

Profile of benign breast diseases in western Saudi Arabia. An 8-year histopathological review of 603 cases

Abdulkader M. Albasri, MBBCH, PHD.

ABSTRACT

Objectives: To describe the histopathological patterns of benign breast diseases (BBD) among Saudi patients.

Methods: This is a retrospective review of BBD reports of Saudi patients of both genders and all age groups seen between January 2006 and December 2013 at King Fahad Hospital, Madinah, Kingdom of Saudi Arabia.

Results: Out of the total 1005 breast biopsies, 603 cases (60%) were BBD. The female to male ratio was 30.7:1. The overall mean age for BBD was 27.5 years, with an age range of 14-80 years. The most common lesion was fibroadenoma (FA) accounting for 44.3% of cases (mean age: 23.5 years), followed by 23.4% fibrocystic change (FCC) (mean age: 37.1 years). Both lesions had a peak occurrence in the third decade. Inflammatory lesions constituted 13.9% of cases. Most common were granulomatous mastitis (3.5%), chronic mastitis (3.3%), and acute mastitis with abscess (3.1%). Other major lesions encountered were fibroadenomatoid hyperplasia (3.1%), intraductal papilloma (2.8%), and benign phylloides tumor (2.6%). All benign diagnoses in male patients were gynecomastia and most patients (68.4%) were under 40 years.

Conclusion: In this study, BBD constituted 60% of breast lumps, and were mostly FA and FCC. The BBD peaked at the 20-29 year age range.

Breast diseases are a significant component of the routine workload and experience of a histopathologist, due to the increasing awareness regarding breast cancer (BC). Breast cancer is the most common cancer among women with an estimated 1.67 million new cancer cases diagnosed in 2012 as reported by GLOBOCAN,¹ as well as in the Kingdom of Saudi

Arabia (KSA), according to the 2012 Saudi Tumor Registry report.² Reviewing the recent medical literature of the last decade on BBD,³⁻⁶ a number of articles reporting the spectrum of BBD on hospital-based retrospective studies in the histopathology laboratories were found. However, there is only one BBD publication from KSA during the last decade, which is from the Eastern region of KSA. There is a lack of publications on BBD from the Western region recently. Therefore, our study was carried out to observe any changes in the disease patterns of BC. The aim of the present study has been describe the histopathological patterns of BBD among Saudi patients in Madinah, KSA.

Methods. This retrospective study included breast biopsy reports of all Saudi patients (both genders and all age groups) between January 2006 and December 2013 at King Fahad Hospital, Madinah, KSA. Clinical and demographic data regarding age, gender, and clinical information were obtained from the histopathology request forms and registry. Histopathology slides of cases within the study period were reviewed by the author. The exclusion criteria were all non-Saudi patients (whether resident, expatriate, visitors, or pilgrims), as well as any cases of accessory breast tissue in the axillae. "Masses" which were found to be normal breast tissue, either with normal lactational changes, or involuting unremarkable breast tissue were excluded. As the study was addressing basic demographic and pathological information, and no comparison was indicated between the parameters, therefore no statistical analysis, or any *p* value calculation was performed. Literature search was performed utilizing the Google search engine (<https://www.google.com/>), and The US National Library of Medicine, National institute of Health, PUBMED.gov website (<http://www.ncbi.nlm.nih.gov/pubmed>).

Results. Of the total 1,005 breast lesion biopsy reports, benign lesions comprised 603 cases (60%), and malignant lesions comprised 402 cases (40%) giving a benign to malignant ratio of 1.5:1. There were only 19 male cases (3.2%) in this study, thus the female to male ratio was 30.7:1. The overall mean age for BBD was 23.1 years with a wide age range of 14-80 years, and a peak age occurrence in the third decade. The cases were categorized into 3 main groups; benign tumors (321 cases; 52.9%), non-neoplastic conditions (198 cases; 32.7%), and inflammatory conditions (84 cases; 13.9%). The pathological findings and mean age distribution of BBD are shown in Table 1. Fibroadenoma (FA) was the most common lesion, 121 cases (45.3%) were detected in the left breast, and 126 cases (49.2%) in the right

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Table 1 - Pathological findings and mean age in 603 Saudi patients with breast lesions.

Findings	n	(%)	Mean age (years)
<i>Benign tumors</i>			
Fibroadenoma	267	(44.3)	23.5
Intraductal papilloma	17	(2.8)	45.1
Benign phylloides tumor	16	(2.6)	35.1
Lactational adenoma	8	(1.3)	31.3
Tubular adenoma	7	(1.1)	20.5
Juvenile fibroadenoma	3	(0.4)	16.0
Lipoma	3	(0.4)	42.6
Subtotal	321	(52.9)	
<i>Non-neoplastic conditions</i>			
Fibrocystic change	141	(23.4)	37.1
Fibroadenomatoid hyperplasia	19	(3.1)	34.9
Sclerosing adenosis	14	(2.3)	38.7
Fibrous mastopathy	5	(0.8)	42.6
Gynaecomastia	19	(3.1)	31.6
Subtotal	198	(32.7)	
<i>Inflammatory conditions</i>			
Acute mastitis and abscess	19	(3.1)	38.4
Chronic mastitis	20	(3.3)	37.7
Granulomatous mastitis	21	(3.5)	36.9
Duct ectasia	14	(2.3)	46.4
Galactocele	2	(0.3)	24.5
Fat necrosis	8	(1.3)	42.2
Subtotal	84	(13.9)	

