

## Measurement of Quality of Life of Breast Cancer Patient With Arm Lymphedema Using the SF-36 (Korean version)

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### Abstract

The purpose of this study was to compare the quality of life (QOL) between breast cancer patients with lymphedema and without using the SF-36 (Korean version). Fifty-three consecutive, unselected patients who underwent treatment for breast cancer patients with lymphedema and 37 patients without lymphedema from August 4, 2004 to October 13, 2005 were interviewed and asked to complete the SF-36. These data were used to test the hypothesis that breast cancer patients with lymphedema experience impaired quality of life relative to their control group. The lymphedema group scored poorer than the control group on six of the eight subscales as well as the physical component summary scale of the SF-36 ( $p < .05$ ). Only bodily pain didn't show statistical difference ( $p > .05$ ). Breast cancer patients with lymphedema appear to experience problems in multiple quality of life domains compared with without lymphedema group. These findings demonstrate the need for interventions to improve the quality of life in breast cancer patients with lymphedema.

**Key Words:** Breast cancer; Lymphedema; SF-36; Quality of life.

### Introduction

Breast cancer-related lymphoedema, due to impaired lymphatic drainage from the arm secondary to axillary surgery and/or radiotherapy, is one of the common complication. Although disease management has improved and leading to the well-published recent decline in breast cancer deaths (Peto et al, 2000), breast cancer-related lymphedema occur in around 24 % of cases (Mortimer et al, 1996) so, greater emphasis has been placed upon the side-effects of cancer treatment (Pain et al, 2003).

The condition of lymphedema is chronic because it is not possible to reverse the damage that has caused the swelling. Affected patients have an unsightly, uncomfortable arm, prone to repeated episodes of infections, with the rare, but potentially fatal, complications of secondary lymphangiosarcoma (Foldi, 1998). The aim of treatment is not cure but reduction of limb size, usually with the use of manual lymphatic drainage (MLD), skin care, remedial

exercise, compression garments, pneumatic pump, mercury compression, oral and topical benzopyrones, elevation, microwave and laser therapy (Foldi, 1998).

There are several physical and emotional factors related to lymphedema (Passik and McDonald, 1998), such as increased weight of the edematous limb with restricted motion aggravated by fibrosis and joint contracture, and altered sensitivity and embarrassment during social interactions, but most studies evaluating lymphedema emphasis on the physical aspects using volumetric measurements of the limb as the primary tool (Didem et al, 2005; Liao et al, 2004)

Accordingly, a broader clinical approach in terms of quality of life (QOL) during diagnosis and follow-up would likely benefit these patients (Pereira et al, 2002). Evaluation of QOL has increasingly become an important issue in breast cancer patients with lymphedema. Topics of study have included the emotional, social, psychological, and sexual effects of breast cancer treatment (Ganz, 1997; Lee, 1997; Moyer, 1997). Though there has been a great deal of

research aimed at understanding the quality of life of breast cancer patients, most of the research has focused on the various types of lymphedema (Moffatt et al, 2003; Pereira de Bodoy et al, 2002; Sitzia and Sobrido, 1997; Weiss and Spray, 2002) or without matched control group (Carter, 1997; Johansson, 2003; Launois and Megnigbeto, 2001; Woods, 1995).

It seems clear that chronic edema does have implications for patients' QOL. Patients with edema experience a wide range of psychological and physical difficulties, including poor body image, anxiety, depression, embarrassment, impaired limb movement, impaired physical mobility and pain. However, the methodological issues have hardly been explored (Sitzia and Sobrido, 1997).

The range of concerns identified in these studies suggests that the SF-36 (Medical Outcome Study 36-Short-Form) is a potentially useful instrument to evaluate the QOL in breast cancer with lymphedema. The SF-36 served as the primary measure of Quality of life. This measure contains eight subscales relevant to the general health of the individual: physical functioning (PF), role-physical (RP), role-emotional (RE), mental health (MH), bodily pain (BP), general health (GH), vitality (VT), and social functioning (SF). All scores are standardized so that the worst possible score is 0 and the best possible score is 100 (ie, the optimal level of health in that domain). The reliability and validity of the SF-36 as a measure of health-related quality of life is well established (Ware et al, 2004).

Although the SF-36 has been chosen by the National Adjuvant Surgical Breast and Bowel Project (NSABP) as the quality of life instrument in their breast cancer prevention trial (Ganz et al, 1995) and the reliability and validity of it is well established (Ware et al, 2004). A literature search found few studies of the QOL between breast cancer with lymphedema and breast cancer without lymphedema using SF-36.

The purpose of this study was to determine the

physical and psychological effect on the quality of life between breast cancer patients with clinically apparent lymphedema and breast cancer patients without lymphedema using the SF-36 (Korean ver.).

