

# Role of breast ultrasound in assessment of women with breast pain

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(Submitted: 02 January 2018 – Revised version received: 13 January 2018 – Accepted: 18 March 2018 – Published online: 26 September 2018)

**Objective** To evaluate women with breast pain whether focal or diffuse pain with or without a palpable lump with no history of breast cancer by using ultrasonography.

**Methods** This prospective study included 90 women with mean age of 32.89, standard deviation 8.378 (ranging between 18 and 50 years old) had been enrolled outpatient clinic from September 2016 to July 2017 complaining from breast pain, ethically permission had been taken from breast pain complaining women participants for ultrasonography.

**Results** The ultrasonographic finding evaluation of the affected breast classified into four categories normal 60%, duct dilation 26.7%, solid mass 8.9%, cystic mass 4.4%.

**Conclusion** The study resulted that the duct dilatation is the most common cause of mastalgia after 60% who had normal findings.

**Keywords** mastodynia, ultrasonography, women, Iraq

## Introduction

Mastadodynia or mastalgia, mammalgia (breast pain) was described in the medical literature as early as 1829 and tenderness and discomfort are very common complaint amongst women.<sup>1</sup> Mastalgia is a common situation which brings women under medical attention and makes them more anxious and distress.<sup>2</sup> There are two clinical patterns of breast pain which are: First, the cyclic pain is hormonal dependent in origin affected by dynamic changes in hormone during menstrual cycle so increase and decrease accordingly, the second one non-cyclic pain.<sup>3</sup> The cyclic and non-cyclic pain differs from each other in their underlying physiology.<sup>4</sup> Other classification of breast pain was: cyclic, non-cyclic and extra-mammary pain which has been mostly due to chest wall inflammation.<sup>5</sup> Cyclical mastalgia is mostly seen in premenopausal women and non-cyclical pain in postmenopausal women.<sup>6</sup> The etiology of cyclical mastalgia has not been proved. The characters with non-cyclical mastalgia mostly describe factors such as unilateral, sharp, burning or focal pain. Diffuse breast pain bilateral or unilateral, without other sign and symptoms needs clinical attention because of low risk of breast cancer has been expected while underlying breast disease mostly associated with focal breast pain so such pain should be evaluated to exclude underlying breast disease.<sup>4,7</sup> Ultrasonography together with mammography has been used to rule out breast pain in older women while only ultrasonography has been used to rule out focal pain in younger women. Age of patients, risk of breast cancer and clinical presentation has been determined use of imaging.<sup>4</sup> However, to assess breast pain, the study has been designed to evaluate women with breast pain whether focal or diffuse pain, with or without a palpable lump, with no history of breast cancer by using ultrasonography.

## Materials and Methods

The study included 90 women with mean age of 32.89, standard deviation 8.378 (ranging between 18 and 50 years old) had been enrolled outpatient clinic from September 2016 to July 2017 complaining from breast pain, ethically permission had been taken from breast pain complaining women for ultrasonography. Ultrasound examination had been done by Siemens Sonoline G60S model – No: 1P 7475101, date of manufacture in

December 2003. The result has been made in Italy for Siemens Medical Solutions USA Inc., (Issaquah, WA, USA). The result has been tested by SPSS 22 using chi-square for demonstrating correlation between parameter by using the *P*-value of 0.005.

## Results

The age of examined breast pain complaining women with mean age of 32.89, standard deviation 8.378 (ranging between 18 and 50 years old) the majority of the women participants were in the age group of 26–35 years (35.6%) and 36–45 years (30%). Majority of them had 3 children (22.2%) and 2 children (20%) and around (82.2%) married and 17.8% single. Around 60% of them with regular menstrual cycle, 36.7% and 3.3% were menopause. So these data was demonstrated in Table 1.

