Medical Science

A comparison of epidemiological characteristics in breast cancer patients and healthy women in Baghdad and Misan province

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General Note

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ABSTRACT

Objective: the assessment of the main sociodemographic, clinical, and pathological data for breast cancer patients, within two referral hospitals in Iraq. *Methods:* A retrospective study carried out in two governates in Iraq (Baghdad, and Misan). The data were extracted from the patient's medical record. The study carried out in two referral hospitals (Medical City Teaching Hospital in

Baghdad province, and Al-Sader Teaching Hospital in Misan province). Hormonal receptor status, Her2 status, and demographical data were collected. *Results:* The study included 646 women diagnosed with BC, 320 patients were from Baghdad governate while 326 from Misan governate. The mean age was 50.9 ± 8.0 years, with 50.2% between the age of 50 – 64 years and 47.2% between the age of 35 – 49 years. Additionally; 79.1% was married, 37.3% was menopaused, 24.6% was null parity, 78.8% had an urban residency, 28.8% used oral contraceptive method, 12.4% had a family history of BC. In terms of histopathological features, 72.3%, 75.7%, and 17.3% were ER-positive, PR positive, and Her2 positive. There was no significant difference in demographic, pathological features, tumor characteristics between patients from both governates. *Conclusions:* The Mean age of women with breast cancer was in the sixth decade of life, more than 70% had positive estrogen and progesterone receptor status, no difference was found Baghdad and Misan governate in patient's characteristics indicating breast cancer behavior is similar in various region of Iraq.

Keywords: Breast cancer, Iraq, demographic data, pathological features

1. INTRODUCTION

Worldwide, breast cancer (BC) considered one of the most prevalent diagnosed cancers in females and the most important cause of death in females. The therapy of BC is best by offering poly-therapies which includes surgery, radiotherapy, chemotherapy. This approach led to significant improvement in BC outcomes (Kesson *et al.*, 2012). Several risk factors for BC including age, genetic factors, and breast density is also a significant risk factor, particularly in women aged 40 to 49 years (Clemons and Goss, 2001). Breast cancer occurs 150 times more frequently in women than in men. In the US, there are an estimated 207,090 invasive breast cancers diagnosed annually among women versus 1970 in men (Jemal *et al.*, 2010). Advanced age had the highest predictive value for increased risk of BC in women, with more than 80% of BC occurred after the age of 50. Even in older age groups, many women must be screened to identify single cancer (Harris and Leininger, 1995).

Aside from age and genetics, most other risk factors for breast cancer are likely related to increased exposure to estrogen (Hulka and Stark, 1995). Risk factors for breast cancer that are related to estrogen exposure include a breast biopsy showing atypical hyperplasia, high breast density, and increased bone density (Zhang *et al.*, 1997). The current work aimed to assess the main sociodemographic, clinical, and pathological data for 646 BC patients, within two referral hospitals in Iraq.

2. PATIENTS AND METHODS

Study design

A retrospective study carried out in two governates in Iraq (Baghdad, and Misan). The data were extracted from the patient's medical record from February 2017 until the end of 2019. Patients were assessed by means of clinical breast examination, mammography and/or ultrasonography, and fine-needle aspiration cytology (FNAC).

Study setting

The study carried out in two referral hospitals (Medical City Teaching Hospital in Baghdad province, and Al-Sader Teaching Hospital in Misan province)

Data collection

Data routinely recorded on the patient's file sheet questionnaire by the examining physician included age of the patient at the time of diagnosis, oral contraceptive use, menopause, obesity, family history of BC, number of pregnancy, breast cancer histologic type, grade, and others. tumor size, lymph node status, clinical stage at presentation, Estrogen Receptor (ER), Progesterone Receptor (PR) and HER2 positive tumor contents and the receptor defined breast cancer surrogate subtypes, the TNM classification based on (Lawrance *et al.*, 2019).

Diagnostic criteria

Immunohistochemical (IHC) staining for molecular marker studies was carried out on the formalin-fixed paraffin-embedded blocks containing the BC tissues to evaluate ER, PR, and HER2 contents, the procedure was published previously (Marrazzo *et al.*, 1995).

Inclusion criteria

Patients diagnosed with BC during the recruitment period, age more than or equal to 20 years,

Exclusion criteria

Patients with other types of malignancy, patients younger than 20 years

Statistical analysis

All analyses carried out using SPSS version 23.1 (USA, IL), chi-square test, independent t-test. P-value considered being significant if <0.05.

