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Influence of Physical Activity on the Quality of Life of Breast Cancer Patients

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Abstract

Introduction: Breast cancer is the most common neoplasm among women. As a consequence of the increased number of cancer diagnoses, and concomitant mortality reductions for most types of cancer many patients live with physical and psychosocial problems associated with the disease and its treatment that may compromise their quality of life (QoL). Exercise has been recommended as part of standard care for patients with cancer to help prevent and manage physical and psychosocial problems and improve QoL. The objective of the current study was to compare the impact of physical activity practice in women with breast cancer, through indicators of quality of life.

Methodology: This is a randomized study with breast cancer patients in a large general hospital in southeastern Brazil. The questionnaires were applied regarding function and quality of life (EORTC QLQ-C30 and BR-23). Patients were randomly allocated into two groups: control, without intervention and treatment group, with the practice of physical exercises and nutritional orientation. Physical activity was performed for 3 hours/week through active-assisted exercises of flexion, abduction, extension, and rotation of upper limbs and treadmill walking at speed tolerated by the patient. After six months of participation, all patients were reassessed, with blindness of the investigator. Results: The study did not reveal statistical difference in the constructs cited ($p > 0.05$) between the control group and the treatment group regarding "Global Health Status" " Functional Scale" and " Scale of Symptoms ", however the patients in physical activity presented better mood and confidence being more adapted to face the challenge of the disease.

Discussion: The practice of physical activity showed no benefit in improving quality of life and functional capacity in patients with breast cancer in the evaluation by questionnaires in a short period established, however, showed favorable trends for improvement in successive evaluations.

Introduction

Worldwide, there will be about 2.1 million newly diagnosed female breast cancer cases in 2018, accounting for almost 1 in 4 cancer cases among women. The disease is the most frequently diagnosed cancer in the vast majority of the countries [1]. Long-term survival rates after a diagnosis of breast cancer are steadily rising. This is good news, but clinicians must also recognize that this brings new challenges. Survivors of breast cancer represent a unique group who must be cognizant of the long-term side effects of their treatment protocols and be given information to encourage a proactive approach to their overall health [2]. The treatment can lead to changes in a woman's self-image and functional loss as well as psychological, emotional and social alterations. Such alterations in women that have undergone treatment for carcinoma of the breast can be quantified on a quality of life scale. Quality of life assessment is considered to be an important patient reported outcome reflecting treatment, effectiveness, success. The patient experiences represent one of the most important therapeutic goals and a primary end point in many modern clinical studies [3]. It is believed that determination, fortitude, and optimism can override the biologic effects of a malignant disease and can improve survival [4,5].

Some valid studies by responsible investigators clearly show an enhanced survival among subsets of patients with breast cancer who attended a weekly group support program in contrast with persons with similar prognoses who acted as the control group. Although, few consistent studies definitely verify that a positive attitude will affect the overall course of malignant disease, quality of life can be meaningfully enhanced when patients are appropriately optimistic and realistic about their illness [6]. Breast cancer has been recognized as a chronic disease. This reflects efforts about the early diagnosis and improvement of the proposed treatments. Breast cancer survivors represent a unique and extremely complex group of patients, who experience the side effects of the proposed treatment protocols, which are aggravated by pre-existing comorbidities at the onset of breast cancer treatment [2]. The survival rate of women with breast cancer has increased in the last two decades due to improved early diagnosis and increased possibilities for more effective treatment. This treatment success, however, increases the risk of cardiovascular disease that depends on the therapies, the stage of the disease and the time of diagnosis [2].

A protective effect of physical activity in the pathogenesis of breast cancer is well established [7]. The protective mechanisms of physical activity in breast cancer survival are, however, less documented; the evidence indicates that survival is improved by promotion of cardiovascular health and preventing over- weight [8]. Until very recently the specialists discouraged oncological patients to practice physical activity, believing that this is not a safe practice considering the health condition of these patients. In 2009, the American Cancer Society (ACS) convened a panel of experts and created a Guideline for the practice of physical activity in cancer patients, among these women with breast cancer. ACS has shown to be safe the practice of physical activity in women with breast cancer, even in the presence of chemotherapy, radiotherapy and hormonal therapy [9].

The Guideline states that exercise training should improve physical function, bone mineral density, homolateral shoulder mobility to surgery, hemoglobin levels, psychological effects such as self-esteem and mood. Exercises should decrease the symptoms and side effects of chemotherapy and radiation therapy. The exercise should be prescribed respecting the capacity of each woman, staging of the disease and the time of evolution of the disease. It should be performed 150 minutes of moderate activity or 75 minutes of vigorous or intense activity per week [9]. Studies that demonstrate the efficacy of physical activity are heterogeneous and are inconclusive about the type of exercise, whether stretching, aerobic exercises, or resistance exercises. [10]. Directly receiving an orientation regarding physical activity does not imply a change of habit or even adherence to the practice of exercises. The exercise prescription must respect the disabilities presented by each woman. It must be individualized, within the functional capacity of each patient, observing muscular strength, cardiovascular capacity, loss of range of motion and presence of comorbidities. Adherence to the exercises is not always satisfactory and depends on a qualified professional who accompanies and encourages these women to practice exercises. The objective of the current study was to compare the impact of physical activity practice in women with breast cancer, through indicators of quality of life.

