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Breast Cancer in Salah Al-Deen Governorate in 2023

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ABSTRACT
Breast cancer is the commonest cancer among Iraqi females. This study aimed to identify the clinic pathological characteristics of breast cancer cases. This is a cross sectional study included 130 breast cancer patients recruited from the cancer management center in Salahdeen Governorate, Iraq, between January 1st and December 31st, 2023. Patients presented with breast lumps and underwent a triple assessment, consisting of clinical breast examination, mammography and/or ultrasonography, and fine needle aspiration cytology (FNAC). Clinical and histopathological data were collected, and staging was conducted according to the TNM classification by a surgical oncology specialist. Statistical analysis was performed using SPSS version 25. The majority of patients were housewives (81.5%), and the commonest age group was 55-65 years (28.5%). Invasive ductal carcinoma was the most prevalent histological type (89.2%), with grade III tumors being the most common (50%). Surgical intervention was performed in 81.5% of patients, with 92.5% undergoing radical mastectomy and 7.5% opting for breast-conserving surgery (BCS). Lymph node involvement was observed in 44.6% of patients, and distant metastasis was found in 36.2%. This dataset underscores the need for strategies focused on early detection, including raising awareness of breast-conserving surgery as a viable treatment option. By improving access to screenings and timely interventions, these measures can reduce the impact of advanced-stage disease and metastasis. Comparing these results with other studies emphasizes the importance of healthcare infrastructure and targeted education in improving patient outcomes.

Keywords: *Breast cancer, breast-conserving surgery, early detection, TNM staging, invasive ductal carcinoma, metastasis, public health.*

1. INTRODUCTION

Breast cancer is the most commonly diagnosed cancer among women globally and remains a leading cause of cancer-related mortality. In 2020, over 2.3 million women were diagnosed with breast cancer, resulting in 685,000 deaths worldwide. This highlights the significant burden of the disease and underscores the need for effective prevention, early detection, and treatment strategies. The age-standardized incidence rate (ASIR) of breast cancer has steadily risen, from 16.42 per 100,000 in 1990 to 26.88 per 100,000 in 2021, with higher rates in developed regions due to better screening and diagnostic capacities, alongside lifestyle and genetic factors. In contrast, lower-income countries often present with advanced-stage disease, contributing to higher mortality rates despite lower incidence. [1] Breast cancer's epidemiology is influenced by a complex interplay of genetic predispositions, hormonal factors, environmental exposures, and lifestyle habits such as diet, alcohol consumption, and physical activity. Variations exist across regions; for example, in sub-Saharan Africa, breast cancer is the most common female malignancy, with many patients presenting at late stages due to limited healthcare access and awareness. The median age at diagnosis also varies, tending to be younger in low-income countries compared to high-income regions. [2]

Furthermore, advancements in diagnostic technologies, including the use of artificial intelligence, are transforming breast cancer risk prediction and early detection, enabling personalized approaches to prevention and treatment. These tools have the potential to address disparities and improve outcomes globally by adapting strategies to specific population needs. By understanding the geographic, socioeconomic, and biological factors that contribute to breast cancer incidence and mortality, public health initiatives can better target interventions to reduce the disease's global burden. [3] For more detailed data and insights, you can explore reviews and epidemiological studies, such as those by the Global Burden of Disease Study and region-specific analyses in countries like Ethiopia. [2]

In Iraq, breast cancer is one of the most prevalent cancers in Iraq, reflecting significant public health challenges influenced by both medical and socio-political factors. Studies indicate that breast cancer represents a substantial proportion of all cancer diagnoses in Iraq, with a rising incidence partly attributed to better diagnostic capabilities and an aging population. Environmental factors, such as the remnants of warfare, may also play a role in increasing cancer risks. [4] Healthcare infrastructure for cancer treatment in Iraq has been severely impacted by decades of conflict. Many oncology facilities in regions affected by war, including those occupied by ISIS, suffered substantial damage. Reconstruction efforts are ongoing, with a focus on improving cancer diagnostics, expanding radiotherapy services, and addressing workforce shortages. International organizations like the IAEA and WHO have partnered with Iraq to train medical personnel and develop collaborative networks with regional facilities, such as Jordan's King Hussein Cancer Center, to enhance care. [5]

2. PATIENTS AND METHODS:

A total of 130 breast cancer patients was included in the study. They were recruited from patients registered in the cancer management center in Salahdeen governorate-Iraq during the period January 1st 2023–31st December 2023 presenting with breast lumps. Patients were clinically interviewed and examined using a triple assessment technique, i.e. clinical breast examination, mammography and/or ultrasonography, and fine needle aspiration cytology (FNAC). Information requested with lesion characteristics (histopathology and clinical notes), anatomical staging done according to TNM classification, staging done by surgical oncology specialist. All patients with full information, histological and radiological reports were included. All information, regarding histopathology was extracted from file records. Statistical analysis and data presentation done using the Statistical Package for Social Sciences (SPSS, version 25). Ethical clearance was taken from ethical committee in Salahdeen Health directorate. This study was self-funded. No Conflict of Interest.

