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BREAST PAIN ASSESSMENT USING BREAST ULTRASOUND AT KING HUSSEIN MEDICAL CENTER IN JORDAN

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***Keywords**: Breast: mass, pain; Ultrasonography.*

Abstract

Objective:
To evaluate patients with mastalgia having local or diffuse breast pain using breast ultrasound.

Methods:
Our prospective investigation included 100 premenopausal female patients, with the mean age of 33.5 years, complaining of breast pain as the single presenting finding and who were referred to the breast unit of the Radiology Department of King Hussein hospital, King Hussein medical center, during the period January 2015-December 2015, after obtaining verbal consent from all participants. The breasts were examined by systematic ultrasound scan including all the four quadrants of the breast and the retroareolar area. Breast pain severity was graded as mild, moderate and severe.

Results:
Regarding the ultrasound affected breast results, there were three groups: Group I, normal (45%), Group II, ductasia (21%) and group III, mass with fibrocystic changes (34%). In the 34 patients with mass in the breast, 47.1 %(16) patients had cystic mass and 52.9 %(18) had solid mass. The ultrasound scanning of the mass demonstrated that 88.2 %(30) of cases were benign and 11.8 %(4) were intermediate. Histopathological reports of the masses found that 47.1 %(16) were fibrocystic , 20.6 %(7) were fibroadenoma, 23.5 %(8) were benign cysts, 2.9 %(1) was malignancy and 5.9 %(2) were breast infections.

Conclusions:
Fibrocystic changes found by ultrasound examination are the most common cause of mastalgia in our Jordanian female patients after the 45% who had normal findings.

Introduction

Mastalgia or mastodynia defining breast pain is a very frequent situation in women. Mastalgia was demonstrated in the past medical literature in 1829. Pain is one of the most frequent breast symptoms in females (1). Breast pain is a common disorder in females which results in significant anxiety and distress to patient .There are two clinical kinds of breast pain: cyclical that increases and decreases with the menstrual cycle and is hormonal dependent and the second is a non-cyclic pain (2). The physiology is discrepant for non-cyclic and cyclic breast pains. Breast pain was classified into three groups: cyclical, non-cyclical and some extra-mammary pain commonly correlated with inflammation of the chest wall.

Cyclical mastalgia is frequent in premenopausal females and non-cyclical mastalgia is frequent in post-menopausal females (3). The cause of cyclical mastalgia is not known. Non-cyclic mastalgia is commonly unilateral, sharp or burning and more localized in the breast. Diffused breast pain (unilateral or bilateral) is sometimes treated clinically

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due to the less incidence that diffuse breast pain (without other signs or symptoms) is a sign of cancer. Focal breast pain without other signs or symptoms is frequently assessed to rule out underlying breast disease (4).Single ultrasonography is commonly used to assess focal breast pain in younger females and as an adjuvant to mammography in older females. Breast imaging is governed by the age of the patient and risk for breast cancer.

The objective of this investigation was to assess the role of breast ultrasonography in evaluating patients with localized or diffuse pain in the breast, without a palpable lump or history of breast cancer.

Methods

Our prospective investigation enrolled 100 female premenopausal participants, with the mean age of 33.5(ranging between 16 and 51) years, complaining of breast pain as the single presenting finding and who were referred to the breast unit of the radiology department of King Hussein hospital, King Hussein medical center, Amman, Jordan, during the period Jan 2015-Dec 2015, after obtaining verbal consent from all participants. The breasts were examined by systematic ultrasound scan including all the four quadrants of the breast and the retroareolar area. Breast pain severity was graded as mild, moderate and severe. Patients with palpable mass in the painful breast, with history of breast cancer or breast augmentation were ruled out from the investigation.

Each patient received an ultrasound scan to exclude a non-palpable mass. All four quadrants of the breast and the retroareolar area were examined systematically. After an ultrasonography imaging, each patient was requested to grade pain severity and breast pain severity was graded as mild, moderate and severe. Mild pain was defined as tolerable, moderate pain as ameliorated by therapy and severe pain as interfering with daily works and not ameliorated by therapy. The pain was classified as cyclic or non-cyclic. Ultrasonography scan was correlated with the location of the pain with the other place. The patient pin pointed-out the pain-full region to ascertain that the painful region was examined in the standard images.

Main outcome findings were abnormal radiological findings as some of them were correlated by histopathology findings. Statistical analysis included descriptive statistics for normal and abnormal findings. P value was considered statistically significant if it was <0.05.

Results

The mean age of the patients was 33.5 +/- 24.75 years (range: 16 to 51 years). Most patients were in the age group 31-40 years (44%) . Eighty one percent of participants were married. Thirty five percent of patients had children more than 3 and 4% had no children. Table I. In terms of clinical examination, fifty five percent of patients had cyclical breast pain. The pain was right sited in 33% of patients, left sited in 35% and bilateral in 32%. The pain was mild in 57% of patients, moderate in 31% and severe in 12%. Table II.

