done in Mazandaran province in Iran (Naieni et al., 2007) that observed about four times more odds of breast cancer risk in the menopause women, beside other studies done by (Yavari, Mosavizadeh, Sadrol-Hefazi, & Mehrabi, 2005) and that done in Tabriz /Iran (Hosseinzadeh et al., 2014) which also revealed that menopause is a risk factor for breast cancer.

Age at menopause showed no apparent association with diagnosing neither BBD or MBD, yet a study done in Switzerland showed that the age at menopause may possibly related to fibrocystic breast disease but not to fibroadenoma (Goehring & Morabia, 1997). While Age at menopause revealed in our study to have no association with breast diseases was consistent with a study done at north of Iraq which concluded that higher age at menopause was not a risk factor for postmenopausal breast cancer (Zangana & Garota, 2012). Otherwise a study conducted in Iran found that with increasing menopause age to over 50 years, odds of cancer incidence reached 50.1, and doubled at age over 60 years (Veisy, Lotfinejad, Salehi, & Zhian, 2015).

During early pregnancy, estrogens and other circulating hormones cause the rapid proliferation of epithelial breast followed by hormonally driven differentiation of the mammary epithelium while the breast prepares for lactation and it is possible that this differentiation might protect against the development of fibroadenoma, (Coriaty Nelson et al., 2002). In our study the protective effect of parity on different categories of BBD manifested in that higher proportions of PBBD (43.6%) including fibroadenoma and that of NPBBD (25.6%) were diagnosed among nulliparous women beside their proportions tend to be decreased with increasing parity. Similarly a study done in China had also identified a decreasing risk of fibroadenoma associated with an increasing number of live births (Coriaty Nelson et al., 2002).Yet a study conducted in Switzerland showed that nulliparous women may be at increased risk of fibrocystic breast disease but not of fibroadenoma (Goehring & Morabia, 1997). The higher proportions of breast cancer reported with increasing parity in this study seem to be inconsistent with other studies that revealed a decreased risk of breast cancer with increasing number of parity (Yavari et al., 2005; Naieni et al., 2007; Hosseinzadeh et al., 2014). Meanwhile whether parity decrease the risk of breast cancer only in postmenopausal women (Zangana & Garota, 2012) or nulliparity increase the risk of breast cancer only in

postmenopausal (Clavel-Chapelon & Gerber, 2002) or only in premenopausal (Hsieh, Trichopoulos, Katsouyanni, & Yuasa, 1990) or both in pre and post- menopausal women (Zangana & Garota, 2012) still a matter of debate. There are considerable many risk factors that may play a role in the pathogenesis of breast cancer (Mir et al., 2017) and to identify the role of specific factor may require to conduct further studies with different design and methodology other than conducted in recent study.

Age at 1st delivery did not found to have associations with different categories of benign breast diseases in this study, otherwise a study done in Switzerland (Goehring & Morabia, 1997) concluded a negative association between age at first delivery and fibroadenoma. Late age at first birth delays terminal duct proliferation of mammary gland and such women may have a higher proportion of epithelial cells that are susceptible to carcinogenic insult (Ozmen et al., 2009) while younger age at first birth related to both early differentiation of mammary gland cells and longer cumulative duration of breast feeding which further reduces breast cancer risk (Zangana & Garota, 2012). In our study higher proportions of breast cancer diagnosed among those with late age at 1st delivery > 30 years (31.0%), similarly results from studies done by (Tavani et al., 1999; Ozmen et al., 2009) revealed that late age at first deliveries >30 years to be associated with increased risk of breast cancer moreover the study conducted in Kurdistan region in Iraq found that younger age at first live birth decreased the risk of breast cancer in both pre- and post-menopausal women (Zangan & Garota, 2012).

Lactation (at least 6 months) in current study found to have no role in the occurrence of different categories of benign breast diseases revealed in away so as higher proportions of those diagnosed to be normal were among non-lactating mothers (p<0.001) which was consistent with the results reached in a study conducted in China (Coriaty Nelson et al., 2002) and in Switzerland (Goehring & Morabia, 1997) that also could not find any association between breast feeding and fibroadenoma or fibrocystic breast disease. Breast feeding is hypothesized to primarily reduce the risk of breast cancer through two mechanisms; differentiation of breast tissue and reduction of the number of ovulatory cycles in a lifetime (Hosseinzadeh et al., 2014) yet our result showed higher proportion of breast cancer among lactating mothers, at the same time the results of another study conducted in Kurdistan region in Iraq also showed that breastfeeding is not protective against breast cancer for both pre and postmenopausal women (Zangana & Garota, 2012). On contrary studies done in Iran (Naieni et al., 2007; Hosseinzadeh et al., 2014) and in Turky (Ozmen et al., 2009) showed that women with a history of breastfeeding have a lower risk of breast cancer.

4.3 Mode of Presentation of Breast Diseases

The most frequent main clinical presentations of women attending breast diagnosing center in Erbil city found to be mastalgia + lump (39.2 %), followed by mastalgia (37.6%) then breast lump (23.2 %). While other associated symptoms were less frequently reported; nipple discharge, nipple retraction and skin changes. The frequency of main clinical presentation of breast diseases could be different among similar studies conducted in different countries but still breast lump was among the most frequent ones followed by either breast pain or breast lump and pain (Chalya et al., 2016; Abhijit et al., 2017).

The significant association (p<0.001) of main clinical presentations with the final diagnosis in the present study revealed in the high proportion of those presented with mastalgia yet diagnosed to be normal (59.6%) or having MBBD (26. %). On the other hand breast lump alone or with mastalgia were mostly reported among PBBD and breast cancer, thus our finding was comparable with a study done in Pakistan (Aslam et al., 2013) that showed the most common complain of fibroadenoma to be lump and next was pain, while a study done in Kashmir valley (Mir et al., 2017) found lump followed by lump and pain to be the commonest presentation of breast cancer.Early breast cancer may not be noticed due to lack of symptoms but when tumor grows in size patients presents with lump or swelling of breast with pain, dimpling, ulceration of skin, redness of nipple or skin, changed contour and texture of breast or nipple discharge (Aslam et al., 2013).

MBBD including beast abscess and mastitis mostly presented with mastalgia or mastalgia and mass which found to be similar to a study done in Pakistan that also found pain to be the common complain & lump was the next in breast abscess, acute mastitis, & mammary ductectasia (Aslam et al., 2013).

In spite infrequently reported associated symptoms, it could be a manifestation of serious conditions of breast disease revealed in nipple retraction which found to be reported totally with breast cancer rendered it to be alarming signs for raising the red flag. Otherwise nipple discharge could be associated with less freighting breast conditions categorized among MBBD. It is worth to mention that the majority of the patients in the present study had no associated symptoms, so it is difficult to draw a conclusion.

4.1 Limitation of the Study

The design of this study being cross sectional, thus the temporal relationship between the exposure and the outcome could not be elicited. Furthermore only associations could be inferred from the statistical analysis of the available data.

5. Conclusions

Majority of women presenting with breast problems diagnosed to have benign diseases. The proliferative conditions including fibroadenoma are the most common ones and affecting mainly younger age groups. Breast cancer constituting 13.2% of breast diseases is diagnosed mainly among older age groups >50 years. Mastalgia and mass are the commonest presentation of all breast diseases and need to be thoroughly investigated to exclude malignancy. Meanwhile young age women could be assured that breast complains affecting them are mostly related to benign conditions that could be managed effectively though occasionally may need proper follow up especially those of precancerous tendency.

Acknowledgements

Competing Interests Statement

The authors declare that there are no competing or potential conflicts of interest.

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