Ultrasound and Mammographic Findings of Contra lateral Breast in Iraqi Patients Underwent Mastectomy for Breast Cancer

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Background:prolonged lifeafter breast cancer management and repetitive use of contra-lateral breast ultrasonography on follow up those patients has led to increase the incidence of metachronous and synchronous breast cancer detection.

Objective:is to assess the role of ultrasound in thorough assessment of other breast in patient previously underwent mastectomy for breast cancer.

Patients and method: this is a cross sectional study which include100 patients who underwent mastectomy ,the study was done from the period between October 2016 to September 2017 in radiological unit - oncology teaching hospital /medical city complex where the patients were referred from oncology clinic for follow up of previous mastectomy site and scanning of contralateral breast for any lesion.

Results:the mean age of 100 patients who underwent the study is 53 years, the result show that majority of the patients are in 5th and 6th decades (27% and 35% respectively), 29 patients had 1st to 3rd degree relative having breast cancer in the past ,from those 58% are 1st degree and 24 % 2nd degree.

Regarding the ultrasound finding of contralateral breast,88% reveals normal fibrofatty breast architecture,of them 86% are in BIRADS I and II, the remaining 12% have fibroglandular breast texture of those 2 % reported as III and 10% BIRADS IV and V.

Mass seen in 14 cases , 11 of them are well circumscribed ,of those 5 are malignant and other are benign (simple cysts and fibroadenomas), 3 are poorly defined outline ,two are malignant and one is fibrocystic area.

Lymph nodes with benign criteria seen in 5 cases , 4 cases have malignant criteria ,their histopathology revealmetastatic carcinoma in all.

Mammography reveals finding in concordance with that of ultrasound with P value of 0.

Conclusion:breast cancer is the leading cause of death from cancer among the Iraqi women, regular follow up by breast ultrasound is mandatory to assess the mastectomy site and contralateral breast for any lesion whether benign, malignant or metastatic to contralateral axillary lymph nodes ,in addition the ultrasound is and especially when performed by professional radiologist remains the main and high yielding tool for analysis the breast, mammography is better to start with when there is normal physical examination and if it shows abnormal or suspicious are we can do target ultrasound scanning of this area.

Keywords: synchronous breast cancer, metachronous breast cancer, breast ultrasound, mammography, fine needle aspiration

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I.   Introduction

Thefrequency of breast cancer has increased dramatically in the world as general and especially in Iraq during the last 10 years (1, 2).As early detection was emerging for most of the cases with consequent good prognosis for the disease and prolog patients life expectancy has been achieved, so the urge to is achieve cure and for that trying to maintain the patient under strict follow up after surgery by the screening the mastectomy site for recurrence and to scan the contralateral breast for lesion whether is new or old (3,4).Breast cancer still constitutes 30-50% of 2nd malignancy thataffected patients in whom breast cancer is the primary malignancy, those women had 2-6 folds higher risk of developing cancer in the contralateral breast during their life(5,6).The second cancer is either developed from 1 month,2 months,3 months ,6 months or 1 year after the diagnosis of 1st cancer this referred to as synchronous breast (7, 8,9, 10,11), controversy coexist about the second breast cancer whether it is a metastatic spread or newly developed primary similar debate coexist about its prognostic consequence(12). The histopathology of the bilateral breast cancer whether synchronous or metachronous is

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very aggressive this subject the patients to more violent surgeries (13). Metachronous breast cancersare defined as two breast malignancy that developed in either breast in two different time periodsand usually diagnosed 2 years from the original primary cancer and beingworsethan those with unilateral disease(14 ,15), Moreover, there is disagreement about theresults of synchronous and metachronous breast cancer on the treatment of patients surgically, such as the role of prophylactic mastectomy or use other alternatives,in fact, most of the patients underwentbilateral mastectomies rather than breast conserving therapies, although there are reports confirming the efficacy of less invasive management in bilateral breast cancer as for unilateral tumors (16 ,17).

From radiological point of view, ultrasound is widely used in every day practice to improve breast lesion detection and characterization,by that diagnosis of breast cancer has been largely improved since the introduction of high-resolution ultrasound machines (24).For the time being, it gives the differential diagnosis between benign and malignant lesions, local preoperative staging of disease including the tumor size (T stage) ,and lymph nodes evaluation within both axilla and supraclavicular regions (N stage) finally it guided interventional diagnosis by using either the fine need le aspiration or core biopsy (25).