Patients and Methods

This is a randomized study with breast cancer patients in a large general hospital in southeastern Brazil. Patients were randomly allocated into two groups: 26 in control, without intervention and 24 in treatment group, with practice of physical exercises. Physical activity was performed for 3 hours / week through active-assisted exercises of flexion, abduction, extension and rotation of upper limbs and treadmill walking. Physical activity was individualized within the functional capacity of each patient, observing muscular strength, cardiovascular capacity, loss of range of motion and presence of comorbidities. The study was approved by the research ethics committee. Written informed consent was obtained from the patients, and they were assured that their treatment would not differ in any way from the pre-existing standard of care in the institution. The questionnaires were applied regarding Quality of Life Questionnaire (EORTC QLQ-C30 and BR-23). The EORTC QLQ-C30 (hereafter, QLQ-C30) is a popular instrument for measuring the general cancer quality of life, and it is used internationally.

The QLQ-C30 includes 30 items and is composed of 15 multiitem scales or quality of life domains that evaluate functioning, symptoms and overall health (2 items). The functioning scales include physical (5 items), emotional (4 items), cognitive (2 items), role (2 items) and social functioning (2 items). The symptom scales measure nausea and vomiting (2 items), fatigue (3 items) and pain (2 items) and 6 single items assessing financial impact and various physical symptoms. Most of the 30 items have 4 response levels (not at all, a little, quite a bit and very much), with 2 questions that address overall health with 7 response levels (on a scale from very poor to excellent). All of the scales and single-item measures were scored according to the standard scoring rules identified in the EORTC QLQ-C30 Scoring Manual. The principles for scoring these scales are the same in all cases. First, we estimate the average of the items that contribute to the scale; this is the raw score. Second, we use a linear transformation to standardize the raw score, so that the scores range from 0 to 100. Higher functional scale scores represent better functioning, but higher symptom scores indicate worse symptoms [11].

The EORTC QLQ-BR23 (hereafter, QLQ-BR23) [12] is a breast cancer module of the EORTC QLQ and is developed for use among breast cancer patients varying in disease stage and treatment modality (i.e., surgery, chemotherapy, radio- therapy and endocrine treatment). When employed in conjunction with the QLQ-C30, the use of the QLQ supplementary modules, including QLQ-BR23, can provide more detailed information relevant to evaluating the QOL in specific patient populations. It includes 23 items composed of 4 functioning scales [i.e., body image (4 items), sexual functioning (2 items), sexual enjoyment (1 item) and future perspective (1 item)] and 4 symptom scales [systemic therapy side effects (7 items), breast symptoms (4 items), arm symptoms (3 items) and upset by hair loss (1 item)] The scoring approach is identical in principle to

that for the function and symptom scales and the single items of the QLQ- C 30. After 6 months of participation, all patients were reassessed, with blindness of the investigator.

Results

The study did not reveal statistical difference in the constructs cited (p> 0.05) between the control group and the treatment group regarding "Global Health Status " and functional scales however the patients in physical activity presented better mood and confidence being more adapted to face the challenge of the disease. The practice of physical activity didn't show benefit in improving quality of life in patients with breast cancer in the evaluation by questionnaires in a short period established, however showed favorable trends for an improvement in successive evaluations. There was no statistical difference in the construct symptom scale in the treatment group (p = 0.065) but there was a slight difference in the control group over time (p = 0.048). Table 1. Regarding the instrument of QOL BR-23, in both control and treatment groups, there was no difference in functional scale from time 1 to time 2 (After 6 months). On the symptom scale, there was no statistical difference in the treatment group, but there was a difference in the control group (p = 0.037). Within the symptom scale, the highest score has more symptoms, means worse health status.

Table 1: Construction of Quality of life EORTC QLQ C-30 instrument.

Scale	Abbreviation	Test Statistics
Global Health Status	QL2	Control 0,095
		Treatment 0,910
Functional Scales	PF2, RF2, EF, CF, SF	Control 0,750
		Treatment 0,100
Symptom Scales	FA, NV, PA, DY, SL, AP, CO, DI, FI	Control 0,048
		Treatment 0,065

Indices calculated using the test Wilcoxon Signed Ranks Test, based on positive ranks P<0,05

Legend: QL2 = Global health status, PF2= Physical functioning, RF2 = Role functioning, EF=Emotional functioning, CF=Cognitive functioning, SF=Social functioning, FA= Fatigue, NV=Nausea and vomiting, PA= Pain, DY=Dyspnea,SL= Insomnia, AP= Appetite loss, CO=Constipation, DI =Diarrhoea, FI+ Financial difficulties.