## Methods

### Subjects

Data was collected from two samples: breast cancer patients who has had lymphedema and without lymphedema (control group) within 5 years after cancer-related treatment. Criteria for inclusion for the lymphedema group were patients who were physician-referred for lymphedema treatment to 3 outpatient physical therapy clinic in South Korea between August 4, 2004 and October 14, 2005. In addition, these women had to 1) be 19 years or older, 2) have no known neurological disorder that would interfere with completion of the measures, 3) can speak and read, 4) have no history of treatment for other types of cancer, 4) have no known untreated or unstable medical conditions, 5) have no edema in lower limb. 6) had to have completed adjuvant chemotherapy, radiation and surgical treatment for breast cancer a minimum of 3 months and a maximum of 5 years previously, 7) have no evidence of disease recurrence at the most recent follow-up visit. 58 patients met all eligibility criteria. 5 of these patients refused to participate, complete data were obtained from the remaining 53 eligible patients (91.4%).

A control group was also recruited. Criteria for inclusion was same with lymphedema group but they have no history of lymphedema. of 45 patients who met all eligibility criteria, 8 did not answer the questionnaire packet completely. complete data were obtained from the remaining 37 breast cancer patients without lymphedema (82.2%).

### Procedures

After clinical examination and documentation, an informed consent of the purpose of the study was

obtained in each patient to study the QOL. Each patient was sent to a physical therapist for lymphedema treatment and was asked to complete a generic questionnaire SF-36 (Korean Ver.). A control group, consisting of 37 patients without lymphedema, similarly completed the questionnaire.

The data were analysed using SPSS for windows. The differences between lymphedema group and control group were examined using the chi square test (for categorical data, such as types of cancer-related treatment) and the t-test (for continuous data, such as age). The two-sample test was used for statistical analysis with a p-value <.05 taken as significant.

## Results

Demographics on lymphedema group and control group are shown in Table 1. A total of 90 patients were studied. The lymphedema group consisted of 53 patients, with an average age of 52.0±8.1 years. BMI was from 19.2~31.5 (M=24.6; SD=2.3). A majority of these women were married (88.7%), and currently working (79.2%). 52.8% indicated they were high school graduates. Fifty-four percent of lymphedema group reported economic status were moderate. The average length of time since surgery/radiotherapy was from .4~4.8 years (M=2.6; SD=1.3). With regard

**Table 1.** Demographics on lymphedema group and control group characteristics (N=90)

Characteristic	Lymphedema group (n <sub>1</sub> =53)	Control group (n <sub>2</sub> =37)	Test result
Age(years)			
Mean (SD)	52.0(8.1)	49.1(7.6)	Not significant
Range	35.0~69.0	35.0~72.0	
BMI			
Mean (SD)	24.6(2.3)	23.8(2.5)	Not significant
Range	19.2~31.5	19.2~29.3	
Education			
Elementary school	2	1	X <sup>2</sup> =.6, p=.89
Middle school	5	2	
High school	28	21	
College or above	18	13	
Religion			
Yes	32	25	X <sup>2</sup> =.49, p=.496
No	21	12	
Occupation			
Yes	42	28	X <sup>2</sup> =.16, p=.689
No	11	9	
Economic status			
High	19	11	X <sup>2</sup> =1.08, p=.58
Moderate	29	24	
Low	5	2	
Marital status			
Married	47	33	X <sup>2</sup> =.21, p=.65
Unmarried	6	3	
Cancer-related treatment			
Surgery only	16	16	X <sup>2</sup> =2.17, p=.34
Radiotherapy only	1	0	
Surgery and radiotherapy	36	21	
Time since surgery/radiotherapy (years)			
Mean (SD)	2.6(1.3)	2.0(1.2)	Not significant
Range	.4~4.8	.5~4.9	

**Table 2.** Comparison of lymphedema group and control group (N=90)

	Lymphedema group (n <sub>1</sub> =53)	Control group (n <sub>2</sub> =37)	p
Funcional status			
Physical functioning	65.5±22.8 <sup>a</sup>	76.6±16.0	.012
Social functioning	65.1±22.2	78.0±20.9	.007
Role limitation-physical	26.4±32.3	55.4±41.30	.00
Role limitation-emotional	33.3±35.2	58.6±41.9	.003
Well-being			
Mental health	55.5±20.1	72.0±20.7	.000
Vitality	38.96±19.7	66.1±22.7	.000
Bodily pain	65.0±23.7	73.6±19.7	.073
Overall evaluation of health	51.2±21.3	63.1±17.5	.006

<sup>a</sup>Mean±SD.

to their cancer-related treatment, 36 women (67.9%) had surgery and radiotherapy.