Mammography plays a dramatic role in the early diagnosis of breast cancers, and by that detecting about 75% of cancers at least one year before they can be detected clinically, no need to fear from its radiation as the Mammography uses low-dose ionizing radiation estimated to be less than annual background yearly exposure(26).

The American College of Radiology has developed the Breast Imaging Reporting and Data System (BIRADS) to make the road for the breast cancer screening and diagnostic routine, BIRADS 0 –cannot be evaluated additional imaging evaluation by ultrasound or magnetic resonance imaging , 1 – normal 2 - Benign finding, noncancerous, 3 –probably benign finding, short-interval follow-up required, 4 - Suspicious lesion, biopsy or fine needle aspiration is recommended, 5 - Highly suggestive of malignancy, action should be done, 6 – previously diagnosed breast cancer (27).

Patients and method: this is a cross sectional study in which 100 patients were included in the study, the study was done from the period between January 2016 to December 2017 in radiology unit - oncology teaching hospital /medical city complex ,the patients age were range from 26-80 years ,the patients were referred from the oncology clinic for ultrasound as a routine follow up examination of the mastectomy site and ultrasound and mammography forintentionally normal contralateral breast ,the ultrasound exam was performed using GE machine ,7-12MHz probe was used ,the patient was examined in supine position, with complete exposure of anterior chest wall and axilla ,the hands set under the head so the breast was in a good natural anatomical position as was the axilla ,examination of breast bed was done including the surgical wound and the superior and inferior chest wall ,the corresponding axilla was scanned for any adenopathy ,then the contralateral breast was examined in circular pattern clockwise and then in radial pattern from outer toward the nipple,finally the nipple and areola was evaluated for any lesion ,after that the ipsilateral axilla was assessed for any lymphadenopathy, then characterizing the lymph node for competent, lost or destructed hilum,presence of any mass ,it position according the clock site ,it margin ,consistency ,position and size were recorded, the breast general architecture ,the presence of significant lymphadenopathy in axilla was also documented ,fine needle aspiration cytology was indicated for suspicious lesion and was done either by direct palpation of the suspicious area or under ultrasound guide.

II. Results

our study is a review study composed of 100 patients, their age ranges from 26-80 years with the mean is 53 years, the age result shows that the majority of affected women by breast cancer are in 6th and 5[th]decade, detailedinformationabout the age groups distribution is illustrated in (table 1andfigure 1).

Table 1: the age distribution

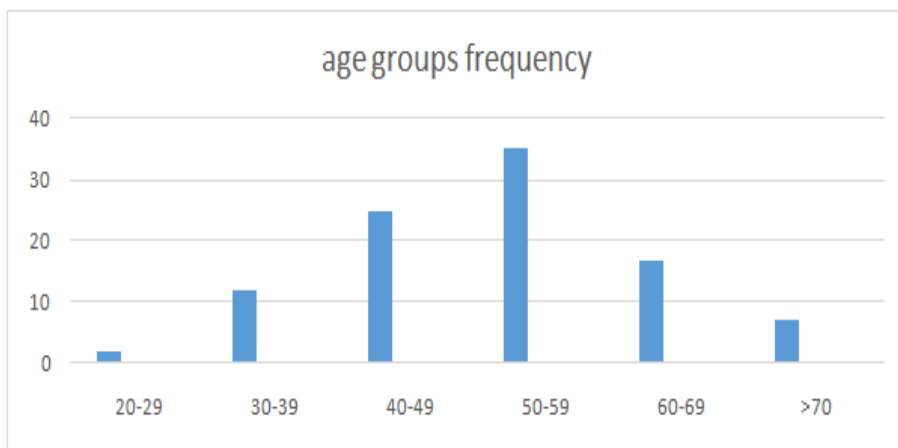| Age group in years	Percentage
20-29	2 (2%)
30-39	12 (12%)
40-49	27 (27%)
50-59	35 (35%)
60-69	17 (17%)
>70	7 (7%)
	100

Figure 1:age distribution

When reviewing the data of the patients we find positive family history of breast cancer in 29 case ,17 of them (58%) had 1st degree relative affected by breast cancer ,while 7 (24%) had 2nd degree relative suffering from breast malignancy ,the remaining 18% had 3rd degree relative complaining from breast cancer.

Now regarding the ultrasound findings of contralateral breast:

First of all we discuss the breast echogenicity, normal breast architecture (which include fatty and fibrofatty echogenicity) are present in 88% of the patients in whom 86% are in BIRADS I and II and the remaining 2% in BIRADS IV,the fibroglandular breast architecture is seen in remaining 12 %of them 2% in BIRADS III and 10 % in BIRADS IV and V (2% and 8% respectively).

