

Benign Breast Disorders –a Histiopathological Study in Tikrit City

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Abstract

The objective of the present study is to determine the frequencies of various benign breast diseases (BBD) in female patient in Tikrit city. A retrospective descriptive study of all female patients visiting surgical clinic with breast problems was performed. This study was conducted at Tikrit Teaching Hospital and the main private histopathological laboratory in Tikrit over the period from January -2000 to the end of December 2007. All the patients were diagnosed as carcinoma were excluded. A total of 485 patients were included in this study. About 35.7% (173/485) patients were belonged to the 3rd decade of life (age between 21-30 year), followed by 30.5% (148/485) were belong to 4th decade (age between: 31-40 years). Fibrocystic disease was the commonest of all benign breast disease, seen in about 33% (162/485) mainly in the 3rd, 4th & 5th decades of life with peak at 31-40 years followed by fibroadenoma that is seen in 27.6%(134/485) of the cases mostly in the 2nd & 3rd decades of life. It is found that benign breast diseases are common problem in females of reproductive age.

Keywords: benign breast disease, fibrocystic disease, fibroadenoma.

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الخلاصة

تهدف هذه الدراسة الى تحديد تواتر الحالات المختلفة من أمراض الثدي الحميدة للإناث في مدينة تكريت و قد تم اجراء دراسة وصفية لكل النساء اللواتي زرن العيادة الجراحية بخصوص مشاكل الثدي. تم اجراء هذه الدراسة في مستشفى تكريت التعليمي وفي مختبر النسيج المرضي الخاص الرئيسي في مدينة تكريت للفترة من كانون الثاني ٢٠٠٠ الى نهاية كانون الأول ٢٠٠٧. تم استبعاد كل المريضات المشخصات بالاصابة بسرطان الثدي، وتضمنت الدراسة ٥٨٥ حالة. ٣٥.٧% (٤٨٥/١٧٣) من الحالات ضمن العقد الثالث من العمر (٢١ - ٣٠) سنة، يتبعها ٣٠.٥% (٤٨٥/١٤٨) ضمن العقد الرابع (٣١-٤٠) سنة. تم التوصل الى ان المرض التليفى التكيسي للثدي كان الأكثر شيوعاً من بين الأمراض الحميدة و يكون ٣٣% (٤٨٥/١٦٢) غالباً في العقد الثالث والرابع والخامس من العمر وذوته بين ٣١-٤٠ سنة يتبع هذا المرض الورم الليفي الغددي الحميد حيث لوحظ في ٢٧.٦% (٤٨٥/١٣٤) من الحالات في العقدين الثاني والثالث من العمر.

Introduction

Benign breast diseases BBD constitute a heterogeneous group of lesions arising in the mammary epithelium or in other mammary tissues and can present a wide range of symptoms or may be detected as incidental microscopic finding[1-2]. BBD includes all nonmalignant pathological conditions of a

breast, including benign tumors that do not increase a patient risk for developing cancer, lesions that confer a slightly increase risk and lesions that are associated with up to 50% risk of developing breast cancer[3] (table1). BBD can preset as a palpable mass, pain & nipple discharge or nipple inversion. Much concern is given to malignant breast

lesions, this is despite the fact that the majority of the lesions that occur in breast are benign, 90% of patients visiting breast clinic, will have nonmalignant disorders [4,5]. Benign conditions are common and have an incidence of 12% in general female population during child bearing age [6].

Fibrocystic disease complex comprises a spectrum of changes including cyst formation, apocrine metaplasia and alterations of lobules especially blunt duct adenosis, sclerosing adenosis and epithelial hyperplasia. Fibrocystic diseases may present symptomatically with cyst formation, as a semi discrete mass or an ill-defined thickening or nodularity[15].

Ductectasia affects perimenopausal women, an inflammatory process involving large duct caused by ruptured duct with release of lipid-rich secretions, with episodes of periductal mastitis and abscesses typically located around the areola[16].

Breast abscess may originate from infection of subareolar ducts and or preexisting galactocele (puerperal mastitis), or from ruptured ectatic ducts or cysts with chemical inflammatory and subsequent bacterial super infection. Puerperal mastitis has an acute onset when there is penetration of staphylococcus through crack in the nipple. If mastitis is not treated properly it will end in abscess with necrotic tissue and pus in the abscess cavity [16]

Granulomatous mastitis resulting from infectious etiology, foreign material or systemic autoimmune disease can involve the breast [1].

