

THE COMPLETE DECONGESTIVE THERAPY IN LYMPHEDEMA MANAGEMENT DEVELOPING IN RELATION WITH MASTECTOMY

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MASTEKTOMİYE BAđLI GELİŞEN LENFÖDEM YÖNETİMİNDE KOMBİNE EDİLMİŞ DEKONJESTİF TEDAVİ

ÖZET

Lenfödem; önleme, erken saptama ve yönetim için multidisipliner yaklaşımlar gerektiren, maliyeti yüksek, zaman alıcı ve karmaşık bir klinik problemdir. Kontrol edilmezse çok sayıda komplikasyonla sonuçlanabilir ve hastaların hem fiziksel hem de psikolojik sađlığı üzerinde zarar verici etkileri olabilir. Lenfödem yönetiminin temel amacı volümün azalması ve buna bađlı olarak yaşam kalitesinin iyileştirilmesidir. Günümüzde lenfödem yönetiminde kullanılan etkili tedavi yöntemlerinden biri kombine edilmiş dekonjestif tedavidir. Bu tedavi, manuel lenfatik drenaj, kompresyon, egzersiz ve cilt bakımı uygulamalarından oluşmaktadır. Literatürde kombine edilmiş dekonjestif tedavinin lenfödem yönetiminde etkili olduđu belirtilmektedir.

Anahtar sözcükler: mastektomi, lenfödem, kombine edilmiş dekonjestif tedavi

ABSTRACT

Lymphedema, which requires a multidisciplinary approach for prevention, early detection and management is a time wasting, high cost and complex clinical problem. It may lead to numerous complications and may have damaging effects on both the physical and psychological health of the patients. The main objective of lymphedema management is reduction in swelling and improvement in the patient's quality of life. The complete decongestive therapy is one of the most effective therapies used to treat lymphedema today. This therapy consists of manuel lymphatic drainage, compression, exercise and skin care. It is indicated that the complete decongestive therapy is effective in lymphedema mangement.

Keywords: mastectomy, lymphedema, complete decongestive therapy

Lymphedema, developed after mastectomy, which is characterized by edema in the arm and in close parts of the body close to the arm which could be caused by cosmetic deformity, physical disorder, loss of function, cellulitis, lymphangitis, and sometimes lymphangiosarcoma is a chronic, progressive, multifactorial process (1,2,3,4,5).

It should be stated that incidence of lymphedema is between 6-30%. It is estimated that in America between 120 thousand and 600 thousand patients have suffered from some complications associated with breast cancer (2,6,7,8,9). Because of chemotherapy and advanced radiotherapy, patients with breast cancer longer, so lymphedema has become a chronicle problem. The American Cancer Assosiation is estimate that 10-15% of patients with breast cancer could be diagnosed with lymphedema in their life. An examination of seven grate studies in 1998 has reported an incidence between 6-30% (10). In a study it was found that lymphedema has been developed in 24.9% of 450 patients with breast cancer (5).

Effects of lymphedema on patient

Lymphedema can be damaging both physically and emotionally (11,12). There is swelling and tightness in the affected arm. In a study, the patients with breast cancer were have been followed for 12 months, and it was found that the amount of lymphedema was increased more than 10% in 52% of patients. Also the mean amount of lymphedema increased 84 ml (13). Swelling in the arm been the cause of disproportion in dimensions of one part of the body (13). Minimal swelling in the surgery side as well as damage in the arm can be begin to become an stable damage (6). In an implemented study, Paskett stated that daily routine activities have been reduced in 48% of women with breast cancer (14).

At the same time, patients complained about reduced flexibility, fatigue, weakness, hopelessness, pain, sense of pain, heaviness, or infection. (11,15,16). In the edematous arm, collection of colloid which is rich in protein, provides an excellent environment for bacterial growth. Lymphatic dysfunction, increases the risk for infection by local immune response (6).

Lymphedema if is not controlled, can result in a lot of complications. The most problematic complications, an increase in repeated infections rate, reduced local immunity in the affected area, serious restraint in mobility which causes to difficulty in daily activities, serious social and emotional problems and changes in the skin (10,17).

