

Breast diseases in the Northern region of Saudi Arabia

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ABSTRACT

Objective: The incidence and pattern of breast diseases varies within countries. There is virtually no information on breast diseases found in the Northern region, Kingdom of Saudi Arabia (KSA). This study hopes to provide data in this area.

Methods. We reviewed the histological and clinical records of 708 patients who presented to General Surgery in Prince Abdul-Rahman Al-Sudairy Central Hospital, Sakaka, Al-Jouf, KSA, with breast complaints over an 8-year period (June 1994 and June 2002). Breast findings were categorized in terms of benign, inflammatory, malignant, congenital and functional. Benign diseases were also evaluated in terms of their proliferative status and cancer risk.

Results: The findings in order were benign breast disease in 245 (48.9%) were most common, inflammatory disease, 213 (42.5%), and finally cancer of the breast in 43 (8.6%).

Fibroadenoma was the most common benign disease. Twenty-seven (5.4%) of benign breast disease were lesions with a cancer relative risk ranging from 1.6-4.4. Breast abscess was the most common inflammatory disease. Ductal carcinoma was the most common breast cancer. Breast cancer was bulky and presented late in mostly premenopausal women.

Conclusion: Breast diseases are common among our patients. Although benign disease is the most common, some patients have lesions that have a small but definite cancer risk. Of concern is the pattern of advanced breast cancer, which presents mostly in young premenopausal women. A concerted educational program is needed to acquaint the patients with the significance of breast masses.

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Kingdom of Saudi Arabia (KSA) is a large country covering an area of 2,240,000 square kilometers. Such a huge country would be expected to have variations in the pattern and prevalence of breast diseases found. Information in respect of the above is important for several reasons. Since KSA is still in the phase of rapid acquisition of health manpower, information for all parts of the country is needed in planning of the educational and training syllabus. It is useful for health planners in the allocation of health resources. Finally, it is important for the orientation of practicing physicians and surgeons. Most breast studies to date have focused on malignant breast diseases.¹⁻⁵ Only a few studies have focused on the overall pattern of female breast diseases.^{6,7} Our study is the first of the

pattern of breast diseases in the Northern region of the country. This study hopes to provide data in this vital area.

Methods. All women who presented to the General Surgery Service of Prince Abdul-Rahman Al-Sudairy Central Hospital, Sakaka, Al-Jouf, KSA, with a complaint of breast disease between June 1994 and June 2002 were considered for this study. Our hospital is a regional secondary care center providing health care for 240,000 people living in Al-Jouf region in the northern edge of Al-Nefood desert of KSA. The data on clinical presentation and management was obtained from the patients' records. Fine needle aspiration (FNA) and

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histopathology data including histology slides and pathology reports were retrieved from the records of the Central Laboratories of the hospital and rechecked. All the results were merged to yield a total of 708 patients who were admitted to this study. Overlapping of the cases was avoided. Of patients who presented with breast abscess only the non-puerperal breast abscesses were subjected to preoperative FNA and operative biopsy. Obvious lactational breast abscesses underwent incision and drainage without FNA or biopsy. Excluded were patients <13 years of age. Also excluded were patients who presented with menstrual cycle related cyclical mastalgia.

Results. Over this review period, a total of 708 women who presented with complaints relative to the breast provided data for this study. There were 617 Saudis and 91 non-Saudis women with an age range of 13-70 years. Five hundred and one cases have a biopsy diagnosis (excisional or FNA, or both) (**Tables 1 & 2**), while 207 cases had a clinical diagnoses only (**Table 3**). The tables show details of the disease and patient characteristics. There was 100% correlation between the FNA results and the subsequent histopathological diagnosis. Benign breast disease (benign tumors, tumor-like conditions and proliferative lesions) was the most common findings comprising of 245 patients (48.9%). Inflammatory breast disease in 213 patients (42.5%) was the next most common findings and was followed by malignant disease in 43 patients (8.6%). Of the benign diseases, the most common was fibroadenoma in 138 patients (27.5%) followed by epithelial hyperplasia, 52 patients (10.4%) and fibrocystic disease in 20 patients (4%). Malignant breast disease was rather uncommon and was seen in only 43 patients (8.6%) of whom 14 were non-Saudis. Not surprisingly, breast abscess in 181 patients (36.1%) was the most common inflammatory lesion. Of these, 47 patients presented with non-lactational abscess. This group was slightly older (mean age of 36 years) than those who presented with puerperal breast abscess. Non-lactational breast abscess in 2 Saudi women just over 60 years of age was surprising but both showed only inflammatory cells on both FNA and histology. Tuberculosis of the breast was not found among our patients. Traumatic breast necrosis was not common and was seen in only 5 patients. Nipple discharge none associated with malignant breast disease presented in 35 patients. The most common nipple discharge was the greenish yellow or black type in 15. In 9 such lesions, both FNA and histology showed mammary duct ectasia. In respect of a rather common entity, mastalgia, there were only 142 patients, and of these 10 had Mondor's disease and the rest (132), non-cyclical mastodynia. The most common congenital breast findings were polymastia, and polythelia.

