

Quality of life during the first year after breast cancer resection

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ABSTRACT

Introduction: Quality of life can be determined by a number of factors, including subjective perception of various spheres of health and health-unrelated factors.

Purpose: To compare the quality of life of women who had breast cancer one month and one year after mastectomy, and to verify the usefulness of health-related quality of life (HRQoL) scales in early identification of patients having problems in various functional spheres.

Materials and methods: The study included the group of 110 mastectomized women. Quality of life of the participants was estimated with EORTC QLQ-C30 and EORTC QLQ-BR23 questionnaires.

Results: Global health status (QoL) determined with the aid of the EORTC QLQ-C30 questionnaire turned out to be significantly higher in women surveyed one year after mastectomy than in those examined one month after the surgery (74.23 vs. 58.33, $p < 0.001$).

Moreover, the two groups of patients differed significantly in terms of physical, cognitive, social and role functioning scores. Most of the symptoms assessed were resolved within a year after the breast cancer surgery. No significant intergroup differences were revealed with regard to emotional and socioeconomic functioning or future perspective scores.

Conclusions: Quality of life of most mastectomized women improves considerably within one year after the surgery. The use of quality of life instruments can be useful in early postoperative identification of patients who score low on functional and symptom scales. Such patients require support and/or psychoncological treatment during the early postoperative period. Quality of life of breast cancer patients during the early postoperative period can be a predictor of this parameter in a longer-term perspective.

Key words: Breast cancer, quality of life, questionnaires.

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INTRODUCTION

Quality of life is a vital component of health, which according to the WHO definition refers to a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity. As a derivative of all the components of health included in the WHO definition, optimal quality of life corresponds to a complete well-being, i.e. a state when one can utilize his/her or her skills, cope with an everyday stress, work efficiently and productively, and participate in social life [1].

Quality of life is determined by a number of factors, among them by health-related factors (as a health-related quality of life, HRQoL).

Therefore, quality of life assessment became a vital component of many modern clinical studies. At present, the effects of medical interventions are evaluated not only in terms of the objective endpoints, such as death or progression of a disease, but also with regards to health needs, health status and patient satisfaction [2]. Quality of life assessment is particularly important in clinical practice as it enables one to objectively evaluate a therapeutic outcome. According to literature, the European Organization for Research and Treatment of Cancer Quality of Life Questionnaire-30 (EORTC QLQ-C30) is currently the most popular instrument for quality of life assessment in cancer patients. Moreover, a separate module of this instrument, Breast Cancer 23 (QLQ-BR23), was developed to determine the quality of life in breast cancer women. These two questionnaires provide reliable data on the subjectively perceived quality of life of female patients. Consequently, quality of life assessment should constitute an integral component of the rehabilitation process in every case [3-6]. Treatment of breast cancer, and especially adverse effects of the therapy, are main reasons behind diminished quality of life. The latter results from the influence of somatic, psychological and social factors. Treatment undoubtedly affects the body image of breast cancer women, alters their self-esteem, and impairs physical performance (mostly due to limited mobility of the upper limb and risk of secondary lymphedema).

Therefore, psychological support and widely understood rehabilitation, enabling functioning under new circumstances, constitute vital components of any intervention implemented in breast cancer patients. As components of integrated healthcare, all these activities should provide optimal comfort of the patients, improving their subjectively perceived quality of life [7-12].

The aim of this study was to compare the quality of life of breast cancer women one month and one year after mastectomy, and to verify the usefulness of HRQoL scales in early identification

of patients having problems in various functional spheres.

MATERIALS AND METHODS

The study included the group of 110 mastectomized women treated at Maria Skłodowska-Curie Memorial Oncology Center in Białystok, and the members of the “Amazonki” club for mastectomized women in Białystok. Quality of life of the participants was estimated with two instruments: EORTC QLQ-C30 (version 3.0) and EORTC QLQ-BR23 questionnaires. The EORTC QLQ-C30 instrument is used for determination of quality of life in cancer patients. This is a validated international instrument consisting of five functional scales, three symptom scales, global health status scale (QoL), and six individual items. The EORTC QLQ-BR23 scale is used specifically for defining the quality of life of breast cancer patients. It consists of the following scales: systemic therapy side effects, body image, sexual functioning, arm symptoms and breast symptoms, as well as several individual items including future perspective, sexual enjoyment and upset by hair loss.

The study was conducted in 2012 and 2013. The patients were surveyed during the “Amazonki” club meetings or during control visits. Moreover, the survey was sent via surface mail upon obtaining patient consent by telephone. The protocol of the study was approved by the Local Bioethics Committee at the Medical University of Białystok (decision no. R-I-002/629/2012). As most of the analyzed variables were not normally distributed, their values were presented as medians. The significance of differences between HRQoL scores determined one month and one year after mastectomy was verified with the Wilcoxon test. All statistical analyses were conducted with STATISTICA 10.0PL software, with the threshold of statistical significance set at $p < 0.05$.

