Epidemiological Study of Breast Cancer in Erbil, Kurdistan Region

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Abstract

Breast cancer is the most diagnosed cancer and the second leading cause of cancer death among women in the world. Compared to some other regions in the world, amount of information available about breast cancer epidemiology in the Kurdistan Region of Iraq is scarce. This study is an attempt to enrich our knowledge about different epidemiological aspects of breast cancer in the region since epidemiological studies contribute quite significantly to the current knowledge of environmental and genetic risk factors and to the current treatment strategies for breast cancer. In addition, studies has shown that the past and ongoing research has a massive implication in improving the outcome of this common disease. This work takes all women diagnosed with breast cancer at Nanakaly Hospital in Erbil, Iraq as sample of the study. Patient characteristics were captured then statistical analysis was performed on these data sets. The majority of patients were found to be city dwellers and about 46% were diagnosed at stage II and 40% at stage III. The vast majority of cases tested positive for hormone receptors but negative for HER2.

Keywords: Breast Cancer, Epidemiology, Hormone Receptor, HER2, Therapeutic Interventions, Erbil.

1. Introduction

Alarming trends in cancer incidence rates have been identified globally (Jemal et al., 2010). In developing countries, breast, colon, and lung cancers are frequently diagnosed and are considered the leading causes of high morbidity and mortality. Breast cancer is the commonest cancer in females and is responsible for approximately 32% of all cancers in women worldwide (Ibrahim et al., 2014). It is presently one of the most prevalently identified cancers and is the fifth leading cause of cancer-related death with an estimated number of 2.3 million cases worldwide according to the GLOBOCAN 2020 report (Sung et al., 2021). Numerous procedures, such as general preventive behaviors and screening programs, are critical for reducing the occurrence rate of breast cancer (Łukasiewicz et al., 2021). Long-term fertility, which occurs with early menarche and late menopause, is among the most significant risk factors for breast cancer. Overweight after menopause, hormone replacement therapy, lack of physical activity, and alcohol consumption have all been linked to an increased risk of breast cancer (Jiang et al., 2022; Vinogradova et al., 2020). Pregnancies and breastfeeding, on the other hand, can be among the preventive factors (Ghoncheh et al., 2016). Limited data on breast cancer incidence rate and geographical distribution are the main impediments to the better planning health status and etiological studies, as a result of the scarcity of research on this subject (Ghoncheh et al., 2016). A limited number of

research on cancer incidence have been conducted in the Kurdistan Region of Iraq, and hence, there is inadequate data on the latest changes in the prevalence of common cancers. To address this deficiency, this study was conducted to outline vital information and incidence of breast cancer in the region.

2. Study Sample, Results, and Discussion

This section contains the study sample, results of the data, and discussion.

2.1. Study Sample

All the breast cancer patients who were recorded in Nanakaly Hospital in Erbil, Iraq, from January 1st, 2016 to December 31st, 2020, were registered in this study. The study was approved by the Ethical Committee of Pharmacy College in Hawler Medical University. Data that was recorded included patient and disease characteristics. These data were tabulated and subjected to statistical analysis. This study does not actually indicate the real number of breast cancer cases in the Kurdistan Region because not all the patients were referred to this particular hospital, as there were other oncology centers in the region.

2.2. Results

The present study investigated a total number of 95 patients with breast cancer in the period between January 2016 and December 2020. All patients were in the age group between 25 and 70 years, and majority were from urban areas and were unemployed. Table (1) demonstrates incidence and characteristics of 95 cancer patients from 2016 to 2020.

Table 1. Patients Demographic Information.