Fat necrosis is a non-supportive inflammatory process resulting from saponification of the adipose tissue after trauma, biopsy, radiotherapy or associated with fibrocystic disease and ductectasia as a result of ruptured duct extravasation of blood causes edema and stromal thickening with ischemia and necrosis due to local pressure

and subsequent adipocyte rupture, accumulation of macrophages and giant cells with necrotic lipid vacuoles.[16]

Ductal papillomas are intraductal epithelial proliferation of papillary appearance with fibrovascular stalk and therefore are well vascular and cellular. A distinction is made between papillomas which arise as single lesions in the large retroareolar ducts in perimenopausal period, and papillomas which arise in peripheral ducts seen in younger patients that are multiple and may associate with proliferative atypical features and are considered at high risk of malignant transformation [17-19].

Fibroadenomas are benign solid tumors developing from a terminal duct lobular unit due to uncoordinated proliferation of the epithelial and stromal component (due to estrogen stimulation) which involves part of the surrounding tissues; these tissues are compressed by the expansive growth creating a pseudocapsule. Stromal elements may undergo a myxoid degeneration, hyalinization, sclerosis and calcification, whereas the epithelial elements may present all proliferative and non-proliferative aspects of the breast parenchyma like apocrine metaplasia, ductal hyperplasia, sclerosing and florid adenosis(8).

Fibroadenomas with apocrine metaplasia., ductal hyperplasia, sclerosing adenosis or cysts are defined as "complex ".(12-13) fibroadenomas have two peaks of incidence: in the third and in the fifth decade of life, but they may occur after menopause as a result of hormone replacement therapy, they can grow rapidly but usually up to 2-3 cm. Giant and juvenile fibroadenomas may reach 6-10 cm, they have cellular stroma and should be distinguished from benign phyllodes tumor [12-13]. They can be multiple and bilateral in 20-25% of patients. Carcinoma rarely develops within fibroadenoma, this is occurs

in 1 out of 1000 case with increased risk related to complex fibroadenoma. [14].

Phyllodes tumor account for 2-3% of all fibroepithelial lesions with peak incidence in perimenopausal age and another peak before the age of twenty. Histologically there is marked intraductal growth of stroma, Treves & Sunderland divide phyllodes tumor into subclasses: benign, borderline and malignant based on the number of mitosis, the type of cellularity and nuclear atypia(17).

The aim of the present study is to determine the frequencies of various benign breast diseases (BBD) & the relation to the age for each specific type in female patient in Tikrit city.

Experimental Work

Materials and method

The present study was done at main laboratory at Tikrit teaching hospital histopathology unit & the main private histopathological laboratory at Tikrit city from January-2000 to the end of December 2007. A total of 485 cases of benign breast disorders were retrospectively collected & tabled according to the age & histopathological types of the disease as recorded in the laboratory reports those were reviewed (tables 2, 3,4 &5). The most frequently seen benign lesions of the breast are summarized as developmental abnormalities, inflammatory lesions, fibrocystic changes, stromal lesions, and

neoplasms (table 4). Data representation was done by using tables.

Results

A total of 485 patients were studied, their ages range from 11-60 year with highest peak at 21-30 years & lowest peak at 51-60 yrs. (table (2).

The total number of all cases of BBD in 2007 was the highest among the previous six years. (76 cases). BBD comprise 70.3% of the total cases of breast lesions evaluated in Tikrit city during the period from 2000-end of 2007. Total number of cases for each year 25, 53, 71, 65, 59, 62, 59 & 91 retrospectively table (2 & 4).

Histopathological classification was done for the cases. The most frequent BBD during the same period was fibrocystic disease seen in about 33% (162/485) followed by fibroadenoma seen in about 27.6% (134/485), (tables 3 &4). Age distribution for each type of BBD was tabled & the most frequent one was shown to be fibrocystic disease peaks at age of 31-40 years.

Among inflammatory BBD, breast abscess occupy the highest peak at 2004 with total number of 49 cases . While among developmental BBD, breast cyst had the highest frequency (12 cases). Regarding Neoplastic BBD fibroadenoma was the most frequent lesion .

Table (1): Classification of Benign Breast Lesion Histology.

Breast cancer risk		No increase	
Moderate increase RR> 2.0	Small increase (1.5-2.0)	Pathologic lesions	Fibrocystic changes aberration within range of normal
Atypical ductal hyperplasia Atypical lobular hyperplasia	Usual ductal hyperplasia Complex fibroadenoma (containing >3mm cysts, sclerosing adenosis, epithelial calcifications or papillary apocrine changes)	Benign tumor Hamartoma Lipoma Phyllodes tumor (benign) Solitary papilloma Neurofibroma Giant fibroadenoma Adenomyoepithelioma Traumatic Hematoma Fat necrosis Foreign body Infection Granuloma Mastitis Sarcoidosis Metaplasia Squamous Apocrine Diabetic mastopathy	Cysts and ductectasia (72%) Mild hyperplasia Non-sclerosing adenosis (22%) Periductal fibrosis Simple fibroadenoma Sclerosing adenosis Miscellaneous (NA) Lobular hyperplasia Juvenile hypertrophy Stromal hyperplasia

Table (2): age distribution of breast lesions.