Discussion. The results of 708 women who presented with breast complaints have been presented. The number of presenting patients over this 8 years review period is somewhat small in relation to the number of our female patient population. Several questions arise from this. Is breast disease rare in our patient population as our figures suggest? Firstly, only a population-based study can provide an accurate answer to that question and ours is a hospital-based study. Secondly, our patients are a self-selected group who chose to present to this hospital. Although a secondary regional medical center, our hospital is not a tertiary care hospital. Inevitably some of our patients are referred to a tertiary care center in the kingdom while others prefer to cross the national border to nearby tertiary care hospitals in neighboring countries. Thirdly, the natural shyness and reluctance of our female population to present with painless or bearable complaints in relation to a personal anatomical organ has been documented.^{8,9} Fourthly as in other non-western countries, since even cancer patients in KSA generally present late,^{3,7} it is possible that other breast diseases are more common in the population than has been documented in this study but that these patients do not present due to nonrecognition of the seriousness of their painless breast diseases. Finally, it is quite possible also that breast diseases are not common in our patient population. It has been documented that breast cancer and fibroadenoma are not as common in KSA as in Western countries.^{1,3,6} Among our patients, benign breast disease was the most common finding. This was followed by inflammatory disease then malignant disease. This finding is at variance with some reports from tertiary institutions where as a result of referral patterns, inflammatory disease was not the second most common lesion but a distant third in incidence.^{6,7} We believe that our finding and those of other general and central hospitals are more likely to reflect the finding within the general population. Masses diagnosed as or suspected to be malignant lesions are more likely to be referred to tertiary institutions than inflammatory masses since expertise for the management of inflammatory breast lesions exists in most hospitals of the kingdom. Another explanation is that most of the studies reporting from tertiary institutions were based mainly on their pathology department findings.^{6,7} Puerperal abscesses, which comprise a majority of the inflammatory lesions, are seen and managed surgically without any biopsy or reference to histopathology. Accordingly, reports from the pathology departments of tertiary institutions probably underestimate non-biopsied types of inflammatory diseases of the breast.

Benign tumors. Although the total number of benign breast tumors was comparatively small, our patients presented with a large variety of benign diseases, ranging from Dupont's non-proliferative lesions such as uncomplicated fibroadenoma and mild

Table 1 - Tumors and tumor-like conditions of the breast and patient characteristic.

Tumor and tumor-like conditions	n (%)	Mean age	Saudi	Non-Saudi
Benign tumor	147 (29.3)	35	138	9
Fibroadenoma	138	20	129	9
Phyllodes tumor	3	33	3	0
Intracystic adenoma	2	38	2	0
Tubular adenoma	2	42	2	0
Lactating adenoma	1	35	1	0
Lipoma	1	40	1	2
Malignant tumor	43 (8.6)	45	29	14
Ductal carcinoma in situ	3	40	3	0
Invasive ductal carcinoma	38	46	24	14
Invasive lobular carcinoma	1	62	0	1
Colloid carcinoma	1	32	1	0
Tumor-like conditions	4 (0.8)	44	2	2

Table 2 - Proliferative and inflammatory lesions.

Non-neoplastic lesions	n (%)	Mean age	Saudi	Non-Saudi
Proliferative lesions	94 (18.8)	34	83	11
Epithelial hyperplasia	52	30	49	3
Fibrocystic disease	20	32	17	3
Fibrous disease	3	35	2	1
Cyst	19	40	15	4
Inflammatory lesions	213 (42.5)	39	187	26
Breast abscess	181	33	158	23
Duct ectasia	11	49	10	1
Fat necrosis	8	38	7	1
Granulomatous mastitis	6	41	5	1
Galactocele	7	33	7	0

Table 3 - Congenital and other lesions.

