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Breast Cancer Presentations at Benghazi Medical Center Oncology Department, 2020-2023

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ABSTRACT:

Background: Breast cancer is the second most common cancer worldwide, the most frequent among women, and the leading cause of cancer death in females globally.

Aim: This study aims to examine the pattern of breast cancer in patients who presented to the oncology department at Benghazi Medical Center (BMC) from January 1, 2020, to December 31, 2023.

Patients and Methods: The study is a descriptive, retrospective cross-sectional analysis. Data were collected from 100 breast cancer patient records at BMC, selected from a total of 1,472 registered cases. Patients included in the study had confirmed diagnoses of breast cancer by histopathology. (Adding pictures from Al Noon Laboratory).

Results: Out of 100 breast cancer patients registered at the oncology department, 90 were from Benghazi, and 10 were from outside the city. The majority (45%) were aged 40 to 49. Invasive ductal carcinoma was the most common type, found in 89% of cases. Among these, 47% were in Grade II, and 56% were in Stage II. Positive estrogen receptor status was observed in 93% of cases, while 53% had positive progesterone receptor status. Additionally, 78% of patients were negative for human epidermal growth factor receptor 2 (HER2), and 30% had a Ki-67 level between 10-25%.

Conclusions: Most breast cancer cases at BMC were from Benghazi. The highest frequency was in the 40-49 age group, with most cases being invasive ductal carcinoma, HER2 negative, ER positive, and PR positive, and predominantly in Grade II and Stage II.

1. INTRODUCTION

Breast cancer is the most frequent cancer among women, impacting 2.1 million women each year around the world, and it is the leading cause of cancer death in women (15%). In 2018, it is estimated that 627,000 women died from breast cancer (Torre et al., 2012) and is the most common cause of cancer-related death in industrialized countries, and the third in developing countries (Parkin & Fernandez., 2006). However, its incidence varies from countries of high incidence including Northern America, Australia/New Zealand, and Northern and Western Europe; to intermediate in Central and Eastern Europe, Latin America, and the Caribbean; and low rate in most of Africa and Asia (Bray et al., 2004) & (Moore et al., 2014). For example, in the US less than 0.9 new cases per 1000 women were reported in the 1990s, and more than 1.4 new cases per 1000 were reported in 2006 (Bray et al, 2004) & (Nadia et al., 2007). The incidence of breast cancer has also shown a steady increase during the last 30 years in the Nordic countries. The incidence in Finland rose from 63.3 per 100,000 female individuals in 1989 to 87.6 in 2007. In the UK, approximately one in nine female individuals is likely to develop the disease during her lifetime. An increase has even been noted in the low incidences of breast cancer countries like Eastern Europe and Japan (Nagata et al., 1997) & (Pompe et al., 2000)

2. PATIENT AND METHODS

The study was a descriptive retrospective cross-sectional type, and data were collected from oncology department at Benghazi Medical Center. which receives cancer patients from Benghazi Included 100 file records from 1472 file of breast cancer patients who registered in the hospital from 2020 to 2023 was collected who were registered during the study in BMC as a case

of breast cancer and had confirmed diagnosis of breast cancer by histopathology. (Adding pictures from Al Noon Laboratory). Demographic, clinical, pathological, and biological information including: sex, age at diagnosis, address staging, biomarkers [ER], [PR], proliferation (Ki67) status, and (HER2) status. Were extracted from medical file records. The marital status, breast feeding, occupation and family history are important information but not record in the files.

Statistical analysis:

Results were expressed as mean ± standard deviation (SD) or number and (%) Figures were done by Microsoft office Excel 2010. Statistical analysis was performed with the aid of the statistical package for the social sciences (SPSS) computer program (version 26 windows).

3. RESULTS

Out of 100 breast cancer patients registered at the oncology department (BMC) 100 patients (90) were from Benghazi and (10) outside Benghazi. Majority of cases (45%) were between 40 and 49 years old, the mean was 52.2 years of age while the Minimum was 15 years the maximum was 86 years (figure 1). The menstrual cycle history was nearly equal with premenopausal slightly higher 53% and postmenopausal 47%. From the body mass index, it was identified from the available data that most of the patients were obese 22.8% and 28.8% were overweight.

