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## Histopathological profile of Saudi females with breast cancer at Albaha province, KSA: A retrospective study

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## ABSTRACT

**Background:** Breast cancer is the most common cancer worldwide and in King Saudi Arabia as well. This study aimed to determine the demographic characteristics and histopathological profile of females with breast cancer attending King Fahad hospital at Albaha-KSA. **Materials and Methods:** Retrospective descriptive study conducted in King Fahad Hospital at Albaha in the period between Jan 2014 through Dec 2018. We obtained data concerning the demographic and histopathological profile of 80 female patients with breast cancer during the study period. **Results:** 80 patients ranging in age from 28–86 years (mean 52 years) were included in the study with the peak incidence age in the 5th decade. In 54.2% of cases, the tumor was left-sided. Most of the tumors 62 cases; 77.5% were of Infiltrating ductal carcinoma, and mucinous is the least one (2 case; 2.5 %). Most of cases were of grade II 40 cases (50%). Ten ( 12.5%) cases had tumor size  $\leq 2$  cm and were considered as (pT1), 33 cases (41.3%) had tumor size of 2–5 cm and were categorized as (pT2), while 7 cases (8.75%) were categorized as pT3 tumor size  $\geq 5$  cm. Thirty cases (16.25%) of the involved lymph nodes were classified as pN1 (metastases in 1 to 3 regional lymph nodes), 5 cases (6.25%) were categorized as pN2 (metastases in 4 to 9 regional lymph nodes), while 7 cases (8.75%) were described as pN3 (metastases in 10 or more regional lymph nodes). **Conclusion:** Our study showed that the peak incidence age of breast cancer was the 5th decade of life while infiltrating ductal carcinoma (IDC) was the most common histological type.

**Keywords:** Breast Cancer, Histopathology, Albaha, KSA

## 1. INTRODUCTION

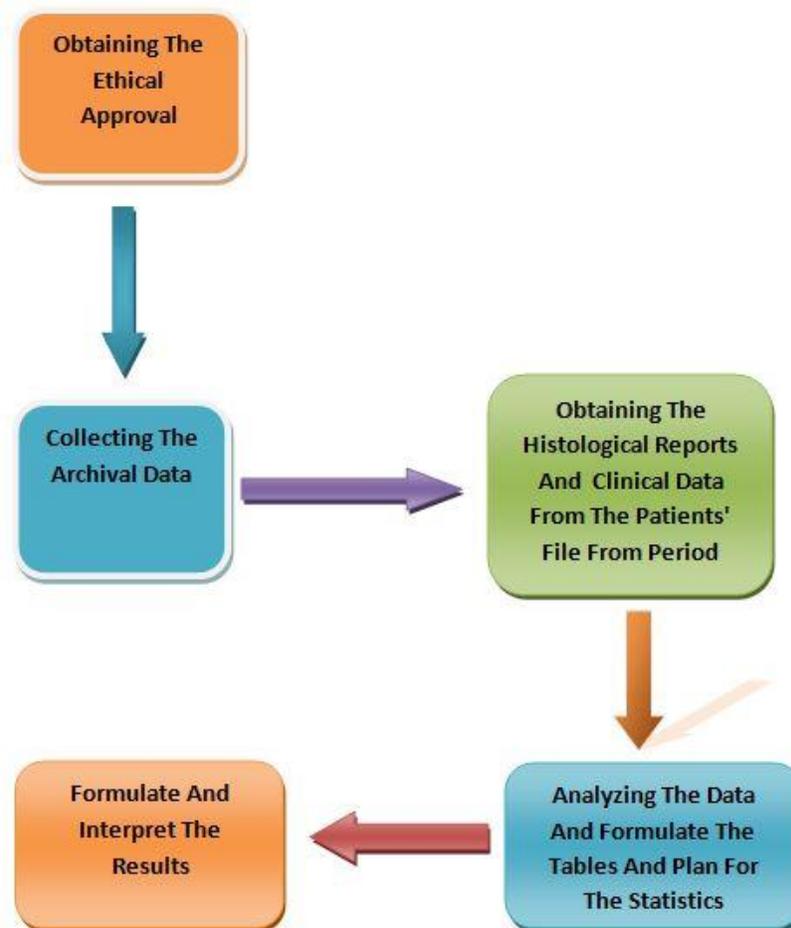
Breast cancer (BC) is considered as one of widespread cancers and a major cause of death among women worldwide (Ferlay et al., 2016). Therefore, it is critical that efforts towards its prevention associated with establishment of good protocols for early diagnosis and treatment have to be put into practice (Ahmed et al., 2010). Due to improved therapeutic and diagnostic tools and the evolution of breast cancer management in the developed countries, a marked reduction in the mortality rate of breast cancer is seen in these countries (Carioli et al., 2018). Population awareness about breast cancer, breast self-examination, and mammography screening are the other issues that may positively be influencing the incidence and mortality of the disease (Wong et al., 2009). The incidence rate of breast cancer varies among different parts of the world, reflecting variation in race and ethnicity (Desantis et al., 2014; Ghoncheh et al., 2016). Incidence varies from 27 per 100,000 in Middle Africa and East Asia to 92 per 100,000 in Northern America. About 1.7 million new cases are predictable mostly in the developing countries by the year 2020 (Wong et al., 2009), and expected to reach 3.2 million by 2050 (Hortobagyi et al., 2005). Saggiu et al. (2005) reported that 1152 cases were diagnosed in the year 2008, compared to 1308 in the year 2009 and 1473 female BC cases in the year 2010 in Saudi Arabia. The 2015 annual report of the Saudi National Cancer Registry shows that 1979 new cases of BC were diagnosed which comprise 16.7 % of the reported cancers in Saudi Arabia, and 30.1% from all cancers reported among females of all ages (Cancer Report 2015 Saudi cancer registry, 2018). Moreover, Alghamdi et al. (2013) stated that the incidence of breast cancer in Albaha province-Saudi Arabia is approximately 2.0–6.8 per 100,000 women.