Table 1. Sociodemographic characteristics of patients and menstrual history

Parameter	No.	%
Age (years)		
16–25	23	25.6
26–35	32	35.6
36–45	27	30.0
46–55	8	8.9
With children		
1 child	16	17.8
2 child	18	20.0
3 child	20	22.2
4 child	16	17.8
5 child	3	3.3
7 child	1	1.1
Without children	16	17.8
Marital status		
Not married	16	17.8
Married	74	82.2
Menstrual history		
Regular cycle	54	60.0
Irregular cycle	33	36.7
Menopause	3	3.3

The characters with pain were 26 (28.9%) cyclic pain and 64 (71.1%) acyclic pain, 71 (78.9%) with diffuse pain and 19 (21.1%) with focal pain, 9 (10%) of breast pain on right breast while 10 (11.1%) on left breast and 71 (78.9%) with breast pain in both breast and is demonstrated in Table 2.

Ultrasound finding in women aged ranging between 16 and 25 years were 17 (73.9%) appear normal, 4 (17.4%) with duct dilatation, no one (0%) have cystic mass lesion, 2 (8.7%) have solid mass lesion.

In age group between 26 and 35 years old were 21 (65.6%) appear normal, 9 (28.1%) have duct dilatation, 1 (3.1%) have cystic mass lesion, 1 (3.1%) have solid mass lesion.

In age group between 36 and 45 years old were 13 (48.1%) appear normal, 8 (29.6%) with duct dilatation, 2 (7.4%) have cystic mass lesion, 4 (14.8%) have solid mass lesion.

In age group between 46 and 55 years old were 3 (37.5%) appear normal, 3 (37.5%) with duct dilatation, 1 (12.5%) have

cystic mass lesion, 1 (12.5%) have solid mass lesion. *P*-value was more than 0.05. The relation of ultrasonographic finding to number of children that women with breast pain had the highest percent was around 61.1% in women with 3 children with normal finding and highest percent of ultrasonographic among women with ultrasound finding was 43.8% of women with duct dilatation had one child while most of women whose had no children with normal finding was 87.5%. the *P*-value was <0.05. Most of unmarried women had normal findings (87.5%) and also most of married women had normal findings 54.1%. The *P*-value was <0.05. Women with regular and irregular cycle had normal ultrasound findings 63% and 60.6% respectively. The *P*-value was >0.05 as demonstrated in Table 3.

## Discussion

Breast ultrasound has become a favored imaging modality for the assessments of breast diseases like breast pain.<sup>9</sup>

Noticeable morbidity had been caused by breast disease and breast pain notably with palpable breast masses probably bearing serious problem indicating immediate evaluation principally in the women who had risk factor of breast cancer.<sup>10</sup>

Ultrasound services had been greatly used in Iraq because it is available, non-invasive and inexpensive cost in comparison to other radiological modalities therefore it plays a crucial role in evaluating breast disease.

The incidence of breast mass in this study among women complaining from mastalgia was low (13% included 8.9% solid mass and 4.4% cystic mass) in comparison with Akreyi study<sup>11</sup> was 32.8%, in Al-Sarairah et al.<sup>12</sup> cystic mass was 34% and Morrow et al.<sup>2</sup> demonstrated that 15% of women with operable breast cancer reported having breast pain, in this study the result of breast pain women with mass was low because most of

Table 2. Breast pain characters

Parameter	No.	%
Kinds of pain		
Cyclic	26	28.9
Acyclic	64	71.1
Localization of pain		
Diffuse	71	78.9
Focal	19	21.1
Site of pain		
Right	9	10
Left	10	11.1
Bilateral	71	78.9

Table 3. Correlation of ultrasound finding of breast pain with demographic characters and menstrual history