Year	11-20	21-30	31-40	41-50	51-60	Total
2000	10	6	5	4	0	25
2001	12	21	13	6	1	53
2002	14	20	24	11	2	71
2003	13	24	15	11	2	65
2004	6	22	19	9	3	59
2005	10	24	20	5	3	62
2006	7	22	24	4	2	59
2007	15	34	28	10	4	91
Total	87	173	148	60	17	485

Table (3): Comparison of various studies of benign breast disorders.

Disorder	Number of cases	% of cases
Fibrocystic disease	162	33
Fibroadenoma	134	27.6
Breast abscess	49	10.1
Granulomatous mastitis	16	3.3
Plasma cell mastitis	3	0.6
Fat necrosis	4	0.8
Cysts	12	2.5
Duct papilloma	6	1.2
Blunt duct adenosis	1	0.2
Tubular adenoma	13	2.6
Lactating adenoma	13	2.6
Benign phyllodes	3	0.6
Lipoma	8	1.6
Leiomyoma	1	0.2
Venous hemangioma	1	0.2
Atypical epithelial hyperplasia	8	1.6
Galactocele	2	0.4
Total	485	100

Table (4): Histopathological Diagnosis of benign breast Lesions.

	2000	2001	2002	2003	2004	2005	2006	2007	Total
1) Inflammatory									
Ductectasia	3	5	4	6	8	10	5	8	49
Breast Abscess	2	5	6	8	15	4	3	6	49
Granulomatous mastitis	0	1	4	2	1	2	3	3	16
Fat necrosis	0	1	1	1	0	0	1	0	4
Plasma cell mastitis	1	0	1	0	1	0	0	0	3
Galactocele	0	0	0	0	1	0	0	1	2
Benign breast cyst	0	2	0	0	0	2	3	2	12
Fibrocystic disease	6	6	25	23	19	24	27	32	162
Blunt duct adenosis	0	0	1	0	0	0	0	0	1
Atypical epithelial hyperplasia	0	2	1	0	0	3	1	1	8
3) Neoplastic									
Duct papilloma	0	0	1	2	0	0	1	2	6
Fibroadenoma	10	23	22	19	8	10	13	29	134
Tubular adenoma	2	4	0	0	1	2	1	3	13
Lactating adenoma	0	4	4	1	2	2	0	0	13
Benign phyllodes	0	0	1	1	1	0	0	0	3
Lipoma	0	0	0	2	2	0	1	3	8
Venous hemangioma	0	0	0	0	0	1	0	0	1
Leiomyoma	1	0	0	0	0	0	0	0	1
Total	25	53	71	65	59	62	59	91	485

Table (5): Comparison of Various studies of benign breast disorders.

	11-20	21-30	31-40	41-50	51-60	Total
Breast abscess	1	16	24	7	1	49
Granular mastitis		2	8	4	2	16
Plasma cell mastitis	1	1		-	1	3
Ductectasia	1	7	23	15	3	49
Galactocele			1	1		2
Simple breast Cyst		4	6	1	1	12
Fat necrosis	1	2			1	4
Fibrocystic disease	10	47	60	40	5	162
Atypical epithelial hyperplasia		1	1	6		-
Blunt duct adenosis		1				1
fibroadenoma	51	61	17	5		134
Duct papilloma		2	3	1		6
Tubular adenoma	1	7	3	2		13
Lactating adenoma	1	9	2	1		13
B. phyllodes				2	1	3
Lipoma	1		3	1	3	8
hemangioma			1			1
leiomyoma	1					1

Table (6): Comparison of various studies of benign breast disorders.