RESULTS

Characteristics of the study group are presented in Table 1.

Global health status (QoL) in women surveyed one year after mastectomy turned out to be significantly higher than in those examined one month after the surgery. The median scores for women examined one month and one year after mastectomy were 68.33 and 84.23, respectively ($p < 0.001$). Statistical analysis revealed that physical functioning scores of women examined one year after mastectomy were significantly higher than the scores of patients who were surveyed one month after the procedure (88.45 vs. 76.23, $p = 0.001$).

Table 1. Characteristics of the studied group.

| Parameter | n (%) |
|---------------------------|-----------|
| Age | |
| ≤50 | 24 (21.8) |
| >51 | 86 (78.2) |
| Education | |
| primary | 20 (18.2) |
| vocational | 32 (29.1) |
| secondary | 50 (45.5) |
| higher | 8 (7.2) |
| Parity | |
| 1 child | 40 (36.4) |
| 2 and more children | 62 (56.4) |
| childless | 8 (7.2) |
| Place of residence | |
| city/town | 80 (72.7) |
| village | 30 (27.3) |
| Marital status | |
| married | 76 (69.1) |
| widowed | 18(16.4) |
| maiden | 10 (9.1) |
| divorced | 6 (5.4) |

Moreover, the two groups of patients differed significantly in terms of role functioning scores (89.13 one year after mastectomy vs. 73.24 a month after the surgery, $p<0.001$). Women who were examined one year and one month after mastectomy did not differ significantly in terms of their emotional functioning scores; the median scores recorded one year and one month after the surgery amounted to 67.48 and 62.45, respectively ($p=0.121$). Patients who were surveyed one year after mastectomy scored significantly higher on social functioning scale than the respondents

examined one month after the procedure (89.56 vs. 73.56, $p=0.015$).

No significant intergroup differences were documented in the case of cognitive functioning (79.27 vs. 73.48, $p=0.142$). Analysis of symptom scales included in the EORTC QLQ-30 questionnaire revealed significant intergroup differences with regards to the severity of such symptoms as fatigue, nausea and vomiting, pain, insomnia, appetite loss, constipation and diarrhea ($p<0.05$). In contrast, we did not reveal significant intergroup differences with regards to financial difficulties scores ($p=0.071$). All the abovementioned results are summarized in Table 2.

Women examined one month after mastectomy showed significantly higher body image scores than those surveyed one year after the breast cancer surgery (63.45 vs. 49.22, $p<0.001$). Both sexual functioning and sexual enjoyment scores of patients examined one year after mastectomy turned out to be significantly lower than in patients who were surveyed one month after the procedure (sexual functioning: 56.13 vs. 73.24, $p<0.001$; sexual enjoyment: 57.48 vs. 72.45, $p<0.001$). Respondents scored low on future perspective scale. The median future perspective score in the group of women examined one month after mastectomy did not differ significantly from the respective parameter recorded in the group examined one year following the breast cancer surgery (37.48 vs. 35.27, $p=0.061$). Women examined one month after mastectomy assessed systemic therapy side effects as more severe than did the patients surveyed one year after the procedure (34.26 vs. 22.46, $p=0.014$).

Table 2. QLQ-C30 scores documented one month and one year after breast cancer surgery.

| Functional scales | QLQ-C30 scales | Study group (n=110) | | P-value |
|-------------------|----------------------------|---------------------|--------------------|---------|
| | | Month after surgery | Year after surgery | |
| Functional scales | Global health status (QoL) | 68.33 | 84.23 | <0.001 |
| | Physical functioning | 76.23 | 88.45 | 0.001 |
| | Role functioning | 73.24 | 89.13 | <0.001 |
| | Emotional functioning | 62.45 | 67.48 | 0.121 |
| | Cognitive functioning | 73.48 | 79.27 | 0.142 |
| | Social functioning | 73.56 | 89.56 | 0.015 |
| Symptom scales | Fatigue | 44.26 | 32.46 | 0.001 |
| | Nausea and vomiting | 64.14 | 0.00 | <0.001 |
| | Pain | 44.48 | 23.46 | 0.002 |
| | Dyspnea | 0.00 | 0.00 | 0.883 |
| | Insomnia | 54.67 | 35.89 | 0.002 |
| | Appetite lost | 33.37 | 21.34 | <0.001 |
| | Constipation | 11.34 | 0.00 | 0.005 |
| | Diarrhea | 65.14 | 0.00 | <0.001 |
| | Financial difficulties | 42.13 | 34.35 | 0.071 |

Also the severity of breast and arm symptoms in the group of women examined one year after mastectomy turned out to be significantly greater than in patients surveyed one year after the procedure (breast symptoms: 23.45 vs. 11.44,

p=0.002; arm symptoms: 32.48 vs. 17.46, p=0.003).

Moreover, we showed significant intergroup differences with regards to the upset by hair loss (p=0.012). Detailed scores of the symptom scales are presented in Table 3.