The onset of lymphedema can be associated with serious psychological consequences, as patients are adjusting to their cancer diagnose. Lymphedema can create impairment in self-esteem and body image, and also limits their desire to be involved in their society (18). Patients with breast cancer who have lymphedema experienced significant psychological stress (1,6,19). Carter stated that some patients with breast cancer who have lymphedema have been experienced anxiety, depression and deterioration in their social relationships (20).

Lymphedema as well effects the quality of life adversely of patients with breast cancer (6,18,21). In a study, it was found that patients are confused and angry, and their self-esteem is reduced when lymphedema is present. In the same study, the quality of life was found to be lower in patients who had, emotional problems, and reductioning in motion and mobility. (22). Also, in a study by Mak et. al. it was determined that the quality of life of patients who have lymphedema is significantly lower than the comparative control group (23).

The complete decongestive therapy in the management of lymphedema

Lymphedema is a high-cost, time consuming, complicated clinical problem which requires a multidisciplinary approach, in order to prevent, detect and managet (22). Therefore, preventing lymphedema and risk classification are very important matters (2). Reduction of the volume of fluid is the main aim in the management of lymphedema and may contribute to improving the life quality (13).

The aim in managing lymphedema is to prevent the progression of disease and complications, reducing swelling in the arm, relieving the symptoms, preventing infections, improving movement and the ability to performing the daily activities of the person, resulting in a person's well being physically well as psychologically (10,11,24).

Existing management of lymphedema has been based on Complete Decongestive Therapy (CDT) identified by M. Földi in 1989 (13,25). Some common rehabilitative interventions are used in therapy. Therapy program consists of a combination of manual lymphatic drainage, compression, exercise and skin care (10,13,15,19,26,27,28,29). This therapy program is a multidisciplinary approach including patient, physicians, physiotherapist, occupational therapist, and in some cases a psychologist (15). The Complete Decongestive Therapy is accepted as the most effective therapy in lymphedema management, according to American Cancer Association, National Lymphedema Network and experts in this area (10,11,30).

In a study, it was found that 75% of women who have lymphedema with breast cancer receive a compression garment, 46.9% receive mechanical compressive therapy, 26% receive wrapped with a bandage which is wrapped , and 22% physical therapy (14).

Vignes et al, in a study with breast cancer were stated that the mean volume of lymphatic fluid was 936 ml, before combined decongestive therapy, and the mean volume of lymphatic fluid was 335 ml, after combined decongestive therapy (31).

Impressive results have been reported in large patients groups ranging from mild to severe lymphedema which received intensive combined decongestive therapy for two-three weeks (10). Patients who received some or all of the components of complete decongestive therapy, were shown to have significant reduction in the swelling of the arm after one year from the time of therapy. Koul et al. in their study stated that there was a 47% absolute reduction in lymphedema volume (10). In a study aimed to determine the effect of certain factors in lymphedema, the volume during complete decongestive therapy, of 537 patients which they followed for 12 months, a decrease was determined in the mean lymphedema volume after intense decongestive therapy (13).

In another study, researchers evaluated the lymphedema between the second and fourth weeks of complete decongestive therapy, and determined a 1.5 cm reduction in the arm circumference and 138 cm. decrease in lymphedema volume (22).

Persons who have decrease such as heart comdition, renal disease are not a good candidate fort this therapy, because they can not tolerate activated excessive fluid. Other condition complications are active cellulitis and deep venous thrombosis (11).

The components of complete decongestive therapy

Manual lymphatic drainage

Manuel lymphatic drainage therapeutic technique is used for reducing edema and symptoms related with edema by accelerating lymphatic drainage (10,32). The aim of massage along the extremity is to provide fluid drainage (24). It is administered by a trained therapist (26). This trained therapist can be a physician, nurse, physiotherapist who is educated in lymphedema therapy (24). Manuel lymphatic drainage, consists of hand motions by the therapist on the skin and subcutaneous tissue of patient. Applied pressure is very soft. For suiting the lymphatic pulse beat, applied motions are slow. Every maneuver is applied from distal to proximale.

Manuel lymphatic drainage stimulates the internal contraction of lymphatic channels. If interstitial space concentration of protein is reduced, it provides drainage of obstructed lymph fluid from local lymph nodes (33). In a randomized controlled study, Williams et al. found that manuel lymphatic drainage significantly reduced the blood volume and skin thickness. In the same study, the quality of life and emotional functions were also increased by using this technique (30).