3. PATHOLOGICAL DIAGNOSIS

Patients were scheduled for a complete diagnostic work-up, which included Fine Needle Aspiration Cytology (FNAC), excisional biopsy, and/or mastectomy. FNAC was carried out using disposable 10 mL syringes with 22- or 23-gauge needles. All FNAC results that were positive were confirmed histopathologically after excision of the lesions. Carcinoma type was identified following the World Health Organization (WHO) classification [6], while the clinical stage of the disease was recorded using the Tumor-Node-Metastasis (TNM) staging system of the American Joint Committee on Cancer [7]. Ductal carcinoma was graded according to the criteria proposed by Scarff, Bloom, and Richardson [8].

4. RESULTS

The commonest age group was 55-65 years old was 37(28.5%), followed by 45-54 years 35 (26.9%), and > 64 years old 24.6%). There was only 1 case of male breast cancer (0.8%). The commonest area of residency was Samara city 42(32.3%) followed by Tikrit city 41 (31.5%). Most of the patient were house wife 106(81.5%), employer 15(11.5%) and retired 9(6.9%), as shown in table 1.

Table 1: The distribution of breast cancer cases according to the general characteristics'.

		Frequency	Percent
Age	25-34 year	2	1.5
	35-44 year	24	18.5
	45- 54 year	35	26.9
	55-64 year	37	28.5
	> 64 year	32	24.6
Sex	Female	129	99.2
	Male	1	0.8
Residence	Tikret	41	31.5
	Samara	42	32.3

	Biji	8	6.2
	Balad	16	12.3
	Alalam	15	11.5
	Al Shirqat	4	3.1
	Dour	2	1.5
	Dijil	2	1.5
Job	House wife	106	81.5
	Employer	15	11.5
	Retired	9	6.9
Total		130	100

Most of the patients were had surgical intervention 106(81.5%). From those who operated radical mastectomy done by 98(92.5%), and Breast-conserving surgery was done for 8 (7.5%), as shown in table 2.

Table 2: surgical history of the patients

		Frequency	Percent
Surgery	yes	106	81.5
	No	22	16.9
	suggested	2	1.5
	Total	130	100
Type of operation	Breast-conserving surgery (BCS)	8	7.5
	total radical mastectomy	98	92.5
	Total	106	100.0

Most of the cases were Invasive ductal Carcinoma 116 (89.2%), followed by Invasive lobular Carcinoma 6(4.6%), mucinous tubular carcinoma3(2.3%), Cribriform carcinoma 2(1.5%), Papillary mucinous denocarcinoma 1(0.8%), mucinous carcinoma 1(0.8%), and Infiltrating duct and lobular carcinoma 1(0.8%). Most of cases had grade III 65(50%) and grade II 46(35.4%), as shown in table 3.

Table 3: the histopathological characteristics of breast cancer cases.

		Frequency	Percent
Histological Type of carcinoma	mucinous tubular carcinoma	3	2.3
	Cribriform carcinoma	2	1.5
	Papillary mucinous adenocarcinoma	1	0.8
	mucinous carcinoma	1	0.8
	Invasive lobular Carcinoma	6	4.6
	Invasive ductal Carcinoma	116	89.2
	Infiltrating duct and lobular carcinoma	1	0.8
grade	I	11	8.5
	II	46	35.4
	III	65	50
	IV	8	6.2
	Total	130	100

Most of the cases had T2 (> 2 cm) 70(53.8%), followed by T1 28(21.5%), T3 23(17.7%) and T4 found among 9(6.9%). Regarding lymph node staging most of cases had N2 58(44.6%), N0 found among 29(22.3%), N3 found among 25(19.2%). Distant metastasis found among 47(36.2%) of the cases, as shown in table 4.