Characteristic	Variable	Frequency	Percent (%)
Age	<25	1	1.1%
	25-50	45	47.4%
	51-75	48	50.5%
	>75	1	1.1%
Total	95		
Residency	Urban	89	93.7%
	Rural	6	6.3%
Total	95		
Employment	Employed	20	21.0%
	Unemployed	75	78.9%
Total	95		
Year of diagnosis	2016	13	13.7%
	2017	21	22.1%
	2018	26	27.4%
	2019	15	15.8%
	2020	20	21.1%
Total	95		

Majority of the studied patients with 67.7% underwent modified radical mastectomy (MRM) and only 32.3% underwent breast conserving surgery (BCS). All patients received axillary lymph node dissection (ALND) or sentinel lymph node biopsy (SLNB), and more than half had 0-3 positive lymph nodes. Approximately 60% of patients had more than three lymph nodes positive, and slightly less than 20% had 9 or more nodes positive. All the patients were diagnosed following presentation with a breast lump. The most common histopathology was invasive ductal carcinoma (IDC) with 84.8%. Invasive lobular carcinoma (ILC) constituted 16.3% of cases, and tubular carcinoma was diagnosed in 2 cases with 2.2%. Majority of patients were diagnosed with stage II and III disease with 45.7% and 40.2% respectively. Most of the patients had grade 2 disease with 73.4%. In regard to predictive markers, majority of cases were ER and PR positive with 87.4% and 85.5% respectively, and approximately a third of cases with 33.7% were HER2 positive. Ki67 was <25 in 61.8% of cases. Table (2) demonstrates distribution of cancer cases according to histopathological subtype.

Table 2. Distribution of Cancer Cases According to Histopathological Subtype.

Characteristic	Variable	Frequency	Percent (%)
Surgery Type	Wide Local Excision	30	32.3%
	Modified Radical Mastectomy	63	67.7%
Total		**93**	
ALND or SLNB	Performed	93	98.9%
	Not performed	1	1.1%
Total		**94**	
Tumor Size	< 30 mm	44	47.3%
	30-50 mm	43	46.2%
	> 50 mm	6	6.5%
Total		**93**	
Number of positive nodes	0-3	55	59.1%
	4-8	21	22.6%
	> 9	17	18.3%
Total		**93**	
Stage at Diagnosis	Stage I	8	8.7%
	Stage II	42	45.7%
	Stage III	37	40.2%
	Stage IV	5	5.4%
Total		**92**	
Histopathological Type	Ductal	78	84.8%
	Lobular	15	16.3%
	Medullary	0	0.0%
	Tubular	2	2.2%
	Other	0	0.0%
Total		**95**	
Tumor Grade	Grade 1	3	3.2%
	Grade 2	69	73.4%
	Grade 3	22	23.4%
Total		**94**	
LVSI	Present	41	43.2%
	Absent	46	48.4%
	Unknown	8	8.4%
Total		**95**	
ER Status	Positive	83	87.4%
	Negative	12	12.6%
Total		**95**	
PR Status	Positive	81	85.3%
	Negative	14	14.7%
Total		**95**	
Her2 Status	Positive	32	33.7%
	Negative	63	66.3%
Total		**95**	
Ki67 Percentage	<25%	55	61.8%
	25-50%	27	30.3%
	51-75%	5	5.6%
	>75%	2	2.2%
Total		**89**	

Patients received chemotherapy in either adjuvant or neoadjuvant setting. In neoadjuvant setting, regimens included AC (3%), AC-T (5.4%), No FEC, FEC-T (1.1%), TC (1.1%) and others (1.1%); whereas in adjuvant setting, regimens included AC (18.5%), AC-T (48.9%), No FEC, FEC-T (2.2%), TC (4.3%) and others (2.2%). Adjuvant radiotherapy was given to 62.8% of patients, while adjuvant anti-HER2 therapy and adjuvant Bisphosphonates were used in 33% and 17 % of patients respectively. Table (3) demonstrates therapeutic interventions of cancer cases.

Table 3. Therapeutic Interventions of Cancer Cases.