Parameter	Ultrasound finding								<i>P</i> -value
	Normal		Duct dilatation		Cystic mass		Solid mass		
	No.	%	No.	%	No.	%	No.	%	
Age (years)									
16–25	17	73.9	4	17.4	0	0	2	8.7	0.475
26–35	21		9		1	3.1	1	3.1	
36–45	13	65.6	8	28.1	2	7.4	4	14.8	
46–55	3	48.1 37.5	3	29.6 37.5	1	12.5	1	12.5	
With children									0.007
1 child	7	43	7	43.8	0	0	2	12.5	
2 child	11	61.1	4	22.2	0	0	3	16.7	
3 child	13	65.0	5	25	1	5	1	5	
4 child	9	56.3	6	37.5	0	0	1	6.3	
5 child	0	0	1	33.3	2	66.7	0	0	
7 child	0	0	1	100	0	0	0	0	
Without children	14	87.5	0	0	1	6.3	1	6.3	
Marital status									0.004
Not married	14	87.5	0	0	1	6.3	1	6.3	
Married	40	54.1	24	32.4	3	4.1	7	9.5	
Menstrual history									0.118
Regular cycle	34	63.0	14	25.9	2	3.7	4	7.4	
Irregular cycle	20	60.6	8	24.2	1	3.0	4	12.1	
Menopause	0.0	0.00	2	66.7	1	33.3	0	0.00	

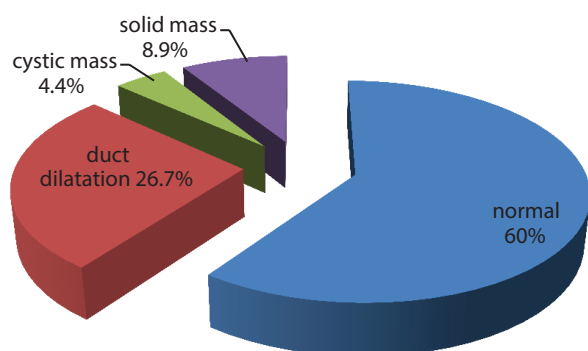


Fig. 1 **Ultrasound finding of women with breast pain.**

the women seeking ultrasound for reassurance from breast pain were most of them had no palpable mass only few of the with palpable mass. The highest incidence of breast lumps was relatively higher in women of reproductive ages which finding is comparable to other studies from other countries.<sup>11,13</sup>

The ultrasound sensitivity in diagnosing breast cancer ranges from 52 to 57.1%.<sup>14</sup> Anyhow, ultrasound sensitivity in classifying breast masses as indeterminate or malignant is reported to be 98.4%.<sup>15</sup>

Ultrasonography is an appropriate imaging modality in classifying breast masses as being benign or malignant, ultrasonography was an initial investigation that had been given clue for further investigations.

In our study most breast pain women had normal ultrasound finding 60% which was higher than in Al-Sarairah et al.<sup>12</sup> while in Akreyi study<sup>11</sup> was most of breast pain women had breast mass, while women with duct ectasia were 26.7% slightly higher than Akreyi study<sup>11</sup> and Al-Sarairah et al.<sup>12</sup>

Women presented with breast pain especially in reproductive age group could be evaluated by ultrasound as a primary imaging modality as it is highly available and low cost especially in our country, also in ultrasound we use real-time imaging and relate to physical examination findings which

regard a major advantage of ultrasound to demonstrate the character of palpable breast masses and the suggestion of malignant breast masses so we can detect malignant breast mass as early as possible before metastasizing and hence we can lowering mortality from breast cancer. Mammography is costly, found only in few hospitals and need appointment, so ultrasonography could be used initially to evaluate any suspicious case and for screening. Women with low-suspicion palpable findings could reassure as the negative predictive value of ultrasound imaging for breast malignancy is high.<sup>16</sup>

To make the final outcome, the combined used of ultrasound and mammography was preferred as the two are complimentary.

## Conclusion

The current study had been evaluated women with breast pain whether focal or diffuse pain with or without palpable mass and no history of breast cancer which show most of women with normal breast ultrasound finding, few percent of women were having duct dilatation and with cystic or solid mass which show benign features. In our region were mammography is accessible and available freely but there is a problem of appointments so patient prefers ultrasound for first evaluation than mammography.

## Recommendation

1. Larger sample size study is needed to predict the exact finding of ultrasonography for women with breast pain.
2. Further investigation of breast pain women such as mammography and histopathological study for comparison with ultrasonography.

## Conflict of Interest

None. ■

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