Original Article Open Access

Archives Of Breast Cancer

DOI: 10.19187/abc.20152115-20

Sexual Dysfunction in Breast Cancer: A Case-Control Study

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ARTICLE INFO

Received:
16 November 2014
Revised:
25 December 2014
Accepted:
20 January 2015

Keywords:
Breast cancer, sexual function, Iran

ABSTRACT

Background: Sexual dysfunction in breast cancer patients is considered as a common and distressing problem. Considering the increasing number of breast cancer survivors living for longer periods of time with the disease and the importance of their quality of life, we conducted the present study to compare the sexual functioning in breast cancer patients with their healthy counterparts.

Methods: In this case-control study, breast cancer patients who completed their treatment protocol and were followed up for at least six months were included. The controls were healthy women with normal clinical breast examinations. All subjects filled-in the Persian version of Female Sexual Function Index questionnaire.

Results: A total of 165 subjects including 71 breast cancer patients and 94 healthy women were studied. The frequency of sexual dysfunction in cases and controls was 52.6% and 47.4%, respectively (P = 0.09). There were no significant differences between the two groups regarding domain scores, except for vaginal lubrication (P = 0.045). Logistic regression analysis indicated that significant determinants of sexual dysfunction in breast cancer group was patients' age (OR = 4.0, 95%CI: 1.3 – 11.5, P = 0.01) and age of the spouse (OR= 9.8, 95% CI: 1.8-51.9, P= 0.007), while in controls, only emotional relationship with the husband was the significant predictive factor (OR = 6.3, 95%CI: 1.9 – 20.5, P = 0.002).

Conclusions: Our findings indicated that sexual dysfunction is prevalent in Iranian women regardless of their physical health status. The frequency of vaginal dryness in breast cancer patients was significantly higher than controls. Age of the patient and the spouse (>40) were the only significant predictors of sexual dysfunction among women with breast cancer. Preventive strategies, sexual education and access to effective treatment should be planned in supportive care of breast cancer patients.

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Introduction

Along with the increasing burden of breast cancer, advances in diagnostic and treatment modalities of breast cancer have resulted in increased survival.[1] Therefore, the study of long term issues such as quality of life and sexual health is a matter of significant importance to both cancer

survivors and breast cancer clinicians.

Previous studies have reported various rates for sexual dysfunction in breast cancer patients which are as high as 84% in some series.[2] This variability can be attributed to differences in study methods and materials. Biological, psychological and social factors all contribute to sexual problems in these patients.[3]

Sexual health is defined as a state of physical, emotional, mental and social well-being in relation to sexuality; thus, it is not merely the absence of disease, dysfunction or infirmity. Sexual dysfunction consists of problems in arousal, desire, lubrication, orgasm, pain and satisfaction.[4] The most frequent sexual problems after breast cancer are reported to be lack of desire, vaginal dryness, orgasm difficulties and pain during sexual intercourse.[5,6] A study on sexual quality of life in newly diagnosed breast cancer patients in Iran indicated that about 84% of breast cancer patients reported disruption in their sexual life six months after completing their treatment, while sexual dysfunction was seen in 52% of them in pre-treatment phase.[2] It has been shown that breast cancer patients present with impaired body image, sexual functioning and sexual enjoyment 18 months after breast cancer surgery and these issues must be considered in follow-up care of breast cancer survivors to improve their overall quality of life.[7]

On the other hand, part of this high magnitude of sexual impairment might have existed before cancer diagnosis.[8] For instance, a study on healthy women showed that 51% of them had experienced at least one of the female sexual problems.[9] Additionally, a population-based study showed that 39% of healthy women had sexual dysfunction after their 50s, with orgasmic (38%) and satisfaction disorder (36.4%) as the most prevalent sexual function disorders.[10]

Considering the fact that breast cancer patients in Iran are about one decade younger than their western counterparts, the study of sexual dysfunction would be of higher importance.[11]

Furthermore, there are limited case-control studies that compare patients to healthy population in our region. The aim of the present study was to determine the prevalence and predictors of sexual dysfunction in breast cancer patients and healthy controls.