3. RESULTS

The study included 646 women diagnosed with BC, 320 patients were from Baghdad governate while 326 from Misan governate. The mean age was 50.9 ± 8.0 years, with 50.2% between the age of 50 – 64 years and 47.2% between the age of 35 – 49 years. Additionally; 79.1% was married, 37.3% was menopaused, 24.6% was null parity, 78.8% had an urban residency, 28.8% used oral contraceptive method, 12.4% had a family history of BC. In terms of histopathological features, 72.3%, 75.7%, and 17.3% were ER-positive, PR positive and Her2 positive, as illustrated in table 1. There was no significant difference in demographic, pathological features, tumor characteristics between patients from both governate, as illustrated in table 2 and 3, and figure 1.

Table 1 assessment of sociodemographic data

Variables	Value
Number	646
Age (y), mean ± SD	50.9 ± 8.0
35 – 49 years	305.0 (47.2%)
50 – 64 years	324.0 (50.2%)
≥65 years	17.0 (2.6%)
Marital status	
Married	511.0 (79.1%)
Unmarried	40.0 (6.2%)
Widow/ divorced	95.0 (14.7%)
Menopause	241 (37.3%)
Null parity	159 (24.6%)
Number of full-term pregnancies	
None	184 (28.5%)
1 pregnancy	56 (8.7%)
2 – 4 pregnancies	219 (33.9%)
≥5 pregnancies	187 (28.9%)
Residence	
Rural	150.0 (23.2%)
Urban	496.0 (76.8%)
Contraceptive use	186 (28.8%)
Family history of BC	80 (12.4%)
ER positive	467 (72.3%)
PR positive	489 (75.7%)
HER2 positive	112 (17.3%)

Table 2 assessment of demographic and pathological features according to governate

Variables	Baghdad	Misan	p-value
Number	320	326	-
Age (y), mean ± SD	51.3 ± 8.0	50.5 ± 8.0	0.193
35 – 49 years	143.0 (44.7%)	162.0 (49.7%)	
50 – 64 years	168.0 (52.5%)	156.0 (47.9%)	0.442
≥65 years	9.0 (2.8%)	8.0 (2.5%)	

Marital status			
Married	254.0 (79.4%)	257.0 (78.8%)	0.850
Unmarried	21.0 (6.6%)	19.0 (5.8%)	
Widow/ divorced	45.0 (14.1%)	50.0 (15.3%)	
Menopause	109.0 (34.1%)	132.0 (40.5%)	0.091
Null parity	71.0 (22.2%)	88.0 (27.0%)	0.156
Number of full-term pregnancies			
None	87.0 (27.2%)	97.0 (29.8%)	0.477
1 pregnancy	29.0 (9.1%)	27.0 (8.3%)	
2 – 4 pregnancies	117.0 (36.6%)	102.0 (31.3%)	
≥5 pregnancies	87.0 (27.2%)	100.0 (30.7%)	
Residence			
Rural	72.0 (22.5%)	78.0 (23.9%)	0.668
Urban	248.0 (77.5%)	248.0 (76.1%)	
Contraceptive use	101.0 (31.6%)	85.0 (26.1%)	0.123
Family history of BC	40.0 (12.5%)	40.0 (12.3%)	0.929
ER positive	228.0 (71.3%)	239.0 (73.3%)	0.558
PR positive	241.0 (75.3%)	248.0 (76.1%)	0.822
HER2 positive	55.0 (17.2%)	57.0 (17.5%)	0.921
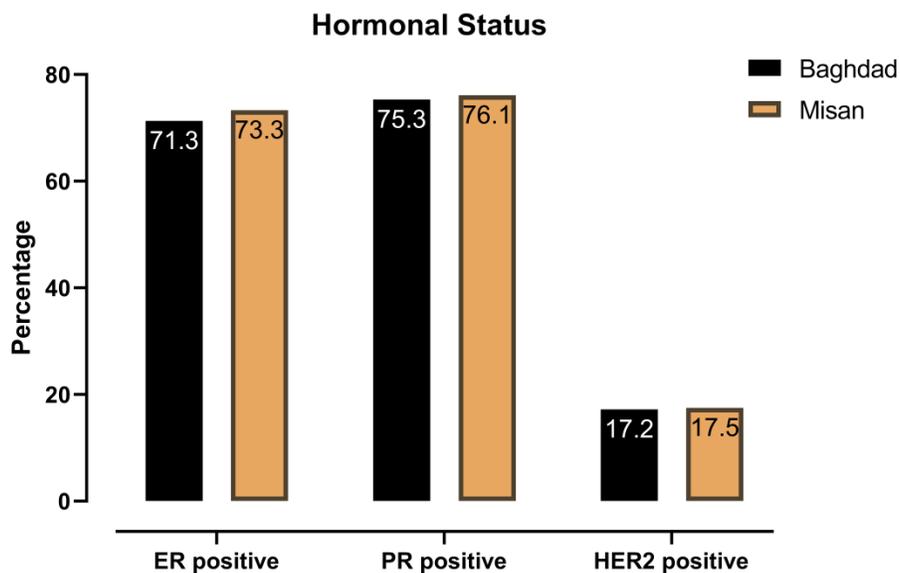
Figure 1 assessment of hormonal status according to governates

