



Contents lists available at ScienceDirect

Gynecologic Oncology

journal homepage: www.elsevier.com/locate/ygyno

Effects of a complex rehabilitation program on edema status, physical function, and quality of life in lower-limb lymphedema after gynecological cancer surgery

Jung Hwa Do, Kyoung Hyo Choi, Jun Su Ahn, Jae Yong Jeon *

Department of Rehabilitation Medicine, Asan Medical Center, University of Ulsan College of Medicine, 88, Olympic-ro 43-gil, Songpa-gu, Seoul 05505, South Korea

HIGHLIGHTS

- Complex rehabilitation (CR) improved quality of life in LLL patients.
- CR improved physical function and reduced both pain and fatigue in LLL patients.
- Compared to CDT, CR was not associated with increased edema status in LLL patients.

ARTICLE INFO

Article history:

Received 9 June 2017

Received in revised form 2 September 2017

Accepted 5 September 2017

Available online xxxx

Keywords:

Gynecologic cancer surgery

Rehabilitation

Quality of life

ABSTRACT

Objective. The purpose of this study was to investigate the effects of a complex rehabilitation (CR) program and complex decongestive therapy (CDT) on edema status, physical function, and quality of life in patients with unilateral lower-limb lymphedema after gynecologic cancer surgery.

Methods. In this randomized pilot study, 40 patients with secondary unilateral lymphedema, after gynecologic surgery for cervical, endometrial, or ovarian cancer, that had been diagnosed based on clinical assessment and 10% volume differences between the legs were randomly assigned to the CDT ($n = 20$) and CDT combined with CR (CRCDT; $n = 20$) groups. CR comprised stretching, strengthening, and aerobic exercises performed for 40 min, five times a week for 4 weeks. Intensive CDT was administered by a physical therapist during weeks 0–2 and by the patients themselves during weeks 2–4. Limb volume, bioimpedance, muscular strength, EORTC QLQ-C30 (European Organization for Research and Treatment of Cancer Quality of Life Questionnaire C30) score, 30-s chair stand test, muscular strength, and GCLQ-K (Korean version of the Gynecological Cancer Lymphedema Questionnaire) score were assessed at baseline and after 4 weeks of treatment.

Results. The edema status, fatigue, pain, and GCLQ-K scores were significantly improved in both groups after the 4-week intervention ($P < 0.05$). Physical function and fatigue in EORTC QLQ-C30 and the 30-s chair stand test and quadriceps muscle strength were significantly improved in the CRCDT group compared with the CDT group ($P < 0.05$).

Conclusions. CR improves physical function, fatigue, and muscular strength without increasing edema status in patients with unilateral lower-limb lymphedema after gynecologic cancer surgery.

© 2017 Elsevier Inc. All rights reserved.

1. Introduction

Cancer is the leading cause of death in South Korea and the main public health problem worldwide [1]. Gynecologic cancer was reported to have comprised 11.7% of all new cancers and 10.4% of all cancer deaths among women in the United States in 2014 [2]. According to the results of research conducted by the Ministry of Health and Welfare in 2013, the incidence of gynecologic cancer in South Korea was 3.4% for

cervical cancer and 2% for ovarian cancer, ranking seventh and tenth among the most frequent cancers in women. The 5-year life expectancy of patients with cervical and ovarian cancers in South Korea is progressively high at 80.1% and 62%, respectively. The incidence of cervical cancer is decreasing by an annual percentage change of -4.3% . However, in the case of endometrial and ovarian cancers, the incidence is progressively increasing at an annual percentage change of 6.9% and 1.5%, respectively. Therefore, the overall incidence of gynecologic cancer is continuously increasing [3].

Patients who undergo gynecologic cancer surgery commonly experience symptoms including lower-limb lymphedema (LLL), sexual

* Corresponding author.

E-mail address: jjyeon2@mail.ulsan.ac.kr (J.Y. Jeon).

problems, pain, fatigue, and reduced physical functioning. Moreover, they also experience impairments in several domains of the quality of life (QoL), such as physical functioning, role functioning, and cognitive and social functioning [4].

Pelvic lymph node dissection is an integral part of the treatment of gynecologic cancer [5]. However, it could lead to damage to lymphatic drainage, causing retention of lymphatic fluid in the interstitial tissue of the limbs and other body areas, as well as secondary lymphedema [6]. LLL after gynecologic cancer surgery could interrupt mobility and daily activity, and have a negative effect on the psychological and social well-being of patients [7]. The incidence of lymphedema depends on the extent of surgical treatment, number of removed lymph nodes, use of radiation therapy, and obesity. It is usually estimated that 20–30% of patients with gynecologic cancer will experience LLL [8].

