



Comparison of hospital based and home based exercise on quality of life, and neck and shoulder function in patients with spinal accessory nerve injury after head and neck cancer surgery



Jung Hwa Do, In Jin Yoon, Young Ki Cho, Jun Su Ahn, Jung Kyo Kim, JaeYong 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

ARTICLE INFO

Keywords:

Head and neck neoplasms
Exercise
Quality of life
Pain

ABSTRACT

Objectives: The purpose of this study was to compare the effects of hospital-based and home-based exercise programs on quality of life (QOL) and neck and shoulder function of patients who underwent head and neck cancer (HNC) surgery.

Methods: This clinical trial included 40 patients with neck and shoulder dysfunction after HNC. The exercise program included range of motion (ROM) exercises, massage, stretching, and strengthening exercises. Twenty patients who were assigned to the hospital-based exercise group performed physical therapy for 40 min three times a week for four weeks, and the remaining 20 patients were assigned to the home-based group. The European Organization for Research and Treatment of Cancer Core Quality of Life Questionnaire (EORTC QLQ-C30), the EORTC Head and Neck Questionnaire (EORTC QLQ-H&N), the Neck and Shoulder Disability Index (NDI), ROM, and numeric rating scale (NRS) were assessed before and after the exercise program. The program consisted of a 10-minute ROM to the neck and shoulder, a 10-minute massage, and 15 min of progressive resistance exercises, followed by a five-minute stretching exercise.

Results: There were statistically significant differences in the changes of neck and shoulder disability index ($p < .05$). Additionally, there were significant differences in neck extension and rotation ROM and NRS in the hospital-based group compared with the home-based group ($p < .05$). QOL was not significantly different between the two groups.

Conclusions: Home-based exercise was effective for improving QOL, shoulder function, and pain relief. Hospital-based exercise had better effects on physical function of the neck and shoulder and reduced pain.

Introduction

Head and neck cancer (HNC) is defined as a malignancy of the larynx, pharynx, oral cavity, or thyroid and paranasal sinuses, and it can easily metastasize to the lymph nodes on the neck [1].

Neck dissection is an integral part of treatment, but it can lead to injury of the accessory nerve, which leads to a high incidence of shoulder pain and dysfunction [2]. Accessory nerve injury can cause paralysis of the trapezius muscle, which can cause scapular depression, abduction, and internal rotation. It can decrease shoulder abduction and flexion [3,4]. The trapezius muscle is partially innervated from the motor nerve of C2, 3, and 4 of the cervical plexus, but accessory nerve contribution is higher [5,6]. Recently, selective neck dissection and modified neck dissection surgeries have been adopted to preserve the accessory nerve. The incidence of paralysis in the trapezius muscle

following surgery via the traditional method was 60–100% and the case of nerve preservation surgery was 20–60% [7,8]. However, while selective neck dissection results in a lower rate of disability and pain in the shoulder, 29–39% of patients still reported a negative effect on shoulder function [9]. Patients with HNC experienced not only neck and shoulder problems but also problems swallowing, breathing, and communicating [10] as well as weight loss, up to 70% of which is attributed to lean muscle wasting [11]. Moreover, an exercise program is essential for patients with this type of cancer.

Shoulder dysfunction is a well-known complication following neck dissection, and it is an important consideration with regard to long-term quality of life (QOL) in patients with HNC [12]. Spinal accessory nerve injury following neck dissection significantly impacts disability levels. Most patients with HNC are men of working age. Rehabilitation for HNC is usually performed only for severe pain interrupting daily life

* Corresponding author.

E-mail address: jjjeon2@ulsan.ac.kr (J. Jeon).

<https://doi.org/10.1016/j.oraloncology.2018.06.019>

Received 16 March 2018; Received in revised form 5 June 2018; Accepted 17 June 2018

1368-8375/ © 2018 Published by Elsevier Ltd.

or obvious neck disability or shoulder changes [13]. Oldervoll et al. [14] reported that QOL is the primary measurement in most studies on exercise intervention. Early physical therapy intervention for HNC is useful for improving shoulder function in the short term [15]. Kizilay et al. [16] reported a strengthening exercise for the scapula using an orthosis that is effective at releasing pain and restoring function. In a randomized study, McNeely et al. [12] demonstrated that a progressive resistive strengthening exercise around the shoulder girdle (3 times per week for 12 weeks) decreased pain and shoulder disability. Patients who performed the resistance exercises continuously for 12 months reported better neck dissection-related function and QOL [17]. However, only studies from hospital-based and supervised exercises were included.

