

A Model of Primary and Secondary Preventions of Lymphedema of Superficial Lymphatic System Using Warm Running Water and Massage

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Abstract

Background: Lymphedema is a localized form of tissue swelling resulting from excessive retention of lymphatic fluid in the interstitial compartment. There is no cure yet for lymphedema.

Aim: In this study, I propose a theoretical model, without any side effect, to prevent lymphedema or lymphedematous (the primary prevention) and to treat the disease at early stages (without any wound) that the severities of lymphedema are from 0 to 2 (the secondary prevention), of superficial lymphatic system including lymphonodi (such as the axillary and inguinal) and lymphangion.

Methods: Based on published medical data, physical principle of diffusion and our previous models of meridian channels, it is possible to drive the superficial lymphatic drainage to out of the skin through meridian channels and sweat and sebaceous glands as well as back to veins.

Modeling Results: With my model, during each treatment period, warm (30 – 40 °C) running water and facial washing force are used to mildly massage superficial lymphatic system including lymphonodi (such as the axillary and inguinal) and lymphangion for 5 – 10 times, one time per second, to clean skin surface and to unblock meridian channels. 1 – 3 treatment periods are performed daily.

Discussions: Because there is not any side effect, my model could be applied in future clinical trials.

Keywords: lymphedematous, lymphonodi, lymphangion, vein, meridian channel, sweat, sebaceous, glands, diffusion

INTRODUCTION

Lymphedema is a localized form of tissue swelling resulting from excessive retention of lymphatic fluid in the interstitial compartment. It is caused by impaired lymphatic drainage. There is no cure yet for lymphedema, and the objective for management is to limit disease progression and prevent complications. The most common treatments are a combination of manual compression lymphatic massage, compression garments or bandaging [1].

In our previous studies [2-5], based on medical data, physical chemistry, anatomy and histology, we modeled meridian channels as a physiological network system. We think, the meridian channel system is mostly constructed with interstices in or between systems

of the cardiovascular, lymphatic, integumentary, nervous, muscular, skeletal, endocrine, respiratory, digestive, urinary and reproductive as well as between the systems and fatty tissues; the meridian channel system does not have its own envelope, it just uses other envelopes of the physiological systems as its envelope; major components in the meridians are loosen connective tissues that consist of electrolytes, cells and proteins; the electrolytes provide rich fluids and ions for processing, propagation or transportation of information, matter and energy in the meridians. Similar to systems of the cardiovascular, lymphatic, endocrine, nervous, respiratory, digestive and urinary, the meridian channel system should be unblocked according to the theory of Chinese medicine. If the systems are blocked, some diseases could occur.

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In this study, I propose a theoretical model to prevent lymphedema or lymphedematous (the primary prevention) and to treat the disease at early stages (without any wound) that the severities of lymphedema are from 0 to 2 [6 - 8] (the secondary prevention), of superficial lymphatic system including lymphonodi (such as the axillary and inguinal) and lymphangion.

METHODS

Based on published medical data [1, 6-8], physical principle of diffusion and our previous models of meridian channels [2 - 5], it is possible to drive the lymphatic drainage out of the skin through meridian channels and sweat and sebaceous glands as well as back to veins.

The staging system to identify the severity of lymphedema is the same as that described by the

Fifth WHO Expert Committee on Filariasis, [6 - 7] and endorsed by the American Society of Lymphology [8].

MODELING RESULTS

The primary and secondary preventions have no side effects as long as there is not any wound.

During each treatment period, warm (30 – 40 °C) running water and facial washing force are used to mildly massage superficial lymphatic system including lymphonodi (such as the axillary and inguinal) and lymphangion for 5 – 10 times, one time per second, to clean skin surface and to unblock meridian channels; towels are used to dry skin after a treatment period. 1 – 3 treatment periods are performed daily. See Fig 1. The deep (profundal) lymphatic system is included in the figure, because there is a connection (or an integration) between the superficial and profundal lymphatic systems [13].

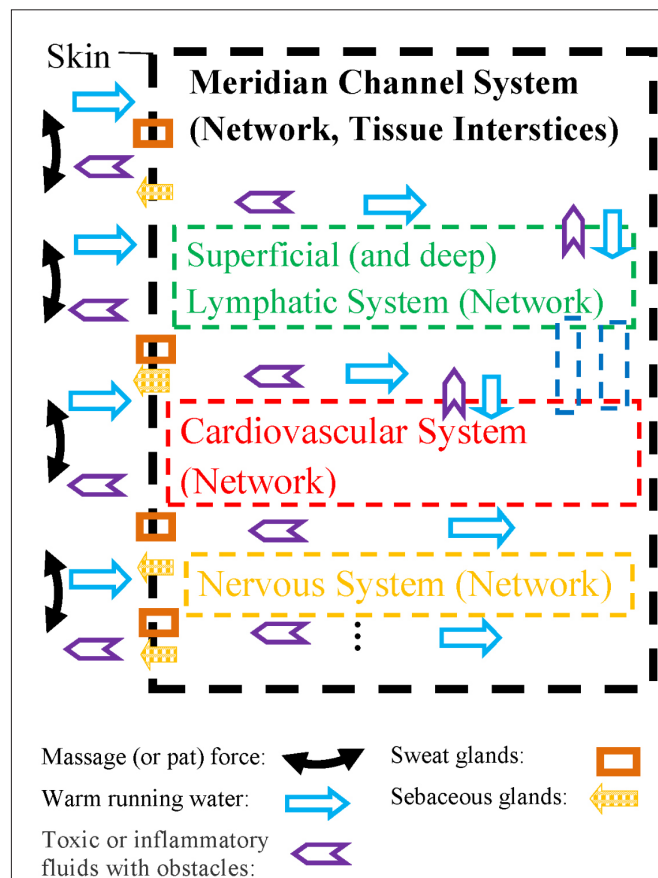


Fig 1. Block diagram of my model of primary and/or secondary preventions of lymphedema or lymphedematous of superficial lymphatic system using warm running water and massage: to drive the superficial lymphatic drainage out of the skin and to eliminate toxic (inflammatory) fluids with obstacles using a periodic clearing, i.e., expelling and diffusing via sweat (major) and sebaceous (minor) glands, meridian channels and others. Sweats are mixed in the effluent. The draw is not to the scale

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DISCUSSION

I believe healthy diet, moderate exercise [9–12], keeping our whole body clean and hygienic are very helpful to the preventions.

I think the principle of my model in this study is also useful to studies of tertiary prevention of the disease (the stages of severity of lymphedema are from 3 to 7 [6 - 8]) and profundal (deep) lymphatic system including lymphonodi and lymphangion as well as to that of lymphatic and hematopoietic cancers and breast cancers related to lymphedema [10 - 12] as long as there is not any wound in the treatment fields; and also believe I my model can be helpful to other similar investigations.

Because there is not any side effect, my model could be applied in future clinical trials.

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