Table 3 assessment of tumor characteristics according to governate

Variables	Baghdad	Misan	p-value
Number	320	326	-
Tumor size #			
T1	45.0 (18.8%)	47.0 (18.9%)	0.934
T2	135.0 (56.5%)	144.0 (57.8%)	
T3	59.0 (24.7%)	58.0 (23.3%)	
Lymph nodes *			
N0	90.0 (35.3%)	107.0 (42.3%)	0.181
N1	96.0 (37.6%)	73.0 (28.9%)	
N2	43.0 (16.9%)	43.0 (17.0%)	

N3	26.0 (10.2%)	30.0 (11.9%)	
Progression $			
Not metastasis	167.0 (77.7%)	151.0 (75.9%)	0.665
Metastasis	48.0 (22.3%)	48.0 (24.1%)	

total number is 488, 158 had missing data
* total number is 508. 138 had missing data
$ total number is 414, 232 had missing data

4. DISCUSSION

The incidence of BC had increased in the last three decade to an alarming rate (Bray *et al.*, 2015), it has been documented that early detection of breast cancer when linked with prompt and adequate therapy, could significantly reduce mortality (World Health Organization, 2010; Stewart and Wild, 2014; Sankaranarayanan *et al.*, 2013) irrespective of the biological nature of the disease (Parise and Caggiano, 2014). Based on that rationale, some nations established public awareness programs coupled with early diagnostic facilities to downstage breast cancer at presentation (Alwan, 2014; Alwan *et al.*, 2017; Abdel-Razeq *et al.*, 2015).

This study establishes similarities in the demographic characteristic, pathological and clinical characteristic in two different governates in Iraq (Baghdad and Misan). Previous reports have described the burden of breast cancer in Iraq, as the most prevalent malignancy among the community in general and the second cause of cancer-related deaths, emphasizing the dilemma of younger age and late-stage at diagnosis (Alwan *et al.*, 2018; Alwan, 2016; Alwan, 2010). One of the most recent publications from the Iraqi cancer registry showed that about 4,500 new female BC registered in 2013 thus the incidence of BC was 26 case per 100,000 with about 900 death cases (Alwan *et al.*, 2018).

In the current study mean age was 50.9 ± 8.0 years with 47.2% aged between 35 – 49 years, which is consistent with previous Iraqi studies (Alwan, 2010), and similar to regional studies like Saudi Arabia (Al-Kuraya *et al.*, 2005), Sudan (Sengal *et al.*, 2018, Awadelkarim *et al.*, 2008). Whoever it was younger than international women by 10 years, in 2012-2014, 48% of breast cancer cases were registered in British women over 65 years; the incidence rates were highest among those aged 85 and over (Alwan *et al.*, 2018). In the present study 72.3%, 75.7%, and 17.3% were ER-positive, PR positive, and Her2 positive, which was in agreement with previous studies (Sengal *et al.*, 2018, Alwan, 2016; Parise and Caggiano, 2014; Al-Naqqash *et al.*, 2019).

5. CONCLUSION

The mean age of women with breast cancer was in the sixth decade of life, more than 70% had positive estrogen and progesterone receptor status, no difference was found Baghdad and Misan governate in patient's characteristics indicating breast cancer behavior is similar in various region of Iraq.

Author contribution

Kawakeb N Abdulla: Conception and design of the work, the acquisition, analysis, and interpretation of data for the work, and Drafting the work.
Saba Jassim Alheshimi: Conception and design of the work, interpretation of data for the work, and revising it critically for important intellectual content
Anwar Ahmed Mohammed: Conception and design of the work, and Drafting the work and finally revising it critically for important intellectual content

Conflict of Interest

The authors declare that they have no conflict of interest.

Informed consent

Written 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 for human

All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards (Code: 2019/D015).

Data and materials availability

All data associated with this study are present in the paper.

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