breast. Both breasts were involved in 20 patients (7.5%). The mean age of patients was 23.5 years, and most of them (n=224; 83.9%) were seen in the first 3 decades of life (Tables 1 & 2). Other benign tumors include lactational, or lactating adenoma (8 cases). The patients' age ranged from 24-45 years. Tubular adenoma was seen in 7 cases with patients' age ranging from 17-34 years. Nineteen patients had fibroadenomatoid hyperplasia, with an age range between 21 and 51 years. Seventeen patients had intraductal papillomas with an age range between 20 and 80 years. Other less common benign tumors encountered were mesenchymal in origin, and included 3 lipomas with patients' age ranging from 37-51 years. Fibrocystic change (FCC) was the second common condition accounting for 23.4 % of all cases. The age distribution of this lesion was distributed between the ages of 15 and 66 years, with a mean age of 37.1 years. Most of the patients (n=111; 78.8%) were between 20-49 years of age (Tables 1 & 2). There were 5 cases of fibrous mastopathy with age ranging from 22-55 years. Sclerosing adenosis was the pathologic finding in 14 patients (age range: 19-55 years). Within the group of inflammatory conditions, acute mastitis and breast abscess were the most common. Almost 84%

Table 2 - Age distribution of 603 Saudi patients with breast lesions.

Variables	Age groups in years, n (%)						Total
	<20	20-29	30-39	40-49	50-59	≥60	
<i>Type of lesion</i>							
<i>Benign tumors</i>							
Fibroadenoma	82 (30.7)	142 (53.2)	30 (11.2)	10 (3.7)	3 (1.2)	0 (0.0)	267
Intraductal papilloma	0 (0.0)	4 (23.5)	3 (17.6)	1 (5.9)	6 (35.3)	3 (17.6)	17
Benign phylloides tumor	1 (6.3)	7 (43.8)	2 (12.5)	2 (12.5)	1 (6.3)	1 (6.3)	16
Lactational adenoma	0 (0.0)	4 (50.0)	2 (25.0)	2 (25.0)	0 (0.0)	0 (0.0)	8
Tubular adenoma	5 (71.4)	1 (14.3)	1 (14.3)	0 (0.0)	0 (0.0)	0 (0.0)	7
Juvenile fibroadenoma	3 (100)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	3
Lipoma	0 (0.0)	0 (0.0)	1 (33.3)	1 (33.3)	1 (33.3)	0 (0.0)	3
Subtotal							321
<i>Non-neoplastic conditions</i>							
Fibrocystic change	5 (3.5)	40 (28.4)	36 (25.5)	35 (24.9)	18 (12.8)	7 (4.9)	141
Sclerosing adenosis	1 (7.1)	4 (28.6)	0 (0.0)	7 (50.0)	2 (14.3)	0 (0.0)	14
Fibrous mastopathy	0 (0.0)	1 (20.0)	0 (0.0)	3 (60.0)	1 (20.0)	0 (0.0)	5
Fibroadenomatoid hyperplasia	0 (0.0)	10 (52.6)	1 (5.3)	6 (31.6)	2 (10.5)	0 (0.0)	19
Gynecomastia	2 (10.5)	6 (31.6)	7 (36.8)	2 (10.5)	1 (5.3)	1 (5.3)	19
Subtotal							198
<i>Inflammatory conditions</i>							
Acute mastitis and abscess	0 (0.0)	2 (10.5)	6 (31.6)	8 (42.1)	3 (15.8)	0 (0.0)	19
Chronic mastitis	2 (10.0)	3 (15.0)	4 (20.0)	7 (35.0)	3 (15.0)	1 (5.0)	20
Granulomatous mastitis	0 (0.0)	5 (23.8)	6 (28.6)	8 (30.1)	1 (4.8)	1 (4.8)	21
Duct ectasia	0 (0.0)	1 (7.1)	2 (14.3)	6 (42.3)	4 (28.6)	1 (7.1)	14
Galactocele	0 (0.0)	2 (100)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	2
Fat necrosis	0 (0.0)	1 (12.5)	2 (25.0)	1 (12.5)	4 (50.0)	0 (0.0)	8
Subtotal							84

of the patients were less than 50 years of age. Other inflammatory conditions include duct ectasia, which affects a different type of population. There were 78.5% of patients over 40 years of age. Granulomatous mastitis was the dominant lesion in 21 cases. There were 20 cases of chronic mastitis, and 4 with lactational changes within the mammary lobules. Galactocele was seen in 2 cases (age range: 20-29 years). Most of these cases had some degree of chronic mastitis. There was a total of 23 males in our study series, out of which 19 had benign diagnoses (gynecomastia). The age range of patients with gynecomastia was 18-75 years. Most patients were between 20-39 years of age (n=13; 68.4%).

