Can breast ultrasound reduce patient's level of anxiety and pain?

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Abstract

Background: Breast pain is one of the most common complaints of women attending a gynecology clinic and general practitioners. This pain can cause anxiety and, consequently, reduce the woman's quality of life. The objective of this study was to assess the severity of pain and anxiety in patients with breast pain and normal examination, before and after breast sonography.

Materials and methods: Among the patients with breast pain and normal examination who came for breast sonography in three centers in Shiraz during 2011–2012, 51 patients agreed to cooperate in this project. These patients filled out the questionnaire for evaluation of pain and anxiety before and after breast sonography.

Results: Sonography findings indicated that 88% of patients have normal sonography without any finding. The average amounts of pain severity before and after sonography were 3.3 and 2.4, respectively ($p < 0.005$). The average amounts of anxiety severity in patients before and after sonography were 51.9 and 37.9, respectively ($p < 0.005$).

Conclusion: This study shows the severity of pain and anxiety after ultrasonography decreased significantly. It can be concluded that ultrasound findings, which reassure the patients that they do not have specific pathology, can reduce the pain and anxiety by its impact on psychological status of the patient.

Keywords

Breast pain, normal examination, anxiety, sonography

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Background

Pain is a warning sign and it is usually a body's reaction arising from a disease or damage. Although in most of the cases pain is a symptom of a disease, in some cases pain may occur due to natural changes in the body without pathologic reasons, such as women's pains before the menstruation, which improves spontaneously after onset of the period.¹

Breast pain is one of the main reasons for women being referred to gynecological clinics. The rate of mammography in young women with breast pain is 7.4% more than the same patients without pain.² Previous studies revealed that 10–30% of women experience breast pain in their lifetime and the pain severity in 2–5% of them is moderate to severe;³ however, it should be considered that the severity of pain is dependent on the characteristics of study population and so it can be different in different groups of study.^{4–8}

Breast pain, which can be cyclic or noncyclic, is attributed to the hormonal changes, fibrocystic changes, breast fibrocystic diseases, chronic mastitis, and dysplasia.^{9–12} Breast cancer in women with breast pain has been reported in 1.2–6.7% of cases.¹³ However, localized breast pain was the only symptom in 15% of women with new diagnostic breast cancer.^{5,13–15} Some

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researchers reported that the risk of breast cancer increased in women with breast pain but other studies show the risk of breast cancer increase in women with breast mass or in women with the abnormal physical exam and suspicious radiologic findings.^{16,17} If the physical exam is normal, mammography, ultrasonography and other diagnostic methods such as magnetic resonance imaging (MRI) can be used to rule out the problems.^{20,21}

From previous studies, it can be concluded that there is a reasonable assurance in women with breast pain and normal physical exam that the risk of cancer is low; however, breast pain can affect both physical and mental health of women. This pain may cause anxiety and, consequently, reduce the quality of life of a woman in the home and society. Considering the key role of women in home and community, this anxiety can affect the life of spouse and children and also the society. The median age of the patients at the start of breast pain is 36 years old (range 12–63 years) and the median duration of pain period is almost 12 years (range 1 month to 38 years).¹⁸ This can reduce the operating efficiency of a considerable number of women in various fields such as social, economic, and cultural. The anxiety due to breast pain is an important issue because this anxiety can cause physical diseases such as peptic ulcer, colon polyps, and blood hypertension.^{19–23}

No previous study has evaluated whether normal sonography findings reduce the pain and anxiety in this population of women. But in this study, sonography results, which showed that the patients do not have a severe problem, could reduce the pain and anxiety of lots of women with this problem.

The objective of this study was the assessment of the intensity of pain and anxiety in patients with breast pain and normal examination, before and after breast sonography.

Materials and methods

In this study, three medical centers in Shiraz were chosen because these centers had a large number of referrals for breast pain. The patients who were referred to these centers during 2011–2012 were included in this study. Inclusion criteria were the patients with breast pain who had a normal physical examination without any symptoms. The patients who had a previous history of breast cancer, cosmetic surgeries, abnormal physical examination, breast mass or abscess, or any other record of special breast pathology and the patients who were in breastfeeding duration at the time of sonography were excluded from the study. Among the included patients were some patients who previously had several mammography or sonography, which does not interfere with the study as long as they had a normal physical examination.

This research was approved by the local research ethics committee of Shiraz University of Medical Sciences, Shiraz, Iran. Details about the research project and the necessity of patient participation in the study were explained to patients and they were reassured that their medical and personal information will remain strictly confidential so that patients filled out the questionnaire with personal satisfaction.