From the files we found that mostly the side of breast with lesions was the left side (61%) and only 1% was found in both sides. Moreover, only 15% of patients had known family history, the rest claimed they had no family history. Figure 2. shows that the Invasive ductal carcinoma (IDC) was diagnosed among (89%) of the cases, (47%) of them were in grade II and stage II (56%) (figure 3. A & B). in Figure 4. A. A section of ductal carcinoma in situ (DCIS) with central comedo-type necrosis (white arrow), Non-invasive because the cancer cells (black arrow) have not spread out of the ducts and glands into the surrounding breast tissue. Moreover in B. Section of invasive ductal carcinoma grade 3 (IDC) with high degree pleomorphic nests malignant cells invasion basement membrane to stroma, no tubule formation (White arrow) malignant cells. (black arrow) Fibrous septa separate tumor cells. H & E stain (X 200).

Positive estrogen receptor was recorded in (93%) of cases compared to (0%) negative estrogen receptor the other 7% were not available in the files. Furthermore, 53% were positive in progesterone receptors and 41% were negative. On the other hand, 78% of patients had human epidermal growth factor receptor 2 negative and the positive was only 15%. While the Ki-67 levels were intermediate in 30% of cases, and 26% had high Ki-67 levels, as presented in figure 4. A, B, C and D.