The control group consisted of 37 patients, with an average age of 49.1±7.6 years. BMI was from 19.2~31.5 (M=23.8; SD=2.5). A majority of these women were married (89.2%), and currently working (75.7%). 56.8% indicated they were high school graduates. sixty-four percent of lymphedema group reported economic status were moderate. The average length of time since surgery/radiotherapy was from .4~4.8 years (M=2.6; SD=1.3). With regard to their cancer-related treatment, 21 women (56.8%) had surgery and radiotherapy.

There was no statistically significant difference in the average age between lymphedema group and control group.

Table 2 presents the mean scores of all domains of the SF-36 for each group of patients. There was a statistically significant difference in all scores: Physical functioning (p=.012); Social functioning (p=.007); Role limitation-physical (p=.00); Role limitation-emotional (p=.003); Mental health (p=.000); Vitality (p=.000); Overall evaluation of health (p=.006). Only bodily pain didn't show statistical significance (p=.073).

## Discussion

The perception of the state of health and the QOL of patients, as well as impact of the breast cancer and its modern treatment, are widely recognized as important issues in epidemiological research (Velanovich and Szymanski, 1999). QOL outcomes have also served as endpoints in studies of treatment. Psychometric techniques are utilized in the evaluation of the QOL. Generic scales and specific disease tests are two instruments most frequently used to measure the main aspects of QOL (TASC, 2000).

Wapnir et al (1996) demonstrated superior QOL in patients undergoing breast conservation versus those treated with mastectomy. Broeckel et al (2000) showed that the postchemotherapy group scored poorer than the noncancer comparison group. Dow et al (1996) reported that breast cancer survivors experienced long-term changes after completion of treatment which affected overall quality of life. Another recent study demonstrated that Bloom et al (2004) report that young breast cancer survivors in five years after diagnosis who remained cancer-free enjoyed good health and improved quality of life. What these studies clearly demonstrate is that breast cancer treatments have an important impact on quality of life and this impact cannot be ignored.

One of the ways breast cancer treatment affects

quality of life is lymphedema. In fact, the impetus to use selective ALND (Velanovich, 1998) or to assessed lymph node involvement using sentinel lymph node biopsy (Albertini et al, 1996) instead of complete ALND is to avoid lymphedema. Fortunately, the incidence of lymphedema has decrease as operations have become less radical (Horsley and Styblo, 1991). but because of increase of breast cancer. lots of patients suffered from lymphedema after treatment of breast cancer.

This study demonstrates that when breast cancer patients with lymphedema occurs, it can be a debilitating problem. we hypothesized that QOL would be poorer in women who had lymphedema after treatment of breast cancer than in a comparison group of women with no lymphedema after that. All eight areas covered in the test were cited as less than satisfactory in the breast cancer patients with lymphedema indicating deterioration in the QOL of these individuals when compared with control group. we found the largest differences between lymphedema group and control group on measures assessing limitations in PF, SF, RP, RE, MH, Vitality, GH and problems with work or other daily activities. In contrast, the smallest difference between groups were on measures assessing pain and problems with work or other daily activities due to bodily pain. The physical aspect directly relates to impairment of the lymphedematous limb. Pain, which normally is not considered a major symptom of lymphedema does, in fact, does not interfere in the QOL. The symptom probably relates to tightness or ongoing overt or latent inflammation and represents a nagging inconvenience in lifestyle. Overall health and vitality were also less than optimal with a constant uncomfortable feeling in the swollen upper limb. Mental health was also adversely affected suggesting that physical impairment interferes with mental well-being. In this setting, deteriorating social and emotional health aspects were not surprising.

The results reported here are inconsistent with previous report (Velanovich, 1998) that compared the

SF-36 of lymphedema patients with non-lymphedema patient. The discrepancy between these findings and those from the current study in the bodily pain domain may be accounted for by differences in demographic characteristics and number of study samples. The present study include women with lymphedema treated with various combinations of surgery, radiotherapy, hormonal therapy and/or chemotherapy, whereas the previous study was limited to women who underwent breast surgery and/or ALND

These data highlight the importance of broadening care to treat these patients more than just the physical ramification of lymphedema. It also suggests, however, that the more effectively one can treat the physical condition, the more the emotional and social aspects are likely to improve. Nonetheless, a multi-disciplinary team is desirable if the QOL of a patient with lymphedema is to be optimized.

## Conclusion

The most important outcome for patient with lymphedema is QOL. Measurement of health-related QOL is based on the assessment of the individual's perception regarding physical, mental, and social functioning. The lymphedema group scored poorer than the control group on six of the eight subscales as well as the physical component summary scale of the SF-36 ( $p < .05$ ). Only bodily pain didn't show statistical difference ( $p > .05$ ). Further research, supported by larger patient populations, may be required to determine which treatment method best improves QOL of patients with varying characteristics and sites of lymphedema.

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