Many risk factors are encountered in the pathogenesis of BC. The age of menopause over 50 years is associated with an increased risk of breast cancer (Dai et al., 2009; Kim et al., 2015; Laamiri et al., 2015; Elbasheer et al., 2019). The role of genetic factors in breast cancer arises from the fact that 40% of inherited BC cases occur due to genetic alterations, the most important are that reported as BRCA1 and BRCA2 genes mutations (Cobain et al., 2016). Moreover, hormonal contraceptives, postmenopausal hormone therapy, obesity, alcohol consumption, smoking, diabetes, and radiation contribute to the incidence of breast cancer (Cobain et al., 2016). Mortality cancer statistics revealed that 571000 deaths from BC reported by the WHO in the year 2015, while in 2018 the disease represented 24.2% of all cancers and 15% of deaths due to cancer among females (Elbasheer et al., 2019). Data from clinical practice analyzing the epidemiology and histopathological profile of breast cancer is limited and restricted to the area of conducting research. Therefore the aim of the current study is to investigate the profile of Saudi female patients with breast cancer attending King Fahad hospital at Albaha, Saudi Arabia.

## 2. MATERIAL AND METHODS

This study was done after taking the ethical approval from the ethical committee of Albaha Faculty of medicine as well as from the ethical committee of King Fahad hospital in Albaha Province. The current study is a retrospective descriptive study conducted in King Fahad hospital at Albaha, department of Surgery. All breast cancer cases diagnosed from 2012 through 2019 were included. Data of

all breast cancer during the study period were retrieved and then reviewed, from hospital records and histopathology reports. Data collected include age, site of the affected breast, type of specimen, histopathological types, grades and lymph node, and margins status. Statistical analysis Data managing was carried out using the Statistical Package for Social Sciences (SPSS version 16). The steps of methodology and study design are represented in flow chart (Fig 1).