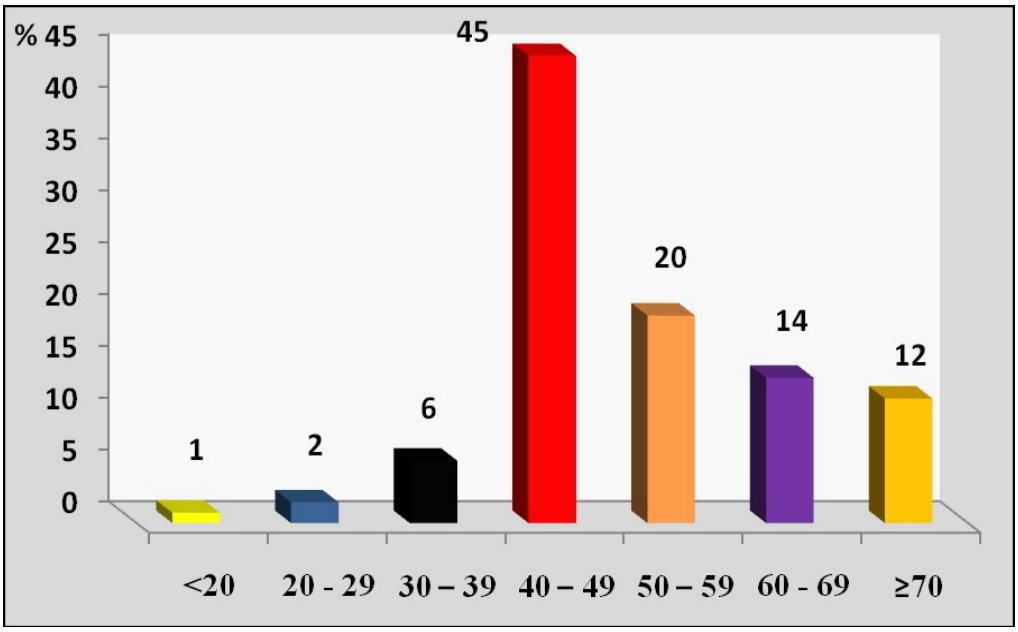

Fig.1: Distribution of patients according to age

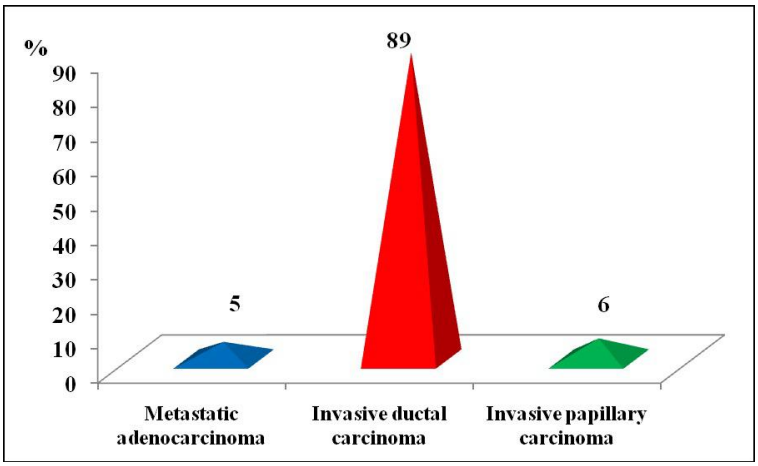

Fig. 2: Distribution patients according to histopathology results

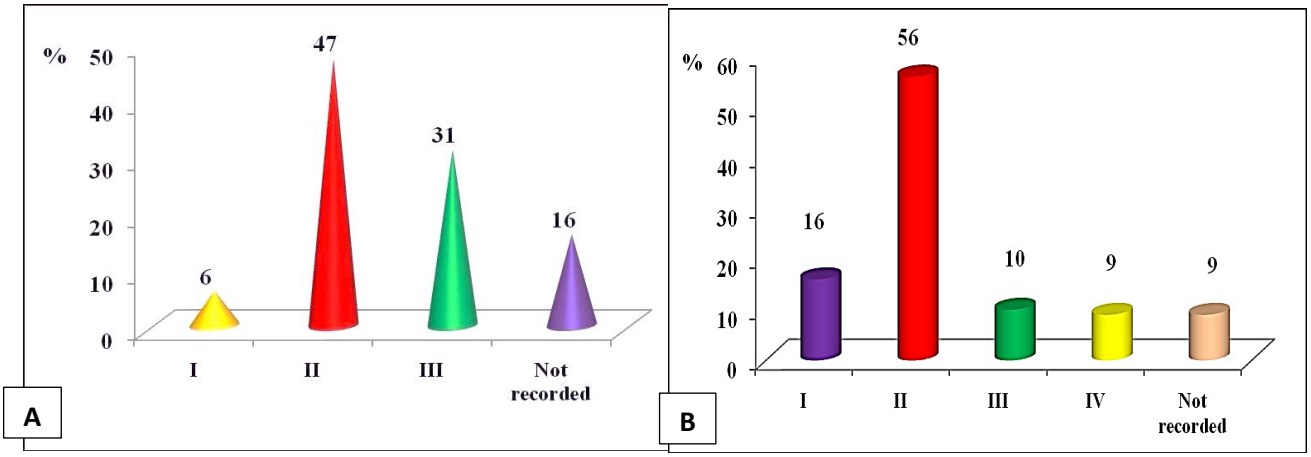

Fig. 3: Distribution of patients according to A. Grade and B. Stage.