Lesions	Shukla and Kumar Retrospective	Khanna Retrospective	Rangabashyam Retrospective	Shukla and Kumer Prospective	Presented study
	n = 927	n=1031	n=215	n=272	n= 485
Fibrocystic disease	14.3	14.3	16.2	3.3	32.3
Fibroadenoma	46.4	40	56.7	37.8	26.6
Ductectasia	7.6	4.4	0	2.5	
Chronic abscess	7.8	11.3	7.9	11	10.1
Tuberculosis	5.1	5.7	2.7	4.7	3.3
Duct papilloma	0.9	0.7	2.3	2.9	1.2
Cysts	7.9	0	0	11.3	2.5
Fat necrosis	1.2	0	1.3	1.4	0.8
Galactocoele	0	1.2	6.9	0	2

Discussion

The breast undergoes various stages of physiological changes i.e. developmental, cyclic changes, pregnancy, lactation and involution. Benign breast disorders should be

reserved for frankly abnormal disorders of development and involution.

In our study 84% (408/485) of the patients with BBD were in the age group between 11-40 years with peak incidence at age group of 21-30 years & 31-40 years. Khanzada et al

found that the 77% of cases are belonged to the age group 21-30 and 31-40 years. Lyer et al found that most off the females belonged to younger age group below 40 years of age benign conditions of the breast are common and have an incidence of 12%.

?in our study fibrocystic disease was the most common BBD seen in 162 of patients about 90.7% of patients were from 21-50 years of age where as peak incidence (37%) was between 31-40 years. This observation is also noted by Kamel et al study who found about 65% of patients with fibrocystic disease of breast were from 31-50 years of age with peak incidence (36%) was between 31-40 years [13]. Stern et al [12] found fibrocystic disease as the most common in female of all ages especially in the middle age group. Chaudhary et al [8] in his study of 234 patients, found fibrocystic disease as the most common BBD with maximum age incident in the 5th decade of life.

The difference between the age group in patients with fibrocystic disease differs geographically. The possible reasons being social factors, age of menarche and parity, and breast feeding procedures use of contraceptive pills and self-awareness because of low literacy rate among females and more rural areas, the female affected with fibrocystic disease tend only to see surgeon when the symptoms are alarming. Recently it has been observed that fibrocystic disease constitute the most common and frequent BBD. Such changes generally affect the premenopausal women between 20-50 years of age (1,2) many other names have been used to describe this entity including fibrocystic disease, cystic mastopathy, chronic cystic disease, cystic mastopathy, mazoplasia, Reclus's disease, the term "fibrocystic disease" is preferred because this process is observed histologically in 90% of women.[14,15]

Fibroadenoma was the second most common (27.6%) BBD can be seen in our study. They are seen most commonly in patients with 3rd decade (21-30) years of life and 38% of patients with 2nd decade (11-20) years of life. Lyer et al in his study observed that fibroadenoma is the commonest lesion detected. Murillo et al also found 38% incidence of fibroadenoma in a study of 698 patients with BBD[4] . No significant difference was noted in the recent literature regarding the age group having fibroadenoma [8] this is because of its presentation as free mobile discrete lump in the breast of young females and more awareness among females. Breast abscess was seen in 10% of patients in our study with peak incidence in patient from fourth decade of life. This was most commonly observed in lactating females. Barton et al found acute frequently in lactating breasts. Mammary ductectasia, also called periductal mastitis is a distinctive clinical entity that can mimic invasive carcinoma clinically [1]. In our study, 10.9 % of the patients had ductectasia with highest incidence seen in fourth decade of life ductectasia is commonly seen in the 30-50 years age groups in western population and more than 40% have substantial ductal dilatation by the age of 70% years [3] it usually presents with nipple discharge, a palpable subareolar mass, pain, nipple inversion (slit like) or nipple retraction. Smoking has been observed as etiological factors in mammy ductectasia.

Granularmatous mastitis resulting from infectious etiology, foreign material or systemic autoimmune disease can involve the breast. In our study 16 patients (3.3%) had granulomatous mastitis. The prognosis for complete cure with appropriate antituberculous therapy is excellent; its incidence is 3-4% in developing countries.

Conclusions

BBD are common problem in females of reproductive age. The common problems for which women consult or are referred to breast pain and nipple discharge fibrocystic disease of the breast is the commonest of all benign breast disease in this study mostly seen middle aged female with highest peak during fourth decade of life and increased incidence with increasing age. Fibroadenoma is the next common BBD seen in 2nd and 3rd decade of life.