Characteristic	Variable	Frequency	Percent (%)
Neoadjuvant Chemotherapy	None	82	88.2%
	AC	3	3.2%
	AC-T	5	5.4%
	FEC	0	0.0%
	FEC-T	1	1.1%
	TC	1	1.1%
	Others	1	1.1%
Total	93		
Adjuvant Chemotherapy	None	22	23.9%
	AC	17	18.5%
	AC-T	45	48.9%
	FEC	0	0.0%
	FEC-T	2	2.2%
	TC	4	4.3%
	Others	2	2.2%
Total	92		
Adjuvant Radiotherapy	Not Used	35	37.2%
	Used	59	62.8%
Total	94		
Adjuvant Hormonal Therapy	None	13	13.8%
	Tamoxifen	34	36.2%
	Aromatase Inhibitors	47	50.0%
Total	94		
Anti-Her2 Therapy	Not Used	63	67.0%
	Used	31	33.0%
Total	94		
Adjuvant Bisphosphonates	Not Used	78	83.0%
	Used	16	17.0%
Total	94		

2.3.   Discussion

The number of women diagnosed with breast cancer rises in accordance with the increase in average lifespan, resulting in an even greater rise in the number of elderly women diagnosed with breast cancer (Louwman et al., 2007). Cancer patients frequently present with a variety of symptoms and complications, making treatment of those patients a serious concern. Early detection of the disease, prior to the appearance of signs and symptoms, significantly improves the quality of care (Mjali et al., 2021). This study aimed to analyze clinico-pathological and epidemiological pattern of breast cancer patients registered in Nanakali hospital in Erbil city over a period of 5 years. It has been reported that 5-year survival for women with breast cancer was 76% for women less than 74 years and 69% for women above 75 years (Kunkler et al., 2015). In terms of past publication from 2020 experience, 86% of breast cancer patients were housewives (Abdulrazzaq & Ahmed, 2020). It has been revealed in several studies that the urban population constituted majority of breast cancer cases. This is correlated to overweight due to absence of daily physical activity (Kartal et al., 2013). Age of patients, stage at diagnosis, and comorbidity were found to be negatively associated with rate of survival in the multiple regression model. Breast cancer management requires a multidisciplinary approach, including surgery, chemotherapy, and radiotherapy, all of which require additional resources. Moreover, expertise in identifying genes linked to breast cancer necessitates precise procedures and incurs enormous costs (Yip et al., 2015). In a study, infiltrative ductal carcinoma (IDC) was found the most common type of breast cancer with 76.6%. Infiltrative lobular carcinoma constituted 5.46% (Amir et al., 2009). In HER2-positive tumors, the presence of carcinoma in situ was significantly lower. In addition, a significant correlation was found between the presence or absence of axillary lymph nodes and the various molecular subtypes (Al-Thoubaity, 2020). Stage and lymph node involvement were reported to be one of the main important factors associated with survival rate (Schwartz et al., 2014). In regard to tumor grade, majority of patients in the present study were grade II with 73.4%. Only 2.3 % of patients were grade I and 23.4% were

grade III. Previous research has shown that late-stage diagnoses and a lack of adequate treatments accounted for more than a half of all cancer deaths worldwide in developed countries (Dunyo et al., 2018; Wijeratne et al., 2021). Many factors, including insufficient screenings, lack of education, and cultural awareness, have been linked to cancer diagnoses made at a late stage (Sathwara et al., 2017; Swinny et al., 2022). As a consequence, several breast cancer cases are only discovered in their later stages.

3. Conclusions

Breast cancer is the most frequently diagnosed cancer in women and ranks second among causes for cancer related death in women. Slightly less than a hundred patients with breast cancer in the Kurdistan Region of Iraq were investigated to shed light on epidemiological aspects of the disease. It was revealed that most patients were urban. Approximately 46% were stage II at diagnosis, and 40% were stage III. The majority of cases were hormone receptor positive and HER2 negative. Generally, our results were consistent with study results undertaken elsewhere in the world.

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