Methods

This case-control study was conducted in the Iranian Breast Cancer Research Center (IBCRC), Tehran, Iran from July 2010 to August 2011. The cases were breast cancer patients who had been registered in a follow-up clinic at IBCRC. All patients had completed their treatment protocol including surgery, chemotherapy and radiotherapy (except hormone-therapy) at least six months before the study. Patients with a history of any other malignancies, recurrence, distant metastasis or sexual-related diseases were excluded. Controls were women who had normal clinical breast examinations according to the clinical examinations performed by one breast surgeon in our clinic. Since age was considered as a potential determinant of sexual function, a similar distribution of age was provided by frequency matching. All participants were married and sexually active at the time of the study. Women who had no type of sexual relationship whatsoever in the past four weeks were excluded (4 patients, 3 controls).

Sample size calculation was based on the reported mean score of sexual function in breast cancer patients and healthy women and resulted in 70 patients.[2,10] In addition, 1 to 2 control(s) were recruited for each case.

The data on sexual function was collected using the validated Iranian version of the Female Sexual Function Index questionnaire (FSFI).[12] The FSFI is a 19-item questionnaire which consists of six subscales including sexual desire, arousal, lubrication, orgasm, satisfaction and pain. The total score ranges from 2 to 36, with higher scores indicating better sexual function.[13] The cut-off point of 28 was considered for definition of sexual dysfunction, as indicated in the validated version of the questionnaire. The cut-off point for each sexual domain was considered as 3.4 for sexual arousal, sexual desire, lubrication and orgasm and 3.8 for satisfaction and pain.[12]

To meet the ethical expectations, all patients had signed written informed consents. The ethical committee of IBCRC approved the study.

Demographic and clinical data including patients' and spouses' age and education level, patients' employment status, reproductive variables and emotional relationship with the spouse (using a five-level Likert scale, from excellent to poor emotional relationship) were also collected.

After using Kolmogorov-Smirnov test to assess normality of continuous variables,we used independent t-test to compare the mean scores of sexual function between cases and controls. The association of potential predicting variables with sexual function in the two study groups was assessed by univariate and logistic regression analyses. P value < 0.05 was considered as the level of statistical significance.

Results

A total of 165 subjects including 71 patients and 94 controls completed the questionnaire. The mean age in cases and controls was 41.3±8.1 and 44.2±7.4, respectively. Breast conservation surgery and mastectomy were performed in 60% and 40% of the patients, respectively. The majority of the cases (80%) were diagnosed at stage 1 or 2 of the disease. Demographic characteristics of the two studied

Table 1. Demographic characteristics of cases (n = 71) and controls (n = 94)

	Case	Control	P-value
Age (women)			0.160
40 ⩾	22 (31%)	39 (41.5%)	
> 40	49 (69%)	55 (58.5%)	
Age (spouses)			0.180
40 ⩾	14 (19.7%)	27 (28.7%)	
> 40	57 (80.3%)	67 (73.1%)	
Education level (women)			< 0.001
primary	30 (42.3%)	13 (13.8%)	
secondary	26 (36.6%)	46 (48.9%)	
higher education	15 (21.1%)	35 (37.2%)	
Education level (spouses)			< 0.001
Primary	28 (39.4%)	9 (9.6%)	
secondary	22 (31%)	35 (37.2%)	
higher education	21 (29.6%)	50 (53.2%)	
Occupation (women)			0.053
housewife/retired	57 (80%)	62 (66.7%)	
employed	14 (20%)	67 (73.1%)	

groups are shown in table 1.

Sexual dysfunction was noticed in 52.6% and 47.4% of the cases and controls, respectively, which was not statistically significant (P = 0.09). The mean scores for total sexual function on the FSFI in the case and control groups were 22.23±10.02 and 24.30±9.05, respectively. The mean scores in different domains are demonstrated in table 2.