Secondly, mass is detected in 14 cases (14%), well demarcated masses represent 11% of these five are malignant, two are simple cysts ,three are fibroadenomas and one is lipoma ,the remaining 3% of masses are poorly demarcated two of them are malignant and one is focal fibrocystic area.

Detailed information about previous ultrasound findings are illustrated in table 2.

Third category represent the presence of lymph nodes and their appearance whether being benign – reactive intact central hilum-,or malignant – destructed or lost hilum (table 3), the benign one seen in 5 cases and malignant one seen in 4 cases all of them showed to be metastatic adenopathy from contralateral breast.

All suspicious and malignant masses that are detected by ultrasound are smaller the 2 centimeter in maximum diameter

Other benign detected findings include mild ductal dilation and duct ectasia

Table 2: breast ultrasound findings

Breast ultrasound findings		Percentage
General breast architecture	Normal	88%
	Fibroglandular	12%
Mass	Well demarcated	11%
	Poorly demarcated	3%

Table 3: axillary lymph nodes findings by ultrasound.

Axillary ultrasound findings		Percentage
Absent Lymph nodes		91%
PositiveLymph nodes	Reactive intact hilum	5%
	Distorted/lost hilum	4%

Regarding the mammographic findings of contralateral breast

Regarding the breast density is nearly similar to ultrasound finding and goes hand by hand with ultrasound findings, the comparison with ultrasound finding according to the BIRADS system is depicted in table 4 below

		ultrasound					Total
		I	II	III	IV	V	
mammogram		0	0	0	0	1	1
	I	64	13	0	1	1	79
	II	2	6	1	0	0	9
	III	0	1	1	1	0	3
	IV	0	0	0	2	4	6
	V	0	0	0	0	2	2
Total		66	20	2	4	8	100

The P value is 0 and this is significant correlation between the ultrasound findings and mammographic findings

By analyzing the patient data we found that 30% of patients had family history of breast cancer among 1st and 2nd degree relative, of whom 20% are under forty years, 20% under fifty, while the majority are under sixty and under seventy represent 30% and 23% respectively.

Regarding the menstruation status of the affected patients, 79% were menopause and 21% were premenapause.

45% of the patients in the study underwent Left sided modified mastectomy ,while Right sided mastectomy was seen in 43%, 5% patients had left sided breast conservative surgery and 7% underwent Right sided breast conservative surgery.

III. Discussion

breast cancer is the most frequent type of malignancy in female, and thus being a leading cause of morbidity and mortality in developed world [18], in Iraq is still the leading cause of death from cancer in women according to Iraqi cancer registry[19].The elderly women are the mostly affected by breast cancer[20]and the frequency of breast cancer are low in women under age of forty and less than five percent of women diagnosed with breast cancer are younger than 40 years old ,however the incidence begin to increase after above target age and are highest in women over age 70 [21].Theabove mentioned demographic figure was nearly in line with our results in our study where we found as the majority are in their fifty and sixty while those under forty represent 14% of study sample and the explanation for this difference may be due to smaller sample size or ethnical factors.

Those with positive 1st and 2nd degree relative of family history for breast cancer represent about 30% and of 1st degree relative is about14% ,this is in concordance with that recorded worldwide which represent 13%[22].

In our study the Left breast cancer dominate on Right sided disease and this is in agree with study[23].

Ultrasound is reliable method for checking the contralateral breast and as it is operator dependent so need to be used by highly qualified person ,mammography is still the screening modality of choice for asymptomatic patients, in our study the patients underwent ultrasound and mammogram and by comparing the results both modalities detect BIRADS I in 64% of cases BIRADS II in 6% if cases ,BIRADS III in one case , while the BIRADS IV seen in 6 cases by mammography was really IV by ultrasound in 2 while being BIRADS V in remaining 4 cases , 3 cases reported BIRADS V by ultrasound and mammography, by that we see that mammography and ultrasound had nearly the same detecting capability and high ability to characterize and categorize the breast lesion with P value of 0.

New –metachronous- breast cancer is diagnosed in 7 (7%) cases while the remaining cases presented with axillary adenopathy and one with supraclavicular adenopathy,their histopathology reveal metastatic carcinoma for another breast, this

IV. Conclusion

Periodic breast ultrasound and annual mammography are reliable radiological tools to assess the contralateral breast for new suspicious –metachronous- breast cancer and in assessment of contralateral axilla for metastatic adenopathy especially when done and reported by a professional qualified radiologist.

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