Drainage time and application frequency changes according to lymphedema volume. Each extremity requires a 45 minute-period. Manuel lymphatic drainage, ideally, is a very superficial massage limited with finger and hand pressures around 30-45 mm Hg. It is a protective therapeutic precaution. The therapeutic aims of this therapy are to increase lymphatic drainage, decrease lymphedema, and avoid repetition of edema and decreasing tissue fibrosis. Acute cellulite, bacterial infection of body/extremity without control are the situations in which the existence of an arm infection because of arterial and venous closing and using renal dysfunction manual lymphatic drainage are contraindicated (33).

Compression therapy: Compression therapy increases tissue pressure, improves venous and lymphatic recycling, and provides blood flow into the initial lymph vessels. Pressure to the area on the lymph ducts, activates the muscles below lymph ducts by creating a soft and natural pumping mechanism. Compression, at the same time, provides a pressure contrary to muscle pressure and breaks the protein depressed in fibrotic arm and leg tissues (11, 33).

Compression therapy includes compression bandaging, compression dressing, static graduated compression tools and pneumatic compression tools (16, 33).

Compression bandaging: Compression is applied with short-stretch bandages. Short-stretch, inelastic bandages have high working pressure and principally use runner strength for muscular system (33). Compression bandaging is applied from distal to proximal after massage in order to make the fluid flow continue through new ways and avoids the fluid recycling to the edematous area (11, 15, 24).

Bandages, according to their features, are applied by trained lymphedema therapists. When the compression bandages are correctly applied, they help decrease swelling and pain. There are bandages in different sizes and they provide pressure at most to 50 mmHg from 20 to 30 mmHg (22).

Compression dressing: Compression dressing is necessary in order to reduce the increased risk of edema and compensate for the elastic inability of the skin after the decrease of volume. Compression dressing can be used instead of bandages in soft edema. Compression dressing,

- increases lymphatic flow and decreases the accumulated protein,
- increases venous return,
- shapes suitability and decreases the sizes of the arm,
- continues the skin wholeness, and
- protects the arm from probable traumas.

The success of compression bandaging and compression dressing depends on patient compliance and coordination (15, 33).

Static, graduated compression tools: Most patients are not suited for compression bandaging due to obese body shape, pain related to degenerative joint diseases, neuromuscular inability, chronic back pain or inefficiency in bandaging technique. Thus, static graduated compression tools are used for patients where compression bandaging is not indicated. These tools include sponge, plaster and collar. The effectiveness of these tools was not proved in controlled studies (33).

Pneumatic compression tools: Pneumatic compression tools are sometimes called pumps. They are used to treat acute and chronic lymphedema in order to activate extra lymph liquid in affected area. The usage of pneumatic compression tools is contraindicated in acute deep vein thrombosis and inflammatory edema. Those tools, in various sizes, are complicated and expensive. Generally, those tools work by applying regular pressure or various-degree pressure to an extremity. Available pressure changes between 0 and 300 mmHg. Therapeutic rate depends on diagnosis, but it is usually between 30-60 mmHg. The Total therapy period can be between 30 minutes and 6-8 hours depending on diagnosis, patient's situation and tools used. (33). Pneumatic compression tools have not determined guidelines related to optimum pumping pressures, length or frequency of session and necessities of therapy (24).

Exercise: Exercise is an important part of complex decongestive therapy for lymphedema management. Therapeutic exercise helps lymph flow and increases the reabsorption of proteins (22, 26). Exercise increases the physical function of the arm locally and systemically by stimulating the inner contractility of the lymph muscles (33). The primary role of the lymphatic system during exercise is to help the regulation of tissue volume and to create pressure by carrying liquid and plasma proteins emanated through interstitial interval from the tissue to the cardiovascular system (19).

It was determined that a six-week exercise and weight training program did not increase the risk of lymphedema developing or lymphedema symptoms in a randomized controlled study carried out (22).

In the study that Hayes et. al carried out (2008), it was determined that exercise did not aggravate the secondary lymphedema for women post breast cancer (34).

In the study Türk and Atalay carried out for mastectomy patients (2007), it was determined that, in the early post-operation period, the difference of the arm diameter of the experiment group of patients who exercised was insignificant in comparison with that of patients in the control group who did not exercise (35).

