

THE REHABILITATION MANAGEMENT OF LYMPHEDEMA

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Abstract

Lymphedema is an important pathology for rehabilitation medicine, especially for the patients who underwent a mastectomy for breast cancer. His frequency is higher when mastectomy is combined with lymph node dissection and irradiation of the lymph nodes. Symptoms include heaviness, numbness, pain, stiffness and weakness in the affected limb. Complications of lymphedema include infections such as cellulitis, erysipelas and lymphangitis. Treatment must be instituted as soon as possible and preventive measures are essential. The rehabilitation treatment consists of skin care measures, manual lymphatic massage, elastic compression of the affected limb and kinetotherapy.

KEY-WORDS: lymphedema, prevention, rehabilitation.

Introduction

Lymphedema is a disease characterised by a chronic edema of the arm, leg, trunk or face, secondary to accumulation of lymph fluid. The normal lymphatic system can cope with modest increases in protein and water loads without formation of edema. But lymphedema represents an imbalance in the lymphatic load and lymphatic transport capabilities. Imbalance can be due to either high-output lymph failure or low-output lymph failure. (1)

High-output lymph failure refers to factors that increase blood capillary filtration. Low-output lymph failure occurs with impaired lymphatic drainage. One example of high-output lymph failure is ascites secondary to portal hypertension associated with cirrhosis of the liver. An example of low-output lymph failure is post-mastectomy edema from the resection of lymph nodes.

Physiopathology of lymphedema

Lymphedema is typically progressive and exists when there is impaired return of the lymph into the circulatory system. Long-standing lymphedema is associated with chronic inflammatory cells and subsequent fibrosis of the soft tissue. (1) There are four major physiologic mechanisms that cause lymphedema:

1. increased blood capillary hydrostatic pressure
2. decreased plasma protein concentration
3. increased blood permeability
4. blockage of lymph return.

Classification of lymphedema

Lymphedema is classified into primary (congenital) and secondary.

Primary lymphedema is associated with aplasia, hypoplasia, or obstruction of the lymphatic vessels. There are three major categories of primary lymphedema : congenital (early in infancy), praecox (onset at puberty) and tarda (around the age of 35 years).

Secondary lymphedema is associated with damage or obstruction of the lymphatic vessels by infectious etiology (filariasis, bacteria), lymph node dissection, radiotherapy and other causes.

Etiology of lymphedema

The most common cause of secondary lymphedema in the world is filariasis, because more than 120 million people have been infected and about 40 million people are subjected to serious disability. In Europe and United States , lymphedema is most commonly secondary to cancer therapies (lymph node dissection and radiation therapy).

One study estimated the incidence of lymphedema after breast cancer treatment from 6% to 30%; but in a cohort of breast cancer survivors examined 20 years after diagnosis, 50% presented sensation of lymphedema and 13% had severe lymphedema. Another study estimated a 41% incidence of lymphedema after breast cancer therapy, but a lower incidence of 17% in women who did not receive axillary irradiation.

(2)

The combination of cancer treatments increases the apparition of lymphedema. Resection of the lymph nodes has the higher risk for surgery-related lymphedema, but the risk is greatly bigger when patients receive adjuvant radiation therapy. Adjuvant chemotherapeutic agents may also elevate the incidence of secondary lymphedema.

Lymphedema from cancer treatment may develop months to years after therapeutic intervention and events associated with late-onset of lymphedema include infection, injury and post-cancer treatment weight gain.

(2)

Clinical presentation

Early symptoms include heaviness, tightness, numbness, stiffness pain, or weakness from stagnant protein-rich fluid in a limb. Pain-free swelling develops after a latent phase that may be manifested with limitation of motion of the fingers on the involved extremity. Postoperative swelling after cancer surgery is usually transitory, but there is a group of patients who progress to long-standing swelling of the limb from lymphedema.

Physical examination

We need to describe and measure the subjective symptoms of lymphedema, because these components provide feedback to the initial therapy on repeated measures over time. (3)

1. Measurable circumference of the swollen limb
2. Number of skin folds from side to side
3. Skin color (erythema, brownish pigmentation)
4. Skin texture (soft, hard, shiny, taut)
5. Asymmetric increase in subcutaneous adipose tissue
6. Pitting edema 0-4
7. Arterial pulses of the extremities
8. Range of motion
9. Neurologic deficits
10. Measurement of limb volume
11. Venous collaterals or congestion.

The International Society of Lymphology has established criteria to grade lymphedema on the basis of circumference measures. (3)

Stage 0- latent or subclinical lymphedema (swelling is not evident despite lymph transport).