Table 4: the staging of the breast cancer cases

Staging parameters		Frequency	Percent
T	T1	28	21.5
	T2	70	53.8
	T3	23	17.7
	T4	9	6.9
N	N0	29	22.3
	N1	18	13.8
	N2	58	44.6
	N3	25	19.2
M	M0	83	63.8
	M1	47	36.2
	Total	130	100

5. DISCUSSION

The present study reveal that the commonest age groups were as follows 55-65, 45-54, and > 64 years. This is goes with Sherko AMK in 2015 who found that the mean age at diagnosis was 49.42 ± 11.66 years compared to control 46.7 ± 10.2 ($p<0.001$, 95% CI: 1.7–3.7). [9]

The present study reveal that there was only 1 case of male breast cancer (0.8%), which goes with Ben Kridis W 2022 that revealed male breast cancer (MBC) is a rare malignancy presenting only 1 % of all breast cancer. [10]

The current study revealed that surgical intervention occurred in (81.5%) of cases, and mastectomy done by (92.5%), and Breast-conserving surgery was done for 8 (7.5%) this is differ from than Fraser VJ in 2016, revealed that 77% of women had one breast-conserving surgery (BCS), 21.3% had two procedures, and 2% (450) had three or more BCS procedures within 180 days of the index BCS. [11] The low percentage of breast conserving surgery may be related to the diagnosing of the cases at late stage, decreased both patient and health staff education about the breast conserving surgery. Also many patients thought that radical mastectomy give more protection against recurrence that the breast conserving surgery.

In the present study, most of cases of BC had grade III (50%) and grade II (35.4%). This goes with Alwan NAS 2016 who found that According to TNM classification, 9.8% presented with stage I disease, and 46% were diagnosed in stages III and IV. [12]

Regarding the distribution of Breast Cancer Histological Subtypes, in the present study, the type of breast cancer were as follows; Invasive ductal Carcinoma (89.2%), Invasive lobular Carcinoma (4.6%), mucinous tubular carcinoma (2.3%), Cribriform carcinoma (1.5%), Papillary mucinous denocarcinoma (0.8%), mucinous carcinoma (0.8%), and Infiltrating duct and lobular carcinoma 1(0.8%).

This goes with Alwan NAS 2016 who found that Infiltrative ductal carcinoma was the most common pathology (67%), followed by intraductal carcinoma (13.6%) and lobular carcinoma (18.5%). Less than 7% of malignant tumors were well differentiated. [12] This also goes with Basudan AM in 2022 in Saudi Arabia, the breast cancer cases were histopathologically subclassified into Invasive Ductal Carcinoma (IDC), Invasive Lobular Carcinoma (ILC), Mixed, or Other. For the period of 2001–2017, IDC constantly remained the dominant subtype (72.4–80.5%). The mean percentage for the IDC, ILC, and mixed subtypes were 77.8%, 5.8%, and 2.6%, respectively. [13] This goes with previous study in Iraq – Baghdad by Abedalrahman SK et al 2020 who found that Invasive ductal carcinoma (IDC) was found among 82 (80.4%) of malignant cases, ILC was 14 (13.7%), most of cases diagnosed at stage II 54 (52.9%), followed by stage III 27 (26.5%). [14]

In the current study most of cases had grade III 65(50%) and grade II 46(35.4%), Most of the cases had T2 (> 2 cm) 70(53.8%), followed by T1 28(21.5%), T3 23(17.7%) and T4 found among 9(6.9%). Regarding lymph node staging most of cases had N2 58(44.6%), N0 found among 29(22.3%), N3 found among 25(19.2%). Distant metastasis found among 47(36.2%) of the cases. this goes with Alwan NAS.in Iraq 2016 who found that More than two-thirds of the patients (65.5%) had positive lymph node involvement at the time of initial diagnosis. Immunohistochemical assays demonstrated that estrogen, progesterone and Her2 receptors were positive in 67%, 69%, and 49.2% of specimens, respectively. The majority of patients (92.3%) were provisionally treated by modified radical mastectomy, 35.2% received palliative treatment, hormonal therapy was prescribed to 54.2%, and recurrence was registered in 9.4%.[12]

This finding is higher than what found by Ahmad AA in 2024 in Saudi Arabia found that Invasive ductal carcinoma found among (89.7%) of the patients, and that most patients presented with TNM stages II and III (55.2%), and 27.7% had metastasis. The main therapeutic modalities included radical mastectomy (63.8%), neoadjuvant chemotherapy (60.4%), and adjuvant radiotherapy (82.9%). [15]

6. CONCLUSION

This dataset highlights the urgent need for strategies focused on early detection and effective treatment of breast cancer. Public health initiatives, particularly those aimed at increasing education about breast cancer awareness, are crucial. This includes raising awareness about breast-conserving surgery (BCS) as a viable treatment option, improving access to screenings, and ensuring timely interventions. Such measures are key to reducing the impact of advanced-stage disease and distant metastasis. When comparing these findings to other studies, the stark differences in outcomes underscore the significant role that healthcare infrastructure and awareness play, further stressing the need for targeted, educational campaigns on options like breast-conserving surgery to improve patient outcomes.

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