In a meta-analysis study carried out by McNeely et. al., it was determined that exercise was effective in increasing the physical function and quality of life of breast cancer patients (36).

Exercise is therapeutically used in some ways in order to affect lymphatic physiology and make the lymphedema volume decrease. Therapeutic exercises are divided into 4 main categories. Those are healing, aerobic healing, focal (special to related point) strength and training, and range of motion exercises. Ideally, each of those approaches must be skillfully included in an extensive program for maximum benefit (26,33).

Healing exercises include a group of very specific physical activities arranged in an order to increase the rhythmic and serial muscle contractions in the related area in the context of lymphedema therapy. Healing exercises are always applied by some external compressions (often armbands and bandages) to the arm. Healing exercises repeatedly apply pressure to lymph vessels by rhythmic contraction and muscle relaxation. This situation creates proper muscle contraction in lymph vessel walls. Also, when the external compression was sufficient, it was determined that an internal pumping mechanism increased the lymph flow through the arm (33).

Aerobic healing exercises activates the lymph vessels by a different mechanism. It develops cardiovascular health and increases venous and lymphatic return by the increased muscle contraction's effect on lymph vessels. It increases produced negative pressure lymph absorption by strongly pumping the proximal vessels. Not utilizing the aerobic exercises increases the risk of lymphedema by decreasing lymphatic drainage. External compression must be applied during aerobic activity in order to optimize those benefits (11, 15, 33).

Soft resistance strength training can be strengthening for the functional capacity of muscles. Gradually, it helps increase muscle strength and tones the muscle. Resistance training must be slowly proceeded by increasing the range of motion of the muscles (11, 15, 33).

Range of motion exercises must be applied to all joints in the area affected by lymphedema and proximal. Flexibility activities can decrease fibrosis, normalize biomechanics, develop posture, and increase the lymph flow. Range of motion exercises help to minimize the retention of soft tissue and decrease scarring that can avoid the lymph flow (11, 15, 33).

Although a large number of studies explain that exercise provides an important decrease in arm edema, nobody has developed specific exercise programs. The benefit of exercise is related to

compression. Accordingly, effective exercise programs have not been systematically developed yet (33). Many motions will stimulate the lymphatic flow and avoid excessive liquid aggregation (11, 37). Specific post-operative exercises must be recommended to patients to aid with the lymphatic circulation and to develop arm and shoulder motion. Once the wound is healed, gradual exercise programs must be safely encouraged in the form of powerful upper body exercises to encourage strengthening and an aerobics program (37).

Skin Care: The aim of skin care is to minimize the dermal colonization of bacteria and fungi, to remove the bacterial and fungal extension of chaps, to increase fluid intake in order to control the dryness, and to remove the chaps. Daily cleaning with oil-based mineral soaps removes the skin rash and bacteria from the environment while moisturizing the skin (33, 38). The skin must be cleaned with a nonabrasive soap. Low pH moisturizers must be used in order to maintain a healthy skin environment. It is important to keep the nails trimmed, but not to cut the cuticles. Manicures and pedicures are not recommended to the surgery side which could be affected by lymphedema because the unsuitable technique and improperly sterilized equipment can cause infection. The skin must be kept safe from traumas (15, 24, 28, 38).

The lymphedema patients must be informed about trying to avoid infection. Even a minor scrape on the skin can cause infection. It is necessary to keep away from situations that can damage the skin such as infection and not to have blood drawn from the affected arm. Extreme temperatures such as those found in heating pads or ice packs, pressure cuffs from taking blood pressure, tight dresses or wearing heavy jewelry on the surgery side arm(s) must be avoided (8, 15, 27, 29).

Result

Lymphedema is a complication arising from surgical treatment of breast cancer. Successful therapy for lymphedema requires early diagnosis and an approach of combined modality therapies. Nowadays, complete decongestive therapy is accepted as a standard care. This therapy which is effective in lymphedema management is a multidisciplinary approach requiring the input of a physician, nurse, physiotherapist, occupational therapist and sometimes psychologist. It has been shown that complete decongestive therapy consisting of manual lymphatic drainage, compression, exercise and skin care is the most effective treatment in managing lymphedema in the majority of patients.

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