References

- [1] Guray M, Sahin AA. Benign breast Diseases: Classification, Diagnosis, and Management. *The Oncologist* 2006; 11:435-49.
- [2] Khanzada TW, Samad A, Sushel C. Spectrum of benign breast diseases *Pak J Med Sci* 2009; 25(2):265-268.
- [3] Miltenburg DM, Speights VO Jr. Benign breast disease. *Obstet Gynecol Clin North Am* 2008; 35:285-300.
- [4] Murillo Ortiz B, Botello Hernandez D, Ramirez Mateos C, Reynaga Garcia FJ. Benign breast diseases: clinical, radiological and pathological correlation. *Ginecol Obstet Mex* 2002; 70:613-8.
- [5] Pollitt J, Gateley CA. Management of benign breast diseases of the breast. *Surgery* 2004; 66:164-8.
- [6] Sandhya P Iyer, MA Gore, Epidemiology of Benign Breast Diseases in Females of Childbearing Age Group, 2009.
- [7] Cole-Beuglet C, Soriano RZ, Kurtz AB, Goldberg BB. Fibroadenoma of the breast: sonomammography correlated with pathology in 122 patients. *AJR* 1983; 140:369-75.
- [8] Jackson VP, Rothschild PA, Kreipke DL, Mail JT, Holden RW. The spectrum of sonographic findings of fibroadenoma of the breast. *Invest Radiol* 1986; 21:34-40.
- [9] Fornage BD, Lorigan JG, Andry E. Fibroadenoma of the breast: sonographic appearance. *Radiology* 1989; 172:671-5.
- [10] Sklair-Levy M, Sella T, Alweiss T, Craciun I, Libson E, Mally B. Incidence and management of complex fibroadenomas. *AJR* 2008; 190:214-8.
- [11] Kuijper A, Mommers EC, van der Wall E, van Dienst PJ. Histopathology of fibroadenoma of the breast. *Am J Clin Pathol* 2001; 115:736-42.
- [12] Steinbock RT, Stomper PC, Meyer JE, Kopans DB. The ultrasound appearance of giant fibroadenoma. *J Clin Ultrasound* 1983; 11:451-4.
- [13] Kronemer KA, Rhee K, Siegel MJ, Sievert L, Hildebolt CF. Gray scale sonography of breast masses in adolescent girls. *J Ultrasound Med* 2001; 20:491-6.
- [14] DuPont WD, Page DL, Parl FF, Vnencak-Jones CL, Plummer Jr WD, Rados MS, et al. Long-term risk of breast cancer in women with fibroadenoma. *N Engl J Med* 1994; 331:10-5.
- [15] Adrian C Bateman, Pathology of Benign Breast Disease, *Women Health Medicine* 3: 1, 2006.
- [16] N. Masciadri, C. Ferranti, Benign Breast Lesions: Ultrasound", *Journal of Ultrasound*, 2011, 14, 55-65.
- [17] Han BK, Choe YH, Ko YH, Yang JH, Nam SJ. Benign papillary lesions of the breast: sonographic-pathologic correlation. *J Ultrasound Med* 1999; 18:217-23.
- [18] Ganesan S, Karthik G, Joshi M, Damodaran V. Ultrasound spectrum in intraductal papillary neoplasms of breast. *Br J Radiol* 2006; 79:843-9.
- [19] Brookes MJ, Bourke AG. Radiological appearances of papillary breast lesions. *Clin Radiol* 2008; 63:1265-73.
- [20] Giri D. Recurrent challenges in the evaluation of fibroepithelial lesions. *Arch Pathol Lab Med* 2009; 133:713-21.



- [21] Out AA. Benign breast tumours in an African Population. *J R Coll Surg Edinb* 1990; 35:373-5.
- [22] Ihekwa FN. Benign breast disease in Nigerian women: a study of 657 patients. *J R Coll Surg Edinb* 1994; 39:280-3.
- [23] Chaudhary IA, Qureshi SK, Rasul S, Bano A. Pattern of benign breast diseases. *J Surg Pak* 2003; 8:5-7.
- [24] Stern EE. Age related breast diagnosis. *Can J Surg* 1992; 35:41-5.
- [25] Rosai J. ed. Chapter Breast. In: Rosai and Ackerman's Surgical Pathology, Ninth Edition. Philadelphia: Mosby, 2004; 1763-1876.
- [26] Santen RJ, Mansel R. Benign breast disorders. *N Engl J Med* 2005; 353:275-85.
- [27] Barton AS. The Breast. In: Pathology. Rubin E Farber JL. 2nd Edi: Philadelphia: JB Lippincort Co 1994; 978.
- [28] Furlong AJ, Al-Nakib L, Knox WF. Periductal inflammation and cigarette smoke. *J Am Coll Surg* 1994; 179:417-20.
- [29] Rahal RMS, deFreitas Junior R, Paulinelli RR. Risk factors for duct ectasia. *Breast J* 2005; 11:262-5.
- [30] Hanif A, Mushtaq M, Malik K, Khan A. Tuberculosis of breast. *J Surg Pak* 2002; 7:26-8.