Through the generic instrument of QLQ-C30, in the treatment group the symptoms improved over time. On the QLQ BR-23 specific instrument, the symptoms worsened over time. There was therefore no difference between the control and treatment groups, but the specific symptoms of breast cancer, such as Systemic therapy side effects, Arm Symptoms, Upset by hair loss remained over time and were statistically relevant.

Discussion

The practice of physical activity has been advocated by the academic community as an essential practice in the survival of women with breast cancer. The benefits of exercise reduce the deleterious effects of proposed treatments, such as cardiotoxicity and even have a positive effect on comorbidities. We have to think not in the woman with breast cancer, but in the woman, who survived breast cancer [2]. Patients were invited to participate in a group of exercises once a week supervised by physical therapy and are encouraged to exercise for at least two more hours throughout the week, totaling 150 minutes of aerobic physical activity as recommended per the American Cancer Society guidelines [13]. Guiding and trying to include the practice of physical activity in the lives of these women is not an easy task, it requires a lifestyle change, which is mediated not only by environmental factors or linked to illness, but also to personal factors. Barriers to physical activity practice need to be assessed and discussed, and a qualified professional for the prescription and orientation of the exercise is still required, which should be individualized [14].

The literature has shown that physical activity plays a fundamental post-treatment role in breast cancer, decreasing mortality rates and recurrence of the disease in these women. The autonomy of the subject is constantly encouraged [15,16]. The results of present study did not show benefit in improving quality of life in patients with breast cancer in the evaluation by questionnaires in a short period established. Bjöneklett, (2012) also did not found no difference between the support group and the control group regarding quality of life. A total of 392 patients were divided into two groups: one control group and another intervention group. This intervention group received orientation, relaxation training and mental visualization exercises. However, both groups showed improvement of symptoms and fatigue over time [17]. In this study it was possible found favorable trends for an improvement in successive evaluations because the team realized that the patient who has adherence, participation in the support group, shows more safety, acceptance and more serenity throughout her treatment, equal the results found in other researches that reinforces the difficulty that health professionals have to demonstrate the beneficial effect of the support group over time (Table 2) [17].

Table 2: Construction of Quality of life EORTC BR 23 instrument.

Scale	Abbreviation	Test Statistics
Functional Scales	BRBI, BRSEF, BRSEE, BRFU	Control 0,737
		Treatment 0,348
Symptom Scales	BRST, BRBS, BRAS, BRHL	Control 0,037
		Treatment 0,132

Indices calculated using the test Wilcoxon Signed Ranks Test, based on positive ranks P<0,05

Legend: BRBI = Body image, BRSEF = Sexual functioning, BRSEE = Sexual enjoyment, BRFU = Future perspectives, BRST= Systemic therapy side effects, BRAS = Arm Symptoms, BRHL Upset by hair loss

Many women with breast cancer will not die from cancer but from comorbidities such as obesity, hypertension, hyperlipidemia and diabetes mellitus, diseases that will affect the disease-free survival of these women. Breast cancer survivors should be instructed to recognize the long-term side effects of the treatments.

They are subjected to be encouraged to healthy lifestyle habits and lifestyle changes that have as pillars the practice of physical activity and healthy eating [2]. The change in lifestyle and the participation and responsibility opens the hope for a new concept of health. Health is not just absence of disease and have normal tests. Be health calls for a deepening of philosophy, self-knowledge, psychology and the attitude of being open to new ways of perceiving reality. It is important to set goals in life, to have time in addition to working, doing physical activity, playing, laughing, having fun, finding friends and get emotional support, allowing situations that give pleasure, seeking a true meaning for life.

However, how to do it is a difficult task, sensitizing these women to healthy lifestyle habits like exercising or eating healthy, is a challenge to be overcome. Healer is a total-health approach to wellness that includes treating the mind, body, and spirit of a patient with breast cancer. Our long-term goal is to help patients with breast cancer under-stand the importance of energy balance. By helping patients with breast cancer achieve healthy weight and healthy biometrics, we can maximize their chances for long-term survival [2]. The practice of physical activity has been advocated by the academic community as an essential practice in the survival of women with breast cancer. The benefits of exercise reduce the deleterious effects of proposed treatments, such as cardiotoxicity and even have a positive effect on comorbidities. We have to think not in the woman with breast cancer, but in the woman, who survived breast cancer.

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