Discussion. The present study highlighted the frequency, demographic data, and pathological features of BBD in Madinah, Western KSA. Being a retrospective hospital laboratory based study, it has the limitation of dependence on data collecting efficacy, and performance of other personnel of the hospital, moreover important statistical analysis could not be performed due to non-availability of appropriate comparative figures. However, it has served the purpose to provide basic data, which is comparable with similar recent and historical studies. Table 3 compares the salient results of the present study with that of recent studies of similar nature from KSA and abroad, along with only one historical study of 2001 from the western region of KSA,⁷ which was included to compare any temporal changes in the BBD pattern within the region. The 2 recent studies from KSA (Amin et al⁸ and the present study) showed lower figures of BBD than the remaining studies. This observation suggests a possibility of higher and increasing rates of BC in KSA. Another argument would be that the data has been obtained from specialized tertiary care centers, but this can easily be refuted by the fact that all the 6 studies also collected their data in specialized centers.

Regarding FA and FCC, the frequency percentages are similar to all the compared studies in Table 3, except that the Pakistani scientists⁹ have reported a noticeably higher percentage of FA (71.3%), and a lower percentage of FCC (3.2%). The mean age parameters of both FA and FCC are also in concordance, except for the interesting fact that the mean age of FCC has been reported to be higher by both the Western KSA studies by Jamal et al,⁷ and the present study. This observation can be further investigated by follow-up studies in the future. Likewise, the observations made in the present study regarding the frequency percentage and age related parameters of inflammatory conditions are also in concordance with the observations by researchers from outside and within the KSA.⁷⁻⁹ Recently, Kochhar et al from India¹⁰ reported the peak incidences of duct ectasia, granulomatous, and tuberculous mastitis to be in the third decade. In keeping with the established associations of breast inflammations with pregnancy and lactation, the present study found most patients (84%) in the reproductive age group. Multiplicity of FA was found in 7.5% (20 out of 267 FA cases) in the present series. Amin et al⁸ from Eastern KSA reported multiplicity of FA in 22 of their 583 FA patients accounting for 3.8%. Thus, in the present study, FA multiplicity was observed to be doubled compared with reports from the Eastern region of KSA.

In the present 603 patients' series of BBD cases, 19 (3.1%) male patients were diagnosed to have gynecomastia; whereas in a study from Nigeria, gynecomastia accounted for 2.1% of all cases.⁴ The Indian study¹⁰ observed 4.3% cases of gynecomastia, whereas, Jamal⁷ from the western region of KSA found 3.1% cases of gynecomastia. The mean age of gynecomastia patients in our study, as well as reported by Jamal⁷ from western KSA is 31 years, while the Indian investigators¹⁰ observed 2 peak incidences in the second and sixth decades of life. Thus, the present observations regarding gynecomastia are in concordance with recent studies in the literature.

Table 3 - Comparison of the present study with other similar regional, national, and international studies among BBD patients.

Study	Year	Place	n	BBD (%)	FA	FCC % (mean age, years)	Inflammations
Jamal ⁷	2001	Jeddah, Western KSA	1084	(68.0)	47.0 (28.6)	22 (41.9)	10.2 (35.0)
Amin et al ⁸	2009	Al-Hassa, Eastern KSA	969	(60.1)	47.6 (24.6)	15.7 (33.6)	18.5 (31.4)
Olu-Eddo & Ugiagbe ⁴	2011	Benin City, Nigeria	1864	(72.4)	43.1 (22.3)	23.8 (30.2)	8.1 (38.9)
Aslam et al ⁹	2013	Karachi, Pakistan	254	(75.3)	71.3 (20.5)	3.2 (29.3)	11.8 (30.77)
Njeze ⁶	2014	Enugu, Nigeria	165	(83.0)	39.0 (26.0)	32 (29.7)	2.4 (NA)
This study	2014	Madinah, Western KSA	1005	(60.0)	44.3 (23.5)	23.4 (37.1)	13.9 (37.6)

BBD - benign breast diseases, FA - fibroadenoma, FCC - fibrocystic change, NA - not applicable

In conclusion, the present study established a baseline of disease pattern on the basis of retrospective histopathological experience in a tertiary care hospital. The findings were also compared with recent international and national publications on patterns of BBD. The pattern and demographic data of BBD observed in the present study is in accordance to the data reported in the recent literature with minor variations. This study is helpful to practising clinicians in diagnosing and managing the local patients presenting with breast lumps, or masses.

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From the Department of Pathology, Taibah University, Madinah, Kingdom of Saudi Arabia. Address correspondence and reprints request to: Dr. Abdulkader M. Albasri, Department of Pathology, Taibah University, PO Box 344, Madinah, Kingdom of Saudi Arabia. Tel. +966 (14) 8483250. Fax. +966 (14) 8484811. E-mail: abdbasri@hotmail.com

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