Patient's information such as age, marital status, method of contraception if they were married, breastfeeding status, location and duration of breast pain, and its relation to menstruation were collected.

In order to measure the severity of pain and anxiety, visual analog score (VAS) and Spielberger anxiety test were used respectively.^{24–27} VAS was actually a 100 mm (10 cm) ruler, which was placed in front of patients and they were asked to score their pain intensity between the number of 0 to 10.

Spielberger anxiety test, which was used to measure the anxiety, included some questions that were prepared in a questionnaire. The questions were the 20 sentences that people use to describe themselves such as, I feel relaxed, I feel safe, I feel fear. Each question had four scores containing: Not at all, a little, moderately, and very much so. The score can be in the range of 20 to 80. Based on the obtained score, the anxiety score between 20 and 31 means mild anxiety, 32 and 42 moderate to low, 43 and 53 moderate to high, 54 and 64 relatively severe, 65 and 75 severe, 76 and more, extremely severe. The patients took these tests twice, once before the sonography and the other after the sonography. Fifty-one patients completed the tests and were included in this study. Statistical analysis such as *T*-test was performed using the statistical package for social science software, version 15.0 for windows (SPSS 15.0).

Results

Fifty-one patients with median age of 35.4 years (SD=9.3, range 20–56 years) participated in this study. About 37 of 51 patients with breast pain were married (72.5%) and 35 of 51 patients had no history of breastfeeding (68.6%). Forty-one patients (80.4%) declared that the pain was irrelevant to menstruation. Marital status of patients, the history of breastfeeding, and relevancy or irrelevancy of patient's breast pain to menstruation is demonstrated in Table 1.

Almost half of the population (51%) experienced bilateral breast pain and the rest of them experienced the pain unilaterally. In 13 patients, the pain was on left breast and in 12 patients it was on the right side. Distribution of patients in terms of pain duration was available only for 37 patients. About 51.4% of the patients experienced 1 to 6 months of breast pain.

Table 1. The relation of breast pain to marital status, history of breast feeding and menstruation

Marital status	Number	% of total	Breast-feeding	Number	% of total	Relevancy to menstruation	Number	% of total
Single	14	27.5	Experienced	16	31.4	Relevant	10	19.6
Married	37	72.5	No experience	35	68.6	Irrelevant	41	80.4
Total	51			51			51	

Table 2. Number of previous pregnancies and contraceptive methods in the married women

Contraceptive method	Number of patients	% of total	Number of previous pregnancies	Number of patients	% of total
Pill	4	10.8	0	19	37.3
Condom	5	13.5	1	6	11.8
Natural	18	48.6	2	12	23.5
Vasectomy	1	2.7	>2	14	27.4
Tubectomy	7	19.0	Total	51	100
Undeclared	2	5.4			
Total	37	100			

Table 3. Result of VAS before and after sonography

Severity of pain	Average	Number	SD	Standard error of mean	<i>p</i>
Before sonography	3.3	51	0.5	0.2	0.00
After sonography	2.4	51	0.4	0.2	

VAS : visual analogue score

Table 2 shows 19 of 51 (37.3%) were nulliparous and 32 of 51 (62.7%) had previous pregnancies. 35 of 37 married women declared the method of contraception, which they use (Table 2).

All the patients had sonography. 45 of 51 patients had negative sonographic finding. 50 of 51 patients (98.04%) filled out the Spielberger anxiety test questionnaire completely. The test results showed the median score of anxiety before sonography was 51.9 (range 47–55) and after sonography, it reduced to 37.9 (range 32–40; $p < 0.005$). The mean difference of anxiety scores before and after sonography was 14 ($SD = 12.1$).

The result of VAS, which was used to measure the severity of breast pain, showed that the median intensity of pain before sonography was 3.3 (range 3–3.5) and after sonography, it was reduced to 2.4 (range 2.1–

2.6; $p < 0.005$). The mean difference in pain severity before and after sonography was 0.9 ($SD = 0.9$). The details of VAS results is shown in Table 3.

The relation of anxiety reduction and breastfeeding experience, menstruation, marital status, and the number of pregnancies is evaluated and demonstrated in Table 4.

The relation of pain reduction and breastfeeding experience, menstruation, marital status, and the number of pregnancies is evaluated and illustrated in Table 5.