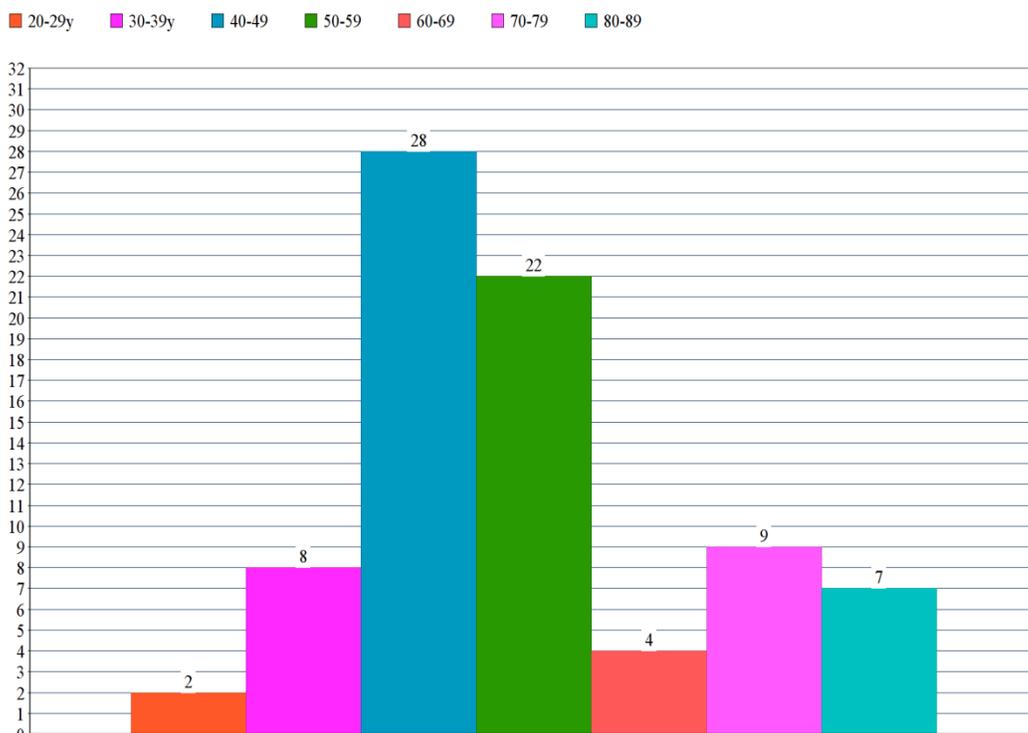


**Figure 1** Flowchart represents the steps of methodology of the current work

### 3. RESULTS

Of the 80 cases studied we found that 28; 35% of the patients were aged (40-49 years), while the remainder age groups constitute 52 cases; 65%, the presentation of age groups are represented in Fig 2. The left-sided tumor was 54.2% while the right one comprises (45.8%) of the cases. Based on the type of biopsy 28 cases (35%) were mastectomy specimens, 30 cases (37.5%) were tru-cut needle biopsy, while the rest types were wide local excision, quadrantectomy and lumpectomy specimens (Table 1). Considering the histopathological types of breast cancer cases registered, infiltrating or invasive ductal carcinoma (IDC) was the most common type (62 cases; 77.5%), followed by invasive lobular carcinoma (ILC) (10 cases; 12.5%), while the medullary and mucinous carcinomas were the least type (6 cases; 7.5%) and (2 cases, 2.5%), respectively (Table 1) (Fig. 3). Of the 80 cases studied and based on Nottingham modification of Bloom Richardson system, 15 cases (18.75%) were Grade I, 40 cases (50%) were Grade II, while 25 (31.25%) of cases showed Grade III. Ten (12.5%) cases had tumor size  $\leq 2$  cm and were considered as (pT1), 33 cases (41.3%) were categorized as (pT2, tumor size 2-5cm), while 7 cases (8.75%) were categorized as (pT3; tumor size  $\geq 5$ cm) (Table 1). Moreover, in all cases diagnosed based on tru-cut needle biopsy the tumor size was not assessed (30 cases; 37.5%).