According to the results, lubrication in the vaginal area was the only domain that was statistically different in patients and their counterparts in the control group. The frequency of vaginal dryness in cases and controls was 31% and 18.7%, respectively (P = 0.04).

Regarding the predicting factors of sexual dysfunction, univariate regression analysis showed that patients' and their spouses' age were significantly associated with sexual dysfunction (table 3). In the healthy women, the only related factor was the emotional relationship with their husbands (P = 0.002).

Among patients, the results of logistic regression analysis showed that the significant predictors of sexual dysfunction were patient's age (OR = 4.0, 95%CI: 1.3-11.5, P = 0.01) and the age of spouse (OR = 9.8, 95%CI: 1.8-51.9, P= 0.02). To assess these significant variables more precisely, the difference between the subjects' and their spouses' age was also computed. Nevertheless, no significant relationship between this variable and sexual dysfunction was observed (P = 0.2).

Table 2. Scores of female sexual function index questionnaire (FSFI) domains among study groups

	Case	Control	P-value
Sexual desire	3.14 ± 1.30	3.03 ± 1.20	0.580
Arousal	3.59 ± 2.02	3.87 ± 2.02	0.340
Lubrication	3.92 ± 2.15	4.56 ± 1.90	0.045
Orgasm	3.64 ± 2.11	4.05 ± 1.91	0.180
Satisfaction	4.20 ± 2.09	4.49 ± 1.85	0.350
Pain	3.71 ± 2.08	4.27 ± 1.93	0.073
Total score	22.23 ± 10.02	24.30 ± 9.05	0.160

Discussion

This research is a case-control study addressing women's sexual problems after breast cancer treatment in Iran. The findings indicated that although the prevalence of sexual dysfunction in our breast cancer patients was higher than healthy women, the difference was not statistically significant (52.6% and 47.4%, respectively). Some studies that have compared breast cancer survivors with healthy women have found that breast cancer survivors report more sexual problems than healthy controls.[14] In this regard, the difference witnessed between our study and other similar reports might be due to a higher prevalence of sexual dysfunction in healthy women in our study control in comparison to most of these reports.[10,15] This remarkable prevalence has also been shown by another study in a sample of Iranian normal female population.[7]

The prevalence of sexual dysfunction in the patients of our case-control study was considerably high (52.6%). Harirchi *et al*. carried out a prospective study regarding breast cancer patients and reported that 52% of the patients had sexual dysfunction before treatment procedures based on the FSFI, which increased to 84% three months after finishing their treatment. It's obvious that the latter

Table 3. Predicting factors of sexual dysfunction in the study subjects (obtained from logistic regression)

	Case		Control	
	OR (95%CI)	P-value	OR (95%CI)	P-value
Age (women)				
40 ⩾	Referent		Referent	
> 40	4.0 (1.3 - 11.5)	0.01	1.3 (0.5 – 3.0)	0.4
Age (spouses)				
40 ⩾	Referent		Referent	
> 40	4.2 (1.2 - 14.5)	0.02	1.6 (0.6 - 4.0)	0.2
Education (women)				
primary	Referent		Referent	
secondary	2.4 (0.8 - 9.4)	0.09	0.5 (0.16 – 2.0)	
higher education	0.4 (0.1 - 1.5)	0.2	0.8 (0.2 – 3.0)	0.7
Education (spouses)				
primary	Referent		Referent	
secondary	1.02 (0.3 - 3.2)	0.9	0.2 (0.03 - 1.2)	0.07
higher education	0.9 (0.2 - 3.2)	0.9	0.3 (0.06 - 1.9)	0.2
Occupation (women)				
housewife/retired	Referent		Referent	
employed	0.3 (0.1 - 1.1)	0.08	1.3 (0.5 – 3.0)	0.5
Type of surgery				
BCS	Referent		-	
mastectomy	1.4 (0.5 - 3.7)	0.5		
Emotional relationship				
excellent/good	Referent		Referent	
moderate to poor	1.6 (0.4 - 5.3)	0.4	6.3 (1.9 - 20.5)	0.002