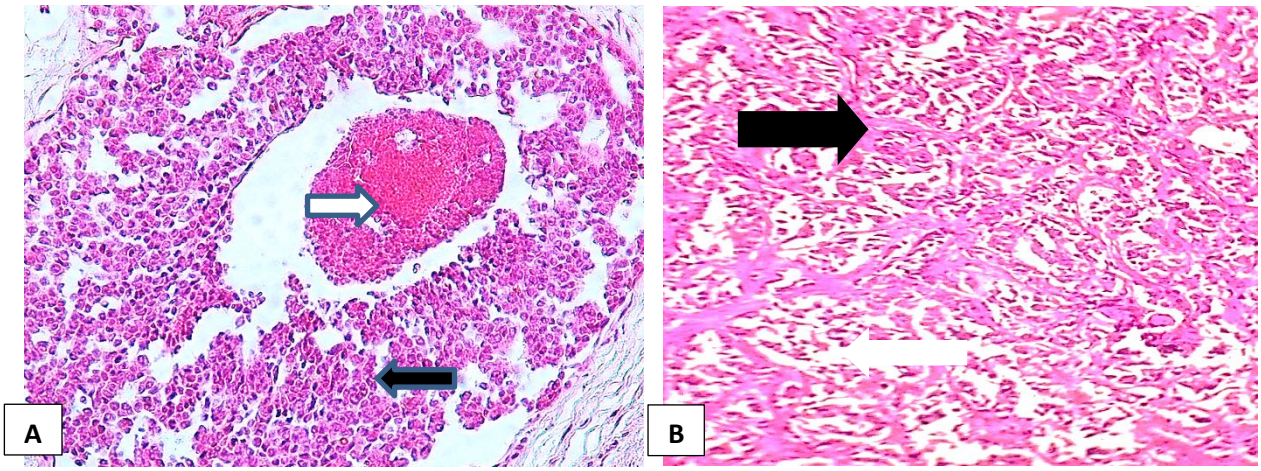

Fig 4: A. Section of ductal carcinoma in situ (DCIS) with central comedo-type necrosis (white arrow), Non-invasive because the cancer cells (black arrow) have not spread out of the ducts and glands into the surrounding breast tissue. B. Section of invasive ductal carcinoma grade 3 (IDC) with high degree pleomorphic nests malignant cells invasion basement membrane to stroma, no tubule formation (White arrow) malignant cells. (black arrow) Fibrous septa separate tumor cells. H & E stain (X 200).