When analyzing lymph node status, we found that 25 cases (31.25%) were negative for the malignancy (pN0), 25 cases (31.25%) showed nodal metastases while in 30 cases (37.5%) diagnosed on tru-cut needle biopsy, lymph node metastases were not assessed. Thirty cases (16.25%) of the involved lymph nodes were classified as pN1 (metastases in 1 to 3 regional lymph nodes), 5 cases (6.25%) were categorized as pN2 (metastases in 4 to 9 regional lymph nodes), while 7 cases (8.75%) were described as pN3 (metastases in 10 or more regional lymph nodes).



**Figure 2** Age distribution in the current study

**Table 1** Demonstrates the frequency distribution percentage of the types of biopsy, histopathological types and tumor size among female patients with breast cancer (n=48)

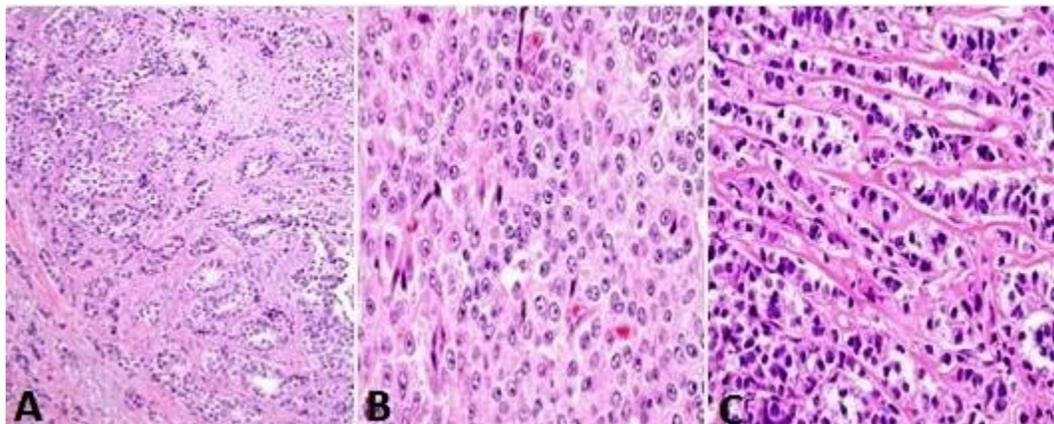
Patterns	Frequency/Percentage (n/%)	P-value
1. Biopsy Type		
Mastectomy	28(35)	0.000
Wide local excision	17(21.2)	
Tru cut needle biopsy	30(37.5)	
Quadrectomy	4(5)	
Lumpectomy	2(2.5)	
2. Histopathological type		
Invasive ductal carcinoma	62(77.5)	0.000
Invasive lobular carcinoma	10(12.5)	
Medullary carcinoma	6(7.5)	
Mucinous carcinoma	2(2.5)	
3. Tumor size		
Not assessed	30(37.5)	0.000
T1	10(12.5)	
T2	33(41.3)	
T3	7(8.75)	

T1; Tumor size < 2 cm, T2; Tumor size 2-5 cm, T3; Tumor size more than 5 cm

#### 4. DISCUSSION

In the present study, we investigated data of all female patients with breast cancer, attending King Fahad Hospital in Albaha area in the last 5 years concerning demographic and histopathological profile. Our study showed that peak incidence age of breast cancer was the 5th decade (40–49 years) and the majority of the cases occurred between the 5th and 6th decades (66.7%) with the mean age of 52.78 years. Our result is consistent with 68 % by Takalkar et al. (2016) in western India; moreover, Anwar et al (2019) in KSA stated that women having ages between 30-59 years were associated with a higher rate of breast cancer incidence as compared to

young women of ages less than 30 years old. This finding was also reported in Saudi Arabia by Alghamdi et al. (2013) who ensured that the incidence of the disease increases with age with the peak incidence observed in the middle-age females. Accordingly, the conduction of national screening programs for middle-age females is beneficial for early detection and intervention of breast cancer cases.



