INTRODUCTION

Breast cancer (BC) is the most common cancer and the leading cause of related deaths among women worldwide accounting for 23% of all female cancers globally\(^1\). In the less developed countries, low survival rates are mainly attributed due to the lack of awareness leading to late stage diagnosis of the disease specifically in the absence of adequate capacity for early diagnosis and multimodality management\(^2\). Studies from the Arab developing countries reported that BC tends to be diagnosed at advanced stages with the prevalence of poorly differentiated tumor presentations illustrated in significantly elevated rates of nuclear aneuploidy, thus leading to a mortality ratio approaching 60%\(^3\)-\(^5\).

In Iraq, BC has become a major public health problem; its burden is further rising with the increase in population size\(^6\)-\(^10\). The Iraqi Cancer Registry reveals that a total of 25,556 new cases of cancer were registered in 2016 where BC was the most common malignancy and the leading cause of death among the Iraqi population following cardiovascular diseases\(^11\). A considerable proportion of Iraqi patients are still diagnosed at relatively advanced stages\(^8\)-\(^10\); and about 90% discover the disease accidentally by themselves\(^8\).

The World Health Organization declared that the most feasible way to control BC is through early detection of the disease coupled with providing appropriate treatment to the detected cases\(^8\)-\(^10\). Screening mammography is the method most commonly used worldwide for the early detection of BC in asymptomatic women, and it is the only imaging modality proven to significantly lower BC mortality and thus remains the cornerstone for its control\(^11\).

A National Program for Early Detection of Breast Cancer was organized in Iraq since 2001; whereby mammography units were introduced in referral centers and specialized clinics for early detection of BC in tertiary hospitals in all Iraqi provinces; offering diagnostic mammography services\(^9\)-\(^12\). As applying organized screening programs in developing countries is not feasible at the present time\(^13\), an initiative opportunistic BC screening trial was carried out in 2012 at the main referral center for early detection of cancer in the Medical City Teaching Hospital in Baghdad on 809 asymptomatic self-referring women over the age of 40 years\(^14\). The breast lesions detected by mammography were classified according to breast imaging reporting and data system (BI-RADS)\(^14\). That study displayed that the overall incident malignancy rate among the total sample was 1.1%; concluding that introducing opportunistic screening could significantly increase the early detection rate of BC and enhance the awareness towards the disease in Iraq.

The current study was conducted to reevaluate the performance of opportunistic mammographic screening applied on 1,187 Iraqi females who attended a main center for early detection of BC in Baghdad; displaying the clinical characteristics of the studied sample and the BC detection rate.
PATIENTS AND METHODS

This retrospective study included a total of 1187 asymptomatic self-referring Iraqi females who attended the National Referral Center of Early Detection of Breast Cancer in the Medical City Teaching Hospital at Baghdad during the period from Jun. 2018- Aug 2019. Of those 1038 were employees from different Iraqi Ministries including the Ministry of Health, Transport, Oil and Higher Education. Those patients were subjected to Physical Breast Examination, Imaging tests (Ultrasoundographic and Mammographic examinations) followed by Fine Needle Aspiration Cytology (FNAC) analysis whenever any suspicious mass was detected. All cases were classified according to BIRADS lexicon. Inclusion criteria comprised asymptomatic females aged 35 years and older who comply by undergoing bilateral digital mammography; while females were excluded if they had symptomatic breast or axillary findings (who were referred directly to the symptomatic breast clinic for appropriate management) and those with incomplete pathological reports.

Relevant patient data were collected using a special form designated for the national BC program recording the chief complaints, demographic information, BC risk factors, and history of previous breast surgery, radiological and pathological findings. All patients were examined by mammography for both breasts by a full-digital mammogram (GE medical system, US Senographe®) including both mediolateral, oblique and craniocaudal views while ultrasound and cytopathological examination was performed as complementary studies in special cases for further evaluation. All cases were classified according to ACR/BIRADS atlas 2013 (Fifth Edition) lexicons by skilled radiologists into 0-6 categories:

- **BI-RADS 0**: incomplete evaluation with further imaging required including additional mammographic views, spot compression or magnification and or ultrasound.
- **BI-RADS 1**: negative examination, meaning that there are no masses, suspicious calcifications or areas of architectural distortion.
- **BI-RADS 2**: benign findings include secretory calcifications, simple cysts, fat-containing lesions, calcified fibroadenomas, implants and intramammary lymph nodes.
- **BI-RADS 3**: probably benign and should have shortened interval follow-up to determine stability. The risk of malignancy is below 2%. There are strict classifications to qualify a finding in the BI-RADS 3 category: a non-palpable, circumscribed mass on a baseline mammogram; a focal asymmetry, which becomes less dense on spot compression images, or a solitary group of punc-
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- tate calcifications. Any findings other than this cannot be placed in the category 3.
  - BI-RADS 4: suspicious lesions require FNAC or biopsy.
  - BI-RADS 5: highly suggestive malignant lesion needs FNAC or biopsy then an appropriate action like lumpectomy or mastectomy should be carried out.