Compared with breast cancer-related lymphedema, LLL leads to more complicated problems such as large-volume edema and the dependent leg position [9]. Traditionally, clinical guidelines recommend that women with lymphedema avoid vigorous, repetitive body exercises to prevent disease exacerbation [10]. Because of the dependent position of the leg, patients become concerned about the worsening of lymphedema just by walking [10]. Therefore, patients with lymphedema tend to become inactive and limit their daily life activities, which result in social and psychological problems. The resulting inactivity decreases muscle movement, which then leads to weakness and even change in the gait pattern [11]. Physical disabilities caused by lymphedema, such as increase of limb volume, have a major effect on the QoL [11]. Proper exercise increases mobility and muscular activity, which lead to internal compression of lymph vessel movement. Intermittent pressure changes between muscles and external compression stimulate lymphatic drainage. Lymph flow through the thoracic duct can be activated by changes in intrathoracic pressure caused by breathing exercises. Therefore, patients should be encouraged to maintain physical activity [12]. Strengthening exercises such as weight lifting is reported to increase muscle strength during bench and leg presses in patients with LLL. A study reporting the feasibility and benefits of a 24-week home-based exercise intervention in gynecologic cancer demonstrated improvement in cardiorespiratory function [13]. Moreover, there were some studies on the effect of exercise on the QoL of patients with gynecologic cancer [14]. However, there is no randomized study aimed at establishing a safe and effective exercise program for patients with LLL.

We hypothesized that a complex rehabilitation (CR) program combined with complex decongestive therapy (CDT) would result in meaningful improvements in physical fitness and QoL without the worsening of LLL.

2. Methods

2.1. Study design and patients

This pilot study was performed at the Department of Rehabilitation Medicine of Asan Medical Center in Seoul, South Korea, between December 2015 and August 2016.

Patients with secondary unilateral lymphedema, after gynecologic surgery with pelvic lymph node dissection for cervical, endometrial, or ovarian cancer, that had been diagnosed based on clinical assessment and lymphoscintigraphy findings and 10% volume differences between the legs were enrolled. The exclusion criteria were cancer recurrence and presence of other diseases (arterial insufficiency, deep vein thrombosis, chronic venous insufficiency, heart or kidney disease, musculoskeletal disease, and neurologic disorder). In addition, patients with skin problems, such as a scarring, inflammation, or infection, were also excluded. The sample size was calculated by using G Power 3.1.2 software (Franz Faul, University of Kiel, Germany) with an alpha level of 5% and power of 80%. The required sample size was 18 in each group for a repeated-measures analysis of variance [13]. Forty-four patients

were initially selected and randomly assigned to either the intervention group (CR combined with CDT [CRCDT]; $n = 22$) or the control group (CDT; $n = 22$). Four patients were unable to complete the final evaluation; therefore, only 40 patients completed the study (Fig. 1). All patients were provided information on the purpose and progress of the study and signed the consent form. Ethical approval was obtained from Asan Medical Center (institutional review board approval no. 2016-0506).

2.2. Interventions

2.2.1. CDT

All patients had 10 sessions of CDT for lymphedema. CDT consisted of manual lymphatic drainage (MLD), compression therapy, skin care, and remedial exercise. MLD is a light and rhythmic form of stretching of the superficial skin. The MLD technique included stationary circles, pumping, rotational strokes, thumb circles, and scooping with varying degrees of light pressure. All groups received 30 min of MLD daily, five times a week for 2 weeks. After MLD, they received a pneumatic pump device. Moreover, they were given a multilayer low-stretch bandage or compression garment for wearing over the edematous limb. The patients were instructed on remedial exercises, including isometric exercise and skin and nail care, to be performed at home. CDT (Dr. Vodder method) was performed by one certified physical therapist during the first 2 weeks. For weeks 2–4, the patients themselves performed MLD and self-bandaging.

2.2.2. CR program

The case group performed the CR program five times for 4 weeks. During the first 2 weeks, the exercises were supervised in the rehabilitation room by a physical therapist. For the next 2 weeks, the patients were asked to exercise at home and write in the exercise diary. On the first day, the participants were assessed for physical function and educated on the exercise methods for 30 min. The CR program consisted of stretching, strengthening, core stability exercises, and aerobic exercise.

Stretching exercise was performed with five different motions, including relaxing the pelvic girdle. For strengthening the lower and upper body, exercises with an elastic band (Hygenic Corp., Akron, OH, USA) were performed. Participants were informed of the Borg rating of perceived exertion (RPE) scale, and performed an intensity of 11–14, which is considered the same exercise intensity level as 50–70% of one repetition maximum for resistance training, for three sets of 10 repetitions [14]. Core stability exercises were also performed using a ball, at an intensity of 11–14 RPE, at one set of 10 repetitions. Aerobic exercise was performed from 30 min at 40–59% of the predicted maximum heart rate to 30 min at 64–76%. Briefly, the aerobic exercise program consisted of 15 min on the cycle and 15 min on the treadmill. The intensity of the aerobic and strengthening exercises was referenced from the guidelines for sedentary people, provided by the American College of Sports Medicine (ACSM). All patients with lymphedema wore compression stockings during the exercises. During the home exercise periods, the participants maintained records on their exercise diary to monitor compliance and support exercises. All patients were recommend to rest in the supine position after exercising, with leg raising for >10 min (Table 1).

2.3. Assessments

Leg volume, bioimpedance, GCLQ-K (Korean version of the Gynecological Cancer Lymphedema Questionnaire) score, muscular strength, 30-s chair stand test, and QoL questionnaire were evaluated in all patients at baseline and after the 4 week intervention.

Download English Version:

<https://daneshyari.com/en/article/8780890>

Download Persian Version:

<https://daneshyari.com/article/8780890>

[Daneshyari.com](https://daneshyari.com)