Stage 1- early accumulation of edema (this stage responds to elevation of the arm and may exhibit pitting).

Stage 2- tissue fibrosis (this stage shows no pitting and no response to arm elevation).

Stage 3- elephantiasis (this stage has no pitting and manifests trophic skin changes).

Grade 1 represents mild swelling and grade 3 represents the most severe and disabling stage.

Functional limitations in lymphedema

Severe limitations are most often related to extreme or advanced disease, such as in elephantiasis, a rare manifestation of lymphedema. Functional limitations are associated with swelling and heaviness, with or without discomfort of the upper extremities. Limitations of the lower extremity are due to inability to fit into appropriate clothing or shoes and patients can have difficulty in walking and climbing stairs or limited participation in physical activities. (4)

Most of the time, the functional limitation is massive swelling of the arm or leg from complications associated with lymphedema, for instance infections like erysipelas, lymphangitis and cellulitis will be associated with temporary disability until resolution with antibiotic therapy.

Treatment of lymphedema

The best treatment of lymphedema is prevention and other treatment strategies include meticulous skin care, exercises and compression.

Initial treatment

Prevention of lymphedema after cancer therapies is very important. It is hard that lymphedema can be completely prevented, although the patient may take measures to lessen the impact or to delay the onset.

In general, the patient should be instructed to avoid constriction of the affected limb, weight gain, repetitive activity to the point of fatigue, heavy lifting, extreme heat and rapid altitude changes. Also, the patient must take measures to avoid injury and infection. (5)

In medical practice, preventive measures have focused on minimizing the extent of surgical resection by moving from a full lymphadenectomy to a more targeted resection, such as sentinel node dissection and minimizing the use of adjuvant radiation therapy directed to the nodal resection bed. (6)

Comorbidities that require attention for control of the edema are congestive heart failure, hypertension and stroke. The presence of cellulitis, erysipelas and lymphangitis requires antibiotic treatment before the initiation of manual massage and therapy.

Medication use in the treatment of lymphedema is useful only in the presence of effusion, like ascites and hydrothorax, or in cases of malignant lymphedema for a short course of diuretics. Long-term diuretic therapy is

not recommended because it may cause electrolytic disturbances. (5)

Rehabilitation treatment of lymphedema

Decongestive lymphatic therapy is the key of treatment and consists of skin care and hygiene, light manual massage or manual lymph drainage, range of motion exercises and compression of low-stretch bandage. Then a low-stretch stocking or sleeve is provided to the patient with remedial exercises and massage as needed to drain the affected area into the lymphatic system. (7)

Relative contraindications to the use of manual lymphatic drainage are acute cellulitis, uncontrolled infections of the affected limb, deep venous thrombosis and renal dysfunction. Poor response to decongestive lymphatic therapy may be related to underlying peripheral vascular disease or malignant lymphedema.

Pneumatic devices facilitate the initial reduction of swelling by sequential and multi-pressure gradient pumps. But the use of these devices cannot replace decongestive lymphatic therapy.

It is crucial to make measurements at the beginning of treatment, at follow-up and at the end of the treatment.

Repeated measures of the visual analogue scale (VAS) for the patients symptoms (heaviness, tightness, hardness, numbness, stiffness, pain or weakness) must be made to quantify the patient progress. (7)

Exercises for patients with lymphedema are well accepted and consist of movement exercises, including passive and active movements plus isometric exercises of the surrounding muscles of the limb after manual lymphatic drainage. Clinical trials using progressive resistive exercises after cancer treatments are showing benefits and no increased risk for aggravation of lymphedema. Exercises are recommended with the affected limb

bandaged or with a compression elastic sleeve. (8)

Complications of lymphedema

Cellulitis can be a risk factor for development of lymphedema or a complication of lymphedema. Other infections that can occur are erysipelas and lymphangitis and they require immediate therapy with antibiotics.

Malignant lymphedema is a condition in which cancer cells invade the lymph nodes or the tumor directly compresses the lymph nodes. This condition necessitates treatment of the underlying disease, but the response to therapy is poor. (3)

Complications of treatment of lymphedema

Potential treatment complications that are due to underlying conditions are congestive heart failure and malignant effusions and medical management is important to reduce the volume.

In malignant lymphedema, manual lymphatic drainage can spread the cancer cells throughout the body by mobilization of tumor thrombi that have already spread to the lymph collectors. The prognosis for these patients is poor and the reduction of swelling is perceived as palliative. (3)

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