FNAC with a 21-23 gauge needle or core needle biopsy with 14-16 gauges were applied under ultrasound guide when further assessment was required. The pathological results were reviewed by expert pathologist in the same center. The gathered recorded information were introduced and analyzed by the researchers using the Statistical Package for Social Sciences (SPSS v. 25). Data were presented as frequency tables, pie charts and the detection rate of breast malignancy was calculated according BI-RADS.

### RESULTS

More than two-thirds of the study sample (67.7%) was aged 40-54 years old with the mean age 48 ± 9 (range 35-77) years. The majority of females (87.5%) were governmental employee, more than two-thirds (67.6%) was highly educated, and 72.9% were married (Table 1).

#### Table 5: Detailed socio-demographic, clinical, mammographic, ultrasound and pathological findings among six patients pathologically confirmed as having BC.

<table>
<thead>
<tr>
<th>Variables</th>
<th>BIRAD 4</th>
<th>BIRAD 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (years)</td>
<td>50</td>
<td>53</td>
</tr>
<tr>
<td>Occupation</td>
<td>housewife</td>
<td>doctor</td>
</tr>
<tr>
<td>Education level</td>
<td>primary school</td>
<td>university</td>
</tr>
<tr>
<td>Marital status</td>
<td>Married</td>
<td>unmarried</td>
</tr>
<tr>
<td>Age of menarche</td>
<td>13</td>
<td>13</td>
</tr>
<tr>
<td>MP* Regularity</td>
<td>irregular</td>
<td>irregular</td>
</tr>
<tr>
<td>Gravida</td>
<td>5</td>
<td>-</td>
</tr>
<tr>
<td>Parity</td>
<td>3</td>
<td>-</td>
</tr>
<tr>
<td>Abortion</td>
<td>2</td>
<td>-</td>
</tr>
<tr>
<td>Age at first child birth (years)</td>
<td>34</td>
<td>-</td>
</tr>
<tr>
<td>Age at last child birth (years)</td>
<td>39</td>
<td>-</td>
</tr>
<tr>
<td>Mammography Results</td>
<td>High density mass with obscure margin at outer UQ** of left breast</td>
<td>Not well circumscribed high density mass at UQ** with axillary lymph nodes</td>
</tr>
<tr>
<td>Ultrasound appearance</td>
<td>Irregular in outline hypoechoic mass at 3 o'clock about 6 cm away from the nipple, suspicious BIRADS IV. Send to biopsy</td>
<td>Irregular in outline hypoechoic area at 12 o'clock direction, suspicious BIRADS IV. Send to biopsy</td>
</tr>
<tr>
<td>FNAC</td>
<td>Scattered sheets and clusters of malignant mammary epithelial cells in bloody background: Ductal Carcinoma</td>
<td>Sheets, clusters of hyperplastic mammary epithelial cells with moderate atypia in bloody background.</td>
</tr>
<tr>
<td>Histopathology Diagnosis</td>
<td>Ductal Carcinoma in Situ</td>
<td>Ductal Cell Carcinoma</td>
</tr>
<tr>
<td>BC Stage</td>
<td>0</td>
<td>III</td>
</tr>
</tbody>
</table>

*MP = Menstrual Period

**UQ = Upper Quadrant
Most (96.6%) of females had normal or had benign looking lesions (78.7% were recorded as negative finding BIRADS 1 and 17.9% were diagnosed as benign BIRADS 2). Only 3.4% (n = 40) were placed into category BIRADS 0; recommending supplementary assessment by ultrasound and pathological examination. (Table 3).

Discussion

Early stage at BC detection has been regarded as a key determinant of the outcome of the disease specifically in low and middle income settings in view of the limited resources required to provide adequate therapy. Scientific evidence confirmed that mammographic screening decreases the mortality related to BC specifically among women aged 50 to 59 years.

The fact that about 60% of the study sample was premenopausal females, 87.5% of those were employees and two thirds (67.5%) were higher than that encountered among Saudi patients attending the first mammography examination, only six were found to have BC as confirmed by Ultrasound and Pathological examinations; representing 0.5% of all studied sample - distributed as five classified as BI-RADS 4 and one as BI-RADS 5 (0.4% and 0.1% of studied sample respectively).

Figure 1 shows that among 1187 females examined by mammography, only six were found to have BC as confirmed by Ultrasound and Pathological examinations; representing 0.5% of all studied sample - distributed as five classified as BI-RADS 4 and one as BI-RADS 5 (0.4% and 0.1% of studied sample respectively).

CONCLUSION

In conclusion, opportunistic mammographic screening was effective in detecting BC among asymptomatic apparently healthy self-referring Iraqi females. Encouraging opportunistic screening in a population where BC is often diagnosed at aggressive advances stages could play an important role in its early detection in addition to elevating the level of community awareness, practice and attitudes towards the disease. Close follow-up of positive cases with referral to appropriate treatment strategies are essential prerequisites for establishing nationwide breast cancer control programs.

References

11. Alwan N. Breast Cancer: Demographic Characteristics and Clinico-pathological