Other breast lesions	n (%)	Mean age	Saudi n (%)	Non-Saudi n (%)
Congenital and others	207 (100)	0	178 (86)	29 (14)
Mondor's disease	10 (4.8)	38	4 (1.9)	6 (2.9)
Nipple discharge	35 (16.9)	36	25 (12.1)	10 (4.8)
Mastodynia (non-cyclical)	132 (63.8)	35	123 (59.4)	9 (4.3)
Polythelia	14 (6.8)	15	12 (5.8)	2 (1)
Unilateral hypoplasia	6 (2.9)	16.4	6 (2.9)	0 (0)
Polymastia	10 (4.8)	28	8 (3.9)	2 (1)

epithelial hyperplasia, through proliferative lesions without atypia such as intraductal papilloma and mild epithelial hyperplasia to proliferative lesions with atypia like lobular hyperplasia.¹⁰ Epithelial hyperplasia was the finding in 52 patients. Most of these patients fell into the category of proliferative lesions without atypia which carries a minimal cancer relative risk of 1.6 compared to women who do not have these lesions. Eight of them however had atypical epithelial hyperplasia. Histological findings in patients with atypical lobular hyperplasia have some of the features of carcinoma-in-situ but lack the complete criteria for that diagnosis. Patients with atypical hyperplasia have a cancer risk 4.4 times that of the general population. If such patients have a family history of cancer then their risk rises to 8-10.¹² None of our patients with atypical hyperplasia had a family history of cancer. Some of our patients had cysts large enough to produce a palpable mass. Non-proliferative benign lesions are not associated with increased risk (relative risk 0.89) of cancer except in those patients with gross cysts (relative risk 1.5) but even this applies only to patients with a family history of cancer.¹⁰ A total of 3.8% of our patients had gross cysts but none had a family history of breast cancer. Cystic disease is a recognized benign lesion of middle age and occurs in the age group 35-50 years and tends to disappear during menopause.¹¹ The mean age of our patients with cysts was 40 years. Of the 35 patients who presented with nipple discharge, 15 were due to duct ectasia. Fibroadenoma was the most common benign lesion among our patients and was found in 138 patients (27.5%). They were multiple ipsilaterally in only 25 and bilateral in 20. One of our patients, an 18-year-old, presented not only with bilateral disease but also with multiple tumors, 10 in the right breast and 8 in the left breast. Fibroadenoma is a benign tumor of young women. Some Pathologist no longer consider it a neoplasm but a hyperplastic process and an aberration of normal development.^{13,14} This view of fibroadenoma, however, remains somewhat controversial as others still consider it a neoplasm.¹⁵ Fibroadenomas are influenced by estrogen and have both estrogen and progesterone receptors.¹⁶ They tend to enlarge during pregnancy and lactation and to decrease in size after weaning.¹⁷ The mean age of our patients with fibroadenoma was 20 and this conforms to reported range of 20-50 years.^{6,7,18} It is generally accepted that patients who have fibroadenoma do not have an increased risk of breast cancer. This however does not apply to breast disease considered complex fibroadenoma, that is fibroadenoma associated with cysts >3 mm in diameter, sclerosis adenosis, epithelial calcifications or papillary changes. These have an increased relative risk of 3.1 for cancer.^{19,20} From the point of view of cancer risk, only 27 of our patients (5.4%) who presented with gross palpable cysts (19) or epithelial hyperplasia with atypia (8) had a relative risk of 1.6-4.4.

Inflammatory disease. Over this review period, inflammatory breast disease was the second most common breast problem seen. As expected in our population where breast feeding is the norm, lactational breast abscess was the most common inflammatory disease. At variance with our results is the finding in the western countries where non-puerperal breast abscess is far more common than the lactational type. Reported figures for non-puerperal breast abscess range up to 91.5% versus 8.5% for lactational mastitis.²¹ Non-puerperal breast abscesses are always suspicious. Abscess like lesions that must be excluded are duct ectasia, metaplasia of duct epithelium and carcinoma.^{21,22} Tuberculous breast disease is now a very rare entity in developed countries. In some third world countries; however, its incidence ranges from 1-4.5%.²³ Breast tuberculosis was not found among our patients. However, with the recent recrudescence of Koch's disease world wide, surgeons must be on the look out for breast tuberculosis. Usually described as being associated with typical axillary and breast sinuses, it may masquerade as a simple and inoffensive fibroadenoma.