Despite the high morbidity associated with HNC treatment, patients with HNC are highly motivated to exercise [18]. However, exercise programs are not provided for patients with HNC at most hospitals in South Korea. We need to know which method of exercise (hospital-based or home-based exercise) is the optimal setting to maximize effectiveness for patients with HNC and spinal accessory nerve injury. There are no clinical studies comparing hospital-based exercise and home-based exercise for patients with spinal accessory nerve injury after HNC surgery. The aim of the present study was to compare the effects of hospital-based and home-based exercise programs in setting, including complex rehabilitation program on the neck and shoulder function, and QOL of patients with spinal accessory nerve injury after HNC surgery.

Methods

Study design and patients

Inclusion criteria in this study were patients with neck and shoulder dysfunction after surgery for HNC including thyroid gland, tongue, parotid gland, base of tongue, hypopharyngeal, and pyriform sinus cancer. All participants were diagnosed with axonotmesis in the spinal accessory nerve on electromyography (EMG) examination. The exclusion criteria were cancer recurrence or the presence of other chronic diseases. The result of the sample size calculation was 18 for each group using the G Power 3.1.2 software (Franz Faul, University of Kiel, Germany) with an alpha level of 5% and a power of 80%. 47 patients were assigned to either the hospital-based group ($n = 24$) or the home-based group ($n = 23$) by participants opinion. Seven patients were unable to finish the last evaluation. All patients were informed of the purpose of the study and the process and consented to the study. Ethics approval was provided by the institutional review board of Asan Medical Center (IRB number:2017-0893).

Interventions

Hospital-based exercise vs home-based exercise

On the first day, all participants underwent assessments of their physical function and received education on the exercise methods for 30 min. The exercise program consisted of stretching, strengthening, and core stability exercises. (Table 1)

The hospital-based exercise group performed an exercise program 3 times a week for 4 weeks. To warm up, stretching exercises and range of motion (ROM) of the neck and shoulder, including neck flexion, extension, lateral flexion, rotation and shoulder flexion, extension, abduction, internal rotation, external rotation were performed. Manual massage was performed by one physical therapist for 10 min. For shoulder girdle strengthening exercises, a band (Hygenic Corp., Akron, USA) was used. Participants were informed of the Borg rating of perceived exertion (RPE) scale and exercised at a “somewhat hard” intensity of 11–14, which is regarded as an exercise intensity level of 50–70% 1 RM for resistance training for 3 sets of 10 repetitions. The

Table 1
Exercise program.

Program components	Program details
Warm-up	Range of motion exercises of the neck and shoulder in a supine position
Strengthening	Sternocleidomastoid, trapezius, rhomboid, biceps, triceps, deltoid, supraspinatus, infraspinatus, subscapularis muscles
Methods	10 repetitions at a somewhat hard intensity (1–3 sets) Performing resistance band exercises while maintaining scapular stability (no scapular winging) No greater than 13 on the Borg Scale: “somewhat hard”
Stretching	Pectoralis major and minor, serratus anterior muscles

home-based group was asked to exercise at home and complete exercise diaries, which had suggested exercise schedules as well as pictures of exercises that can be performed by themselves at home.

Assessments

The European Organization for Research and Treatment of Cancer Core Quality of Life Questionnaire (EORTC QLQ-C30; version 3), EORTC QLQ-Head and Neck (EORTC QLQ-H&N), Neck and Shoulder Disability Index (NDI), ROM of the neck and shoulder, and numeric rating scale (NRS) for pain were evaluated in all patients at baseline and after the 4-week intervention.

Quality of life

Quality of life was evaluated using the EORTC QLQ-C30 and EORTC QLQ-H&N. In conjunction with the EORTC QLQ-C30, the Head and Neck Specific Module was completed [19]. This test was assessed that higher score is better in functioning scales, much symptomatic problem in symptom scales.

Neck and shoulder disability index

The NDI questionnaire contains 10 items assessing neck pain and functional disability. It is similar to the Oswestry Index for evaluating the limitations of patients with ADL-associated low back pain. It includes pain intensity, personal care, lifting, reading, headaches, concentration, work, driving, sleeping, and recreation. Severity was evaluated by a 6-point (0–5) scale. A score of 0 indicates no disability, while a score of 5 indicates severe disability [20].

Active range of motion (AROM)

AROM was measured by using a digital inclinometer (The Saunders Group, Inc., Chaska, MN). We measured each AROM of shoulder flexion and abduction in supine. Neck motions were evaluated in sitting position. The average value of three trials was recorded according to Norkin and White (1985).

Pain

The NRS assesses pain severity using a score of 0–10. A score of 0 indicates no pain, and a score of 10 indicates severe pain [21].

Statistical analysis

SPSS statistics 20.0 software (SPSS Inc., Chicago, IL) was used for all statistical analyses. Continuous and categorical variables are expressed as means \pm standard deviations and percentages. Baseline descriptive statistics were compared using independent-t tests for continuous data and the Fisher's exact test for categorical data. To compare changes in

Download English Version:

<https://daneshyari.com/en/article/10148641>

Download Persian Version:

<https://daneshyari.com/article/10148641>

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