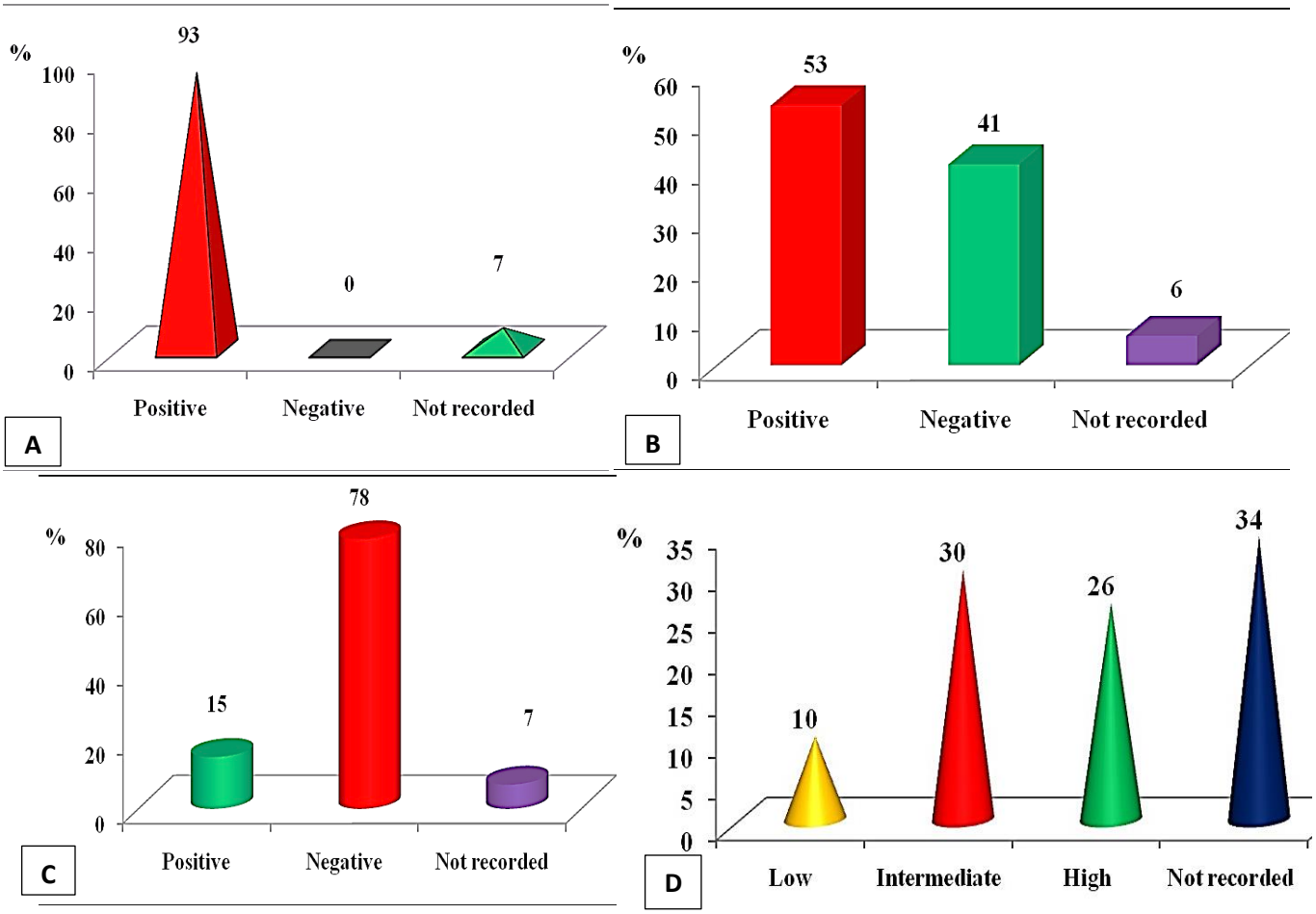

Fig. 5: Distribution of patients according to A. Estrogen receptors, B. Progesterone receptor, C. Human epidermal growth factor receptor. and D. Ki- 67 levels.

4. DISCUSSION

Breast cancer is the most common cancer in women worldwide. In Libya breast carcinoma is the most common malignant tumor in women. Patients often present with advanced disease, have early disease recurrence and are associated with high mortality (El Mistiri et al, 2003) Prediction of this disease depends on various factors such as histological type, stage, grade, size of tumor, lymph node metastasis, and the biomarker of the tumor (Rosai., 2011). In the present study, most of the cases were 40-49 years old, youngest age <20 years represented 1%, and mean age 52.2 years old compared with study done in Egypt, the age ranged between 21-35 years 8.19%, and the mean age was 31 years old (Farouk et al., 2016). Most of the cases were from Benghazi and scanty of cases were from outside Benghazi. In the current study, most cases of tumors 89% were ductal carcinoma which is in accordance with that reported from Saudi the most common type of cancer was ductal carcinoma with an incidence percentage of 81.80% (Asiri et al., 2017). Tumor stage is considered an important factor in local and distant recurrences, survival rate, and having an effective early diagnosis program. About half of the tumors in present study has been detected in Stage II (56%), and this slightly higher than from India was in stage IV (45.7%), (Malvia et al., 2017).

Concerning the grade of tumor in the present study, the results illustrated that (47%) of tumors were in Grade two and (31%) in Grade three. Agreement with a study done by (Engstrom et al., 2013). Revealed that of the 909 tumors, (12.9%) were Grade one, (53.7%) were Grade two, and (33.4%) were Grade three. In this study, 93% were positive for ER and 53% were positive for progesterone receptor, and HER2 was 78% positive. This is comparing with a study conducted in Pakistan, ER+ cases were 62%, PR+ cases were 47%, and HER2-positive cases were 49% (Ali et al, 2017). Higher levels of Ki-67 correlate with more rapid tumor growth and tumor aggressiveness. In the present study Ki-67 level <20 % was recorded in 30% of the cases, comparing with a study in western part of Libya Ki-67 level <15 was 19.1% (Soliman& Yussif., 2016) (Sauter, 2017) & (Gusbi et al., 2018). In this study most patients were from Benghazi from eastern part of Libya. There were 1472 patients in three years from January 2020 to December 2023. Compared other study western part of Libya in years between 2003 and 2018 by (Gusbi et al., 2018), Most of the cases were from Tripoli and AL-jabal Garbi.