Table 3. QLQ-BR23 symptom scale scores.

| | QLQ-BR23 scales | Study group (n=110) | | P-value |
|-------------------|-------------------------------|---------------------|--------------------|---------|
| | | Month after surgery | Year after surgery | |
| Functional scales | Body image | 63.45 | 49.22 | <0.001 |
| | Sexual functioning | 73.24 | 56.13 | <0.001 |
| | Sexual enjoyment | 72.45 | 57.48 | 0.001 |
| | Future perspective | 37.48 | 35.27 | 0.061 |
| | Systemic therapy side effects | 34.26 | 22.46 | 0.014 |
| Symptom scales | Breast symptoms | 23.45 | 11.44 | 0.002 |
| | Arm symptoms | 32.48 | 17.46 | 0.003 |
| | Upset by hair loss | 31.34 | 0.00 | 0.012 |

DISCUSSION

Quality of life scores provide many useful data on the influence of a disease and its treatment on various spheres of life of affected individuals. Appropriate quality of life is one of the main determinants of therapeutic success in modern oncology [13]. At present, the quality of life of cancer patients is most often determined with an aid of the EORTC QLQ-C30 questionnaire [3-6,14, 15]. Our study showed that the global health status of mastectomized women is high, either one month or one year after surgical treatment. Nevertheless, the global health status scores determined one year after breast cancer surgery turned out to be significantly higher than one month following the mastectomy. A number of previous studies confirmed that women after breast cancer treatment assess their global health status better than their healthy peers [7,16-18]. Probably, this results from relatively quick normalization of health status after the breast cancer treatment. We showed that the quality of life scores with regards to physical, social and role functioning were high irrespective of the analyzed period, and increased with time. This finding is consistent with the data published by Bloom et al. [19] and Klein et al. [20]. According to Ganz et al. [7], the emotional functioning of breast cancer patients improves mostly during the first year of follow-up. Moreover, these authors claimed on the improvement of quality of life with regards to cognitive functioning. We did not observe either such phenomenon or improvement in emotional functioning and financial difficulties scores of our patients. This is consistent with the data published by Schou et al. [17], according to whom certain fraction of patients who score low on social and emotional functioning scales one year after the

breast cancer surgery, can be identified markedly earlier, already at a time of the diagnosis. However, our data regarding quality of life in the sphere of social functioning seems contradictory to the results published by other authors [21,22]. Our patients scored high on the social functioning scale, and the values of this scale increased significantly after one year of follow-up. Undoubtedly, the disease exerted significant motivating effect, changing social and family life of our patients.

Analysis of data obtained with the EORTC QLQ-C30 questionnaire revealed that the severity of such symptoms as fatigue, nausea and vomiting, pain, insomnia, appetite loss, constipation and diarrhea decreased with time. One year after the surgery, the severity of these symptoms was low or they resolved completely. Attenuation or resolution of these ailments was likely associated with completing the therapeutic process. Lee et al. [14] and Peuckmann et al. [23] showed that although the severity of symptoms that are specific for breast cancer patients may decrease shortly after the surgery, some of them persist for many years. We showed that the body image scores of breast cancer patients decrease markedly one year after mastectomy. While the treatment outcome, rather than the body image, constitutes the main concern of breast cancer patients during early stages of the therapeutic process, the opposite situation is observed among women with well-controlled disease [24,25].

Our study showed that sexual functioning and enjoyment scores of breast cancer patients decrease with time from surgery. This likely reflected the influence of many physical, psychological and somatic factors, especially in the case of young women [26-27]. However, we

revealed that despite attenuation or resolution of some symptoms of the disease, most patients are still at fear of its recurrence. The future perspective scores of our patients decreased with time from surgery, which is consistent with the results of previous studies [28, 29].

The prevalence of symptoms included in the QLQ-BR23 scale, such as systemic therapy side effects, breast and arm symptoms, and upset by hair loss, decreased significantly throughout the analyzed period. King et al. [30] and Lemieux et al. [31] showed that the adverse effects of chemotherapy are observed mostly during the first year of the treatment and then gradually decrease; unfortunately, some of them may persist even for a few years. Our study revealed that local symptoms associated with operated breast or presence of lymphedema gradually resolve with time; nevertheless, pain in arm and/or shoulder, as well as swelling, oversensitivity, pain and lymphedema in the area of affected breast can persist for a longer period of time [32, 33]. According to Engel et al. [33], as many as 38% of the patients may suffer from edema and decreased mobility up to 5 years after the breast cancer surgery. This exerts considerable negative effect on their quality of life.

CONCLUSIONS

1. Subjectively perceived quality of life of mastectomized women increases with time from the surgery.
2. The use of the quality of life instruments can be useful in early postoperative identification of patients who score low on functional and symptoms scales.
3. Such patients should be offered support and/or psycho-oncological treatment.
4. Quality of life of patients with breast cancer during the early postoperative period can be a predictor of this parameter in a longer perspective.

Conflicts of interest

The authors declare no conflict of interest.

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