Decongestive Lymphatic Therapy of Lower Limb Lymphedema

Essay

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Abstract

Introduction: Lymphedema is defined as swelling of a body part due to the accumulation of interstitial tissue fluid. It is caused by insufficiency, either physical or functional of the lymphatic system in circumstances in which capillary drainage is not increased, and has wide range of clinical manifestations and causes.

The combination of these therapeutic modalities is called decongestive lymphatic therapy (DLT). When the maximal therapeutic result is obtained, compression garments are then essential for long term management.

Aims: To broadcast and highlight the proposal methods and protocols for manual massaging and compression therapy of lymphedema and illustrate their effects for patients using this protocols.

Summary: Multilayer low-stretch bandaging which have limited extensibility under tension 50% is done immediately following manual lymph drainage followed by Made to measure Correct stocking guarantees efficient and successful CDT and therapeutic exercise is the final component of the CDT treatment program.

Neither medication for treating lymphedema is approved by the Food and Drug Administration nor LASER therapy has proved to have efficacy in lymphedema patients.

Keywords: Decongestive Lymphatic Therapy, Lower Limb, Lymphedema.

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Contents

List of Abbreviations

ABI : Ankle brachial index

AVM : Arterio venous malformation

BIS : Bioimpedance scanning

CDT : Complete decongestive therapy

CEUS : Contrast-enhanced ultrasound

CT : Computed Tomography

CVI : Chronic venous insufficiency

DVT : Deep venous thrombosis

LN : Lymph node

MLD : Manual lymph drainage

MRI : Magnetic Resonance Imaging

MRL : Magnetic resonance lymphangiography

NIR : Near-infrared

List of Figures

Introduction

Lymphedema is defined as swelling of a body part due to the accumulation of interstitial tissue fluid. It is caused by insufficiency, either physical or functional of the lymphatic system in circumstances in which capillary drainage is not increased, and has wide range of clinical manifestations and causes. (1)

The epidemiology of lymphedema is not exactly known because it is not a regular registered disease. The number of patients worldwide is estimated about 140-250 million.(2)

The lymphatic system consists of vessels and lymphatic organs. Lymph vessels are a one- way system. There is no central pump, and the lymphatics start as minute, blind ended, endothelial sacs in the intercellular space of all tissues except avascular structures as hair, nail, cartilage and retina. The brain and the spinal cord likewise do not have lymphatics. (3)

According to Clodius, the collateral lymph circulation between the watersheds in the presence of a blockage is what initiates lymphatic backflow toward the

dermis. Stimulation of this flow is one of the main principles of manual lymph drainage (MLD). (4)

The principle roles of the lymphatic system are:

1. Regulating the tissue pressure by preserving equilibrium between the amount of interstitial fluid, the capillary filtrate and plasma protein pressure
2. Immunological surveillance and facilitation of lymphocyte circulation
3. Absorption and transport of macromolecules, debris and chylomicrons. (5)

Based on patho-physiological considerations, lymphatic impairment can be relative or absolute. There is too much lymph production with a normally functioning lymphatic system, or there is a normal amount of lymph production with a diminished lymph transport capacity. These two opposites are called dynamic lymph insufficiency (high output failure) and static lymph insufficiency (low output failure), respectively. This distinction is essential in order to determine an optimal treatment program. Often, combination of these two insufficiencies is present. (3)

Lymphangiogenesis during embryology and in adults is an area of enormous progress. During embryogenesis, lymphatic development is closely related to the development of the blood vessels. In adults, lymphangiogenesis play a role in chronic inflammation and cancer metastasis.(6)

In most of cases of primary lymphedema, especially those presenting from puberty, a developmental disorder leading to lymphatic impairment is likely if no other external cause for lymphatic impairment is present. Both autosomal dominant and recessive patterns of inheritance have been observed in primary lymphedema and many single genes and syndromic forms have been described. (7)

Secondary lymphedema is much more common than primary lymphedema and is caused by damage to the lymphatic transport capacity, e.g., by infection, trauma, surgery, radiotherapy or combination of these. This classification is arbitrary because often a compensated primary lymphedema will become manifest after such events and is then erroneously called secondary lymphedema. There are suggestions that pre- existing factors in the lymphatic transport capacity determine whether one patient has a greater chance of developing lymphedema than another.(8)

In every patient with swelling of an extremity, the face or external genitalia, a diagnosis of lymphedema should be considered. History and physical examination are the cornerstones in diagnosis. In early stage lymphedema there is a reversible pitting edema which is sometimes difficult to diagnose. In more advanced stages with characteristic features of accumulation of macromolecules, fibrosis and interstitial inflammation, the diagnosis can easily be made by physical examination.(9)

Treatment of lymphedema is very challenging. Therapeutic options in lymphedema include conservative and operative modalities and should be individualized with regard to the circumstances of the patient. These circumstances include age, co-morbidities, psychosocial aspects and physical potentials. The goals for conservative treatment are to eliminate edema by reducing interstitial fluid production and to stimulate lymphatic propulsion by compression. In addition, lymph flow is stimulated by manual lymph drainage (MLD), sometimes with additional presso-therapy and by exercise to improve functional capacity. In order to minimize the risk of infection, maintenance of skin integrity and proper skin care are mandatory.(8)

The combination of these therapeutic modalities is called decongestive lymphatic therapy (DLT). When the maximal therapeutic result is obtained, compression garments are then essential for long term management.10)

Aim of the Work

To broadcast and highlight the proposal methods and protocols for manual massaging and compression therapy of lymphedema and illustrate their effects for patients using this protocols.