Most of the age groups were between 40-49 years old in Benghazi, this corresponds to a study by (Boder et al, 2011), comparing breast cancer in Libya and European countries 70.9% of cases arising in female individuals, who are 50 years or younger. Suggesting that in the African population, characterized by African genomic haplotypes, the premenopausal type of breast cancer is more common than the postmenopausal type, in Europe, where the population is characterized by European genomic haplotypes, the contrary is the case. The factors responsible for this are not fully understood, although it could be due to the breast cancer genes (BRCA I and 2) and their variant (Gao et al., 1997). Similar to other studies, the most frequent histological type of breast cancer in young women was invasive ductal carcinoma 36.1% (Bakkali et al, 2003) also common in Benghazi 89%. Genetic factors may be involved; however, no evidence currently exists that breast cancer genes (BRCA1 and BRCA2) are more often involved in breast cancer cases in Africa. (Wiliams et al., 2006). By comparing the stage of the disease with age, we find that most of the stage II (56%) was with the age group 40-49. This corresponds to a study by (Maalej et al., 2008), According to AJCC staging system, stage II was the most frequent similar to the rate reported previously in the global Tunisian population (46.9%), As well as the stage II was common in Benghazi (56%). The total number of Libyan patients with breast cancer from all other types of cancers in Eastern region was (24%) in 2020, (27%) in 2021, (23%) in 2022, and (22%) in 2023.

Regarding tumor grades, the common was grade two (47%) compared with age between 40- 49 years old. Having significant statistical relationship between grade two and common histological type IDC (89%). The role of education on breast cancer symptoms has been reported in a number of studies (Stapleton et al., 2011). Lack of knowledge about breast cancer is an important factor in Libya as observed in study by (Eramah., 2013). And there is a need for public educational programs especially for less educated women. In our study, there is a lack of important information in patients' files at the Benghazi Medical Center such as marital status, family history, history of menstrual cycle and breastfeeding, which affects the prognosis of breast cancer. Compared with other study conducted by (Gusbi et al., 2018) about western part of Libya this information was present. As regards the marital status, 78.6% of patients were married, and 82.1% from western region and more than the half were employed. More than half of the patients had≥4 children, and 46.2% had no breastfeeding, 16.5% were breastfed for 12 months or more. Majority 64.3% of female cases reported early age of menarche <12 years. Oral contraceptive use and hormonal treatment were reported in 62% female patients. Since the customs are similar in eastern and western Libya, we can take advantage of the results found in the previous research to match them with the missing information in our study, such as breastfeeding, the number of children and use of contraceptive. Also compared with Arab countries. This increase in the incidence may be partly due to lifestyle changes being adopted by Arab women, such as late marriage, delayed first pregnancy, having fewer children, taking oral contraceptives, lack of physical activity/obesity, and smoking (DeSantis et al., 2014) & (Ravichandran & Al-Zahrani., 2009).

It is also possible that this increase is partly due to improved detection and diagnosis in some Arab countries over the past 26 years. Population growth and aging could also be possible factors contributing to the increased burden (DeSantis et al., 2014). Although the incidence of breast cancer in Arab countries is rising, it is still less than the global average and only one-fifth of that in Western Europe. In general, the high rates of breast cancer in developed countries are the consequence of a higher prevalence of the known risk factors for the disease, many of which early age at menarche, nulliparity, late age at bom child, late age at any birth, low parity, and late menopause relate to the hormonal (largely estrogen) milieu to which the breast is exposed from menarche to the cessation of ovulation at menopause (Pike et al., 1983). The higher parity and earlier age at first pregnancy of women seen in many developing countries might account for much of the lower incidence of breast cancer in these regions relative to developed countries. The long- standing hypothesis that breast-feeding of longer duration is protective (Lane., 1926) has been affirmed again recently (Beral., 2003).

5. CONCLUSIONS

Breast cancer in Libya is most frequent cancer among women and is rare in males. The most common area is Benghazi in eastern part of Libya, And10% Outside Benghazi. Frequency is higher among age (46-56), and mean age 50 years in Benghazi. Most cases were Stage II (56), followed by stage I (16), stage IV (9), and stage III (10). Regarding tumor grades, grade II (47) patients were most, followed by grade III (31),and grade I (6). AND Not Recorded (16) Most cases were Stage II, and grade III in all age groups and in all cities. Invasive ductal carcinoma was the predominant histopathological type, and secondcommon type was invasive papillary carcinoma. Most cases were ER Positive, PR positive and HER Negative, and most cases had Ki-67 level Low (25%). cases were highest in year 2020 (28) patients, followed by year 2021 was (27) patient, and then year 2022 was patients (23) AND Then Year2023(22).

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