**Figure 3** A. A case of invasive Ductal carcinoma showing glandular differentiation (H&E, x100) B. Another case of invasive ductal carcinoma that is composed mostly of solid areas, with no evidence of tubular formation (H&E, x200). C. Infiltrating lobular carcinoma. The tumor cells are arranged in slender linear strands one to two cells across and dispersed in an irregular fashion in a densely fibrotic stroma (H&E, x200).

Our analysis demonstrated that in 26 cases (54.2 %) the tumor was on the left side, a finding that is also reported by Alotaibi et al. (2018) in Saudi Arabia. Alotaibi et al. (2018) explained this predominance by the fact that mothers prefer to use their right breast during breastfeeding. Moreover, right-handed women check their left breast more often for lumps, increasing the chances of early treatment. In this study, we found that infiltrating ductal carcinoma (IDC) was the most common type (37 cases; 77.1%), which is similar to the Saudi national registry report 2015 (79.2%) and Merdad et al. (2015) study in Saudi Arabia (76%). However this was higher compared to (67.74%) in Nepal by Pradhan et al. (2017) Invasive lobular carcinoma (ILC) comprises (6 cases; 12.5%) and it was comparable to 11% by Merdad et al. (2015). Nevertheless, our result regarding medullary carcinoma (4 cases; 8.3%), and mucinous carcinoma type (1 case; 2.1%) was incompatible with that of the annual report of the Saudi National Cancer Registry 2015 (1% for mucinous and 0.8% medullary type). This variation is probably attributed to the small size of our study samples. Pradhan et al. (2017) reported that grade is an important determinant of breast cancer outcome and complimentary to lymph node (LN) stage.

On assessing the tumor grades we observed that the majority of the cases were Grade 2 and 3 (81.2%). This trend is approximately compatible to 76% by Merdad et al. (2015) in Saudi Arabia. Our study has also stratified the patient in whom lymph nodes status was assessed. We observed that in 31.2 % of cases, the lymph nodes were negative for tumors while positivity was detected in a similar percentage. Our result was consistent with 30% without lymph node involvement in a report conducted by Al Diab et al. (2013) in KSA and incompatible with 42% negative and 51% positive lymph node in Merdad et al. (2015) in KSA as well. This discrepancy could be related to a considerable number of patients in our study whom diagnosed on tru cut needle biopsy; therefore, their lymph nodes status was not assessed. Tumor size is a crucial factor for the prognosis of breast cancer cases; moreover, it has been implicated in the Nottingham prognostic index and the TNM staging system (Ilan et al., 2007). Out of the 62.5% of cases in which their sizes assessed, we found that the majority (41.7%) had tumor sizes ranging between 2-5 cm (pT2), while only 8.1% of cases their sizes were more than 5cm (pT3). This was in agreement with 56% by Al-Kuraya et al. (2005) in Saudi Arabia and (54.84%) in Nepal by Pradhan et al. (2017) and (51.9%) in Nigeria namely, by Adesunkanmi et al. (2006) and Oluogun et al. (2019) who stated that, the majority of cases presented with their sizes ranging 2-5 cm (pT2).

## 5. CONCLUSION

This study was done to analyze the histopathological profile of female breast cancer in Albaha at King Saudi Arabia. We concluded that the peak incidence of the disease was in the fifth decade of life; hence educational awareness should be lunched for this group of women. The mostly reported cancer was the Infiltrating ductal carcinoma type among the breast cancers. Most of the cases showed tumor size between 2-5 cm and exhibited Grade 11 of Nottingham modification of the Bloom Richardson system.

### Conflict of Interest

The authors declare that they have no conflict of interest

### Informed consent

Informed consent was obtained from all individual participants included in the study. Additional informed consent was obtained from all individual participants for whom identifying information is included in this manuscript.

### Ethical approval

The study was approved by the Medical Ethics Committee of Albaha University, faculty of medicine, with ethical approval code; GS/2019/075.

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