Regarding the ultrasound affected breast results, there were three groups: normal (45%), ductasia (21%) and mass with fibrocystic changes (34%). In the 34 patients with mass in the breast, 47.1% (16) patients had cystic mass and 52.9 %(18) had solid mass. Table III. The ultrasound scanning of the mass demonstrated that 88.2 %(30) of cases were benign and 11.8 %(4) were intermediate. Histopathological reports of the masses found that 47.1 %(16) were fibrocystic , 20.6 %(7) were fibroadenoma, 23.5 %(8) were benign cysts,2.9%(1)was malignancy and 5.9%(2)were breast infections. Table III.

Mass was more frequent in females aged 31-40 years (40.9%), single females (57.9%) and females with3 children (42.9%).These correlations were not statistically significant. Table IV.

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Table I. Patients demographics.

parameter		%
Age(years)		
16-20		9
21-30		30
31-40		44
41-51		17
Children		
With	**1 child**	12
	2 children	29
	3 children	35
	4 children	20
Without children		4
Marital condition		
Not-married		19
Married		81

Table II. Breast pain features.

Parameter	%
Kind of pain	
Cyclical	55
Non-cyclical	45
Location of pain	
Right	33
Left	35
Bilateral	32
Intensity of pain	
Mild	57
Moderate	31
Severe	12

Table III. Ultrasonographical findings.

Finding	%
Normal	45
Ductasia	21
Mass with fibrocystic changes	34

Table IV. Ultrasonic findings of breast masses.

parameter	%
Mass type	
Cystic	47.1
Solid	52.9
Mass location	
Right	37
Left	28
Bilateral	35
Ultrasound finding	

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Benign	88.2
Intermediate	11.8

Table V. Breast mass correlation with demographic parameters.

parameter	**mass**		**P**
	no	**%**	
Age group(yr)			
16-20	2	22.2	
21-30	11	36.7	>0.05
31-40	18	40.9	
41-51	3	17.6	
Marital condition			
Non-married	11	57.9	>0.05
married	23	28.4	
Children			
With 1 child	3	25	>0.05
2 children	10	34.5	
3 children	15	42.9	
4 children	5	25	
Without children	1	25	

Discussion

Breast ultrasound is a common imaging method in assessing of breast diseases including breast pain (5). Breast disease results in serious morbidity and breast pain mainly with palpable breast lumps induce problems needing special assessment in breast cancer (6).Ultrasound is a relatively inexpensive and accessible in comparison to other tests. It has a crucial part in assessing breast disease. The frequency of breast lump in females presenting with breast pain was relatively high in this investigation. Morrow M,et al,demonstrated that 15% of females with surgical breast cancer experienced breast pain, while 16% presented with only mastalgia alone (7).The increased frequency of breast masses was more in females of reproductive ages which was similar to other investigations (8).

The overall sensitivity of ultrasound had been reported to be from 52 to 57.1% (9). The sensitivity of ultrasound in determining breast lumps as indeterminate or malignant is diagnosed as 98.4% (10).Ultrasound is a useful technique in classifying breast lumps as benign or malignant. Ultrasonography could be used as a primary test to guide other consecutive tests. Our investigation demonstrated that benign lumps were more easily diagnosed by ultrasonography than malignant lumps. This conclusion was found by Mansoor T and Fleischer AC, et al, who demonstrated that sensitivity was from of 81.8% to 89% (9,11). Ultrasonography can increasingly predict benign lumps correctly more than malignant lumps. The most significant role of ultrasonography lies in the differentiation of cystic lumps from solid lumps (11).

Ultrasonography has a significant role in assessing breast pain. Ultrasonography must be used in most cases of breast pain as a primary test mainly in females of reproductive age as it is highly accessible and relatively less costy especially in developing regions. Mammography is expensive and found only in some regions in the Middle East. Ultrasound can be used initially to assess any suspected case. Even in regions where mammography is accessible, breast ultrasonography must be used as an adjuvant to mammography to make the final outcome even better as the two are complimentary. The most important advantage of ultrasonography is to direct the physical examination findings with real imaging findings. Ultrasonography is useful in recognizing palpable breast lumps and in detecting suspected malignant lumps.Ultrasonography has an important role in initially finding malignant breast lumps before

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metastases appear and decreasing mortality from breast cancer. As the negative assumption importance of Ultrasonography for breast malignancy is increased, it can reassure females with low suspicion palpable findings (12).

Conclusion

Ultrasonography is relatively not costly and highly accessible technique for assessing breast pain. It must be the first step testing mainly in females below the age of 35 years and as an adjuvant to mammography over the age of 35 years. In regions where mammography is not accessible or very costly in developing countries, ultrasonography may be used as an early technique to assess a breast pain and for ultrasound guided techniques. With mammography, breast ultrasound must be included in the symptomatic breast disease diagnosis.

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