Malignant breast disease. The number of our patients with breast carcinoma was surprisingly small. Of the 43 patients who were diagnosed with cancer, 3 (7%) had ductal carcinoma in situ while 40 (93%) had invasive cancer. Carcinoma in situ patients have 10-11 times risk than the normal women for invasive breast carcinoma. Malignant disease was the third most common breast findings and accounted for 8.6% of our patients. This falls within reported figures of 5-32.5 in KSA.^{1,2,6,7} Kingdom of Saudi Arabia, such as other Asian countries falls epidemiologically within an area of low cancer risk.²⁴ Breast cancer occurs in only 14/100,000 women in KSA compared to USA where breast cancer occurs in 80/100,000 at 50 years of age rising to 350/100,000 at age of 70.²⁵ Breast cancer in our patients was a disease of young premenopausal and perimenopausal women with a mean age of 46 years. This finding conforms to reports elsewhere in KSA and other third world countries.¹⁻⁸ Most of our patients also presented with bulky tumors in the advanced stages. Thus, tumor, node and metastasis stages of the patients were: 3 in stage I; 12 in Stage II; 18 in stage III; and 7 in stage IV yielding a total of 37.5% early and 62.5% advanced breast cancer on presentation. This findings is similar to reports elsewhere in the KSA.^{1,3} Invasive ductal carcinoma was the most common comprising 60% of the 40 patients. The findings of late presentation and bulky breast cancer in relatively young women has been documented in KSA and elsewhere in Asia and Africa^{1,7,26,27} and it is at variance with the findings in western countries where women at a mean age of 57 years present with cancer in the early and curable stages.²⁸ These differences have led to speculation as to whether breast cancer has a different biological behavior in Arabs⁷ and in Africans.²⁹ These questions are difficult to address from our study or from the current breast cancer studies available in KSA and in the Arab world. Characterization of the epidemiology or the

prognostic factors in breast cancer in KSA and the rest of the Arab countries are at best sparse. Thus, there is no large scale population based-studies information in respect to familial history of the disease, hormonal receptors, mitotic index, DNA cytometry and other epidemiological data and biomarkers. It is known that premenopausal status, large tumors, and black race correlate with estrogen receptor negativity, and poorer outcomes in breast cancer.³⁰ It has not yet been established if breast cancer does carry a worse prognosis in Arabs. Complete characterization of malignant diseases and their biological characteristics KSA will have to await large scale studies spearheaded by our tertiary institutions.

Congenital breast findings. Presenting mostly in patients <18 years of age, polythelia patients were seen often due to parental anxiety. Polymastia, axillary type, on the other hand, was found in older obese women, mean age 28 years. Accessory breast or nipple is found in 1-2% of the white population. It is more common in the Asian Orientals in whom the figures range from 3.6-5.2%.¹¹ It was found in only 2% of all our patients. No population based-study of the problem is available in KSA.

Mastodynia. Mastodynia, more often the cyclical type, is the most common breast complaint of women worldwide.³¹ A total of 132 out of 142 patients who presented with mastalgia had idiopathic mastodynia. The remaining 10 had Mondor's disease. Generally considered rare mainly due to its largely unrecognized, medical literature in KSA has paid no attention to Mondor's disease, superficial thrombophlebitis of the lateral thoracic or superior thoracoepigastric vein. Often caused by benign conditions and often self-limited, it has been very rarely associated with cancer of the breast.³² Ten of our mastalgia patients had Mondor's disease.

In conclusion, our study indicates that breast diseases are common among our patients and that benign breast tumor was the most common lesion. A small percentage of benign diseases were the proliferative type and thus, it needs prolonged surveillance due to the cancer risk implied. Cancer of the breast seems uncommon but due to referral patterns, its exact incidence in the general population may not coincide with our hospitals findings. It presents late in young mostly premenopausal women at its incurable stages. A large-scale educational activity is needed to educate our patient population on the significance of breast masses.

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