Abbreviation: BCS: Breast conserving surgery

frequency mentioned in this study was higher than what we found in our study. This difference might be the result of different period of time for assessment of sexual dysfunction after completion of treatment (i.e., three months after treatment in Harirchi *et al*'s study and six months in the current study). Several studies indicated that sexual problems in breast cancer patients can perpetuate over time.[16] However, some studies showed that body image, sexual functioning and sexual enjoyment deteriorate after 18 months of follow-up assessment in breast cancer patients and explained that sexual dysfunction is a symptom that may occur as a result of premature menopause following adjuvant systemic therapy.[7]

Furthermore, several factors which may have been present before the onset of the disease can induce sexual dysfunction. Modern sexology considers sexual behavior to be influenced by physical and psychological factors such as hormonal alterations induced by chemotherapy, radiotherapy, physical function and relationship problems.[16] Moreover, since we used the FSFI questionnaire and included sexually active women, the real prevalence of sexual dysfunction might be higher than what we found.

Our findings suggest that the only significant difference in sexual domains between cases and controls was vaginal lubrication, showing that the frequency of vaginal dryness in breast cancer patients was significantly higher than that of the controls. This is expected as the impact of chemotherapy and hormone-therapy. As mentioned before, sexual dysfunction after chemotherapy is frequent.[16] This study indicated that compared to women who didn't have adjuvant chemotherapy, the treated women were reported to have 5.7 times more vaginal dryness, 3 times more desire problems, 5.5 times more pain during sexual intercourse and 7.1 times more difficulty to reach an orgasm.[16] About 80% of breast cancer patients have the menopausal symptoms including vaginal dryness after chemotherapy that could be sustained because of anti-estrogenic treatments during hormone-therapy.[17,18] It should be mentioned that many breast cancer patients receive Tamoxifen and according to the existing data, Tamoxifen may have no or small effect on sexual function.[6]

Regarding the predictors of sexual dysfunction in the patients, we found that patients' age and their partners' age are the most important factors in this area. Partner support and empathy play a basic role in the emotional recovery of women after breast cancer treatment. Quality of the partner relationship is also one of the most important predictors of sexual satisfaction in these women. Although we couldn't find a significant association between emotional relationship and sexual dysfunction in our patients, partners' age can be considered as an important related factor in this area. In fact, many women in traditional societies have the attitude of being inactive in sexual and emotional relationships with their spouses. Furthermore, in these cultures

emotional and sexual intimacy in the older couples especially after cancer could be challenging.[19,20]

Our results showed that emotional relation-ships have an important role in healthy women's sexual experiences. However, this finding was not significant in patients with breast cancer. This finding might be due to the difference in patients' and controls' perspective and the fact that emotional problems might not be as important as other problems relating to the disease and recovery.[21] It can also indicate that a pre-existing emotional problem should be paid attention to, because it could be a main predictor of sexual dysfunction after serious diseases such as breast cancer.[5,19]

Although having a control group was an advantage for this study, there were some limitations. Enrolling healthy women who had previous examinations at a breast clinic instead of healthy normal population as controls in the study, limited number of cases and controls, finding the topic embarrassing by women who were completing the questionnaire and feeling it difficult for them to answer some questions in the questionnaire (despite using the validated Persian version) were the most important shortcomings of this study that must be considered in future studies. Furthermore, as we mentioned before, most of the patients were at stage 1 or 2 of the disease and therefore, patients with advanced breast cancer should be evaluated in other studies.

As a conclusion, our findings indicated that sexual dysfunction is prevalent and prominent in Iranian women regardless of their physical health status and age of spouse is an important predictor among patients. It seems that sexual dysfunction in our breast cancer patients is the sign of a bigger problem in our normal population. Therefore, preventive strategies, sexual education and access to effective treatment should be planned especially for breast cancer patients, as well as the normal population.

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