Discussion and conclusion

The median age of the study population was 35 years and 33 of 51 patients (65%) were less than 40 years

Table 4. Relation of anxiety reduction and breastfeeding experience, menstruation, marital status, and the number of pregnancies

		Anxiety reduction	SD	Standard error of mean	<i>p</i>
Breast feeding experience	Yes	11.1	6.2	1.6	0.24
	No	15.4	14.0	2.4	
Relation to menstruation	Yes	8.5	7.4	2.3	0.10
	No	15.4	12.7	2.0	
Marital status	Single	12.6	13.3	3.6	0.63
	Married	14.5	11.8	2.0	
Number of pregnancies	0	12.1	11.7	2.7	
	1	9.8	9.4	4.2	0.69
	2	22.4	14.6	4.2	0.04
	>2	10.9	8.1	2.2	0.73

SD: Standard deviation

Table 5. Relation of pain reduction and breastfeeding experience, menstruation, marital status, and number of pregnancies

		Pain reduction	SD	Standard error of mean	<i>p</i>
Breast feeding experience	Yes	0.6	0.5	0.1	0.07
	No	1.1	1.0	0.2	
Relation to menstruation	Yes	0.6	0.5	0.2	0.23
	No	1.0	1.0	0.2	
Marital status	Single	1.0	0.9	0.2	0.67
	Married	0.9	1.0	0.2	
Number of pregnancies	0	1.3	1.1	0.3	
	1	0.8	0.8	0.3	0.32
	2	0.9	0.9	0.2	0.25
	>2	0.4	0.5	0.1	0.00

indicating that the study population was young. 37 of 51 patients with breast pain were married, which among these women, most of them did not experienced breastfeeding. About the relation of breast pain with menstruation, 41 of 51 patients (~80%) believed that their pain did not relate to menstruation. This was not

compatible with previous studies that showed breast pain in two-third of patients were cyclic and in one-third were noncyclic.¹⁸

The duration of breast pain in 51% of the patients was between 1 and 6 months and this duration in 21% of them were more than a year. From the results, it can

be deduced that the breast pain was not a temporary and transient pain in most of the patients but on the contrary to the previous study, mostly it was a noncyclic pain.¹⁸

Median anxiety score before sonography was 51.9, which indicated moderate to high anxiety. After sonography, this score reduced to 37.9, which was related to moderate to low anxiety. The results revealed that patient's anxiety decreased significantly after sonography.

Average pain intensity before sonography was 3.3 and after sonography it reduced to 2.4, which implied that almost 0.9 of the patient's pain were alleviated (Table 3). The results of patient's pain intensity agreed with two previous studies. In one of them, most of the patients had mild to moderate breast pain and only 2–5% of women reported severe pains.²⁸ In the other study, 11% of patients had moderate to severe pain and the rest of them had mild to moderate pain.²⁹

Since in 45 of 51 patients no sonographic findings were seen, it can be concluded that there is a little probability of breast cancer development in the patients with breast pain and normal physical examination. Some previous studies also confirm this result.^{5,13–15,29} The cancer rate in these patients was estimated to be 1.2–6.7%. There are also some studies that disagree with these results.^{30,31}

The value of anxiety and pain reduction between the patient who had a previous experience of breastfeeding and the patients who did not have breastfeeding experience, the patients who confirm that their pain was related to menstruation and the patients who deny this relationship and also between married and single patients was not significantly different (Tables 4 and 5).

The value of anxiety and pain reduction between the patient who had one, two, or more than two pregnancies was compared with the patients who did not have any pregnancy. The anxiety reduction of the patients with two children was significantly more than the patients without any pregnancy (Table 4). The pain reduction in the patients with more than two children was less than the patients without any pregnancy (Table 5). There was no significant difference between other groups.

According to the results, because 88% of sonography reports were normal it can be concluded that in women with breast pain and normal physical examination, performing sonography examination and ensuring absence of any specific pathology can reduce patient's pain and anxiety, which affect the psychological status of patients.^{32,33}

Declaration of Conflicting Interests

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Ethical approval

Informed consent was obtained from all individual participants included in the study.

Guarantor

Informed consent was obtained from all individual participants included in the study.

Contributors

Fariba Zarei designed the work. Data collection was done by Parisa Pishdad and Mohammad Hatami. Data analysis and interpretation was done by Fariba Zarei. Drafting the article and critical revision of the article and also the final approval of the version to be published was done by Banafsheh Zeinali-Rafsanjani and Fariba Zarei.

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