

PRELIMINARY EVALUATION OF A NEW, MORE SIMPLIFIED PHYSIOTHERAPY TECHNIQUE FOR LYMPHATIC DRAINAGE

J.M.P. de Godoy, F. Batigalia, M. de F.G. Godoy

Departments of Cardiology and Vascular Surgery (JMPdeG) and Department of Morphology (FB), São José do Rio Preto University School of Medicine, and Clinical Center for Treatment of Vascular Diseases of São Jose do Rio Preto (MdeFGG), São Paulo, Brazil

ABSTRACT

The aim of the present study was to evaluate a new, more simplified physiotherapy technique for management of peripheral lymphedema. Fifteen patients (11 female, 4 male) with ages varying from 22 to 63 years (average 54 years) were included in this study. All presented with stage I or II lower limb lymphedema confirmed by lymphoscintigraphy. Each patient underwent a newly designed modified manual lymph drainage technique regularly performed five times a week, one hour per session after one month. The new technique consisted of utilizing sticks, rollers or other cylindrical, flexible, and malleable material which served as a lymph promoting drainage device.

All patients demonstrated a highly significant uniform reduction in girth of the leg affected by lymphedema (circumference reduction 2 to 4 cm; average 2.4 cm). After treatment, repeat lymphoscintigraphy suggested a generalized improvement in the scintiscans compared with the initial patterns.

This new manual lymph drainage technique efficiently reduces peripheral lymphedema and is less cumbersome and time consuming than standard combined ("decongestive") physiotherapy methods.

Clinical treatment of lymphedema took a major step forward in 1932 when Vodder

developed manual lymph drainage as a treatment technique after observing clinical improvement with special massage applied to patients with cervical lymphadenomegaly (1). During the ensuing 60 years, several contributors modified this procedure based on refinements in lymphatic system knowledge (2,3).

The term massage (commonly used as a synonym for drainage) derives from Greek (to knead) and it is defined as pressing with hands to different parts of the body to promote muscular relaxation. Drainage is a term that arises from hydrology and means to evacuate excess water through conduits. Accordingly, the analogy (4), as one applies manual lymph drainage, liquid is removed from the region involved.

According to current proponents, low pressure massage (~30 to 40 mmHg) (5,6) should be applied to limbs with lymphedema. It has been emphasized that translocation of liquid should be accomplished at the cutaneous and subcutaneous layers to optimize lymphatic drainage, and not be overly vigorous with "muscular bruising." Most popular methods involving complex physiotherapy are, however, very labor intensive, time consuming, and unwieldy.

The purpose of this study was to evaluate the effectiveness of a new, more simplified method for non-operative management of patients with chronic leg lymphedema.

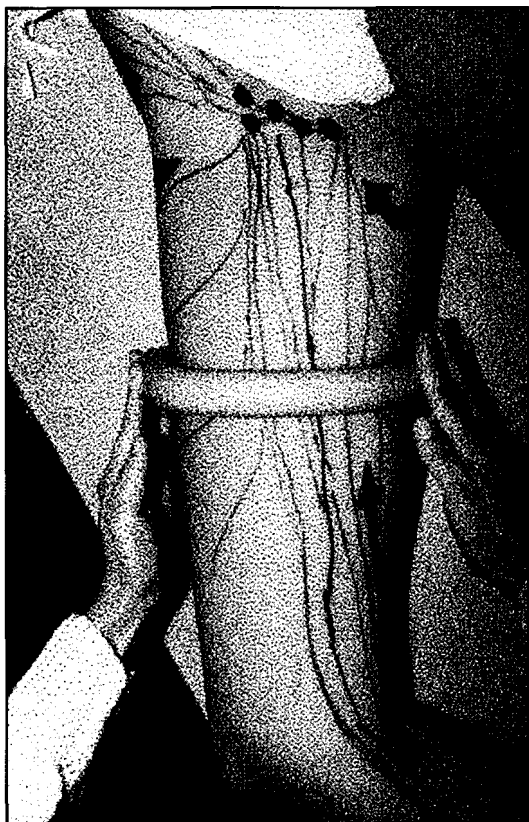


Fig. 1. The manipulation of rollers used to promote lymph drainage in patients with lymphedema.

CLINICAL EXPERIENCE

Fifteen patients (11 female, 4 male) (age 22 to 63 years; average 54 years) with lower limb lymphedema (primary and secondary) as confirmed by lymphoscintigraphy formed the clinical population for this study. Isotope lymphography involved subcutaneous injection of 20 Mbq (500 mCi) of technetium-99m colloidal antimony sulfide into the interdigital spaces of the feet. Frontal images of lymphatic drainage were made using a gamma-camera 45 minutes after injection in an Elscint SP 4 Haifa computed scintillation counter. Images were appraised by two experienced nuclear medicine physicians in a double-blinded fashion. Where there was

disagreement, the final decision was made by a third independent consultant.

Circumferential bilateral measurements of leg volumes were obtained at 10 cm intervals in each patient. All patients received the newly modified lymphatic drainage procedure (see Fig. 1) five times a week, one hour per session for one month. Initially, the neck regions were drained by means of downward "rolling" concomitant with respiratory excursions for 15 minutes. At the initial two sessions, both paramedian epigastric areas were "rolled" for 10 minutes followed by the groins and contralateral leg for another 10 minutes. Each of the regions was drained again for 5 minutes for a total of 1 hour. Only after the third session was the roller technique applied to the lymphedematous leg. After one month, the leg volume changes were determined. Lymphoscintigraphy was also randomly performed in five patients before and after "roller" manual drainage.

RESULTS

Each patient with leg lymphedema demonstrated a reduction in leg swelling ranging from a circumference of 2 to 4 cm (average 2.4 cm). After one month, lymphoscintigraphy uniformly showed improved radiotracer transport compared with the initial lymphoscintigraphic patterns. An example is shown in Fig. 2.

DISCUSSION

This new, simplified non-invasive technique for promoting lymph drainage effectively reduces the circumference of a lymphedematous leg as corroborated by improved radiotracer transport on lymphoscintigraphy. The main advantages of this new method are simplicity, ease of application, and ease in learning. Using "rollers" enables even minimally trained personnel to apply continuous and suitable pressure onto the skin and lymphatic vessels.



Fig. 2. Lymphoscintigram (image taken 45 minutes after subcutaneous injection) in a 62 year-old man with bilateral leg lymphedema (right leg worse than left leg) before (left) and 6 weeks after (right) “roller” lymphatic drainage. Note the improvement in radiotracer transport after therapy.

Another advantage encompasses the ability to maintain effective drainage without close physician supervision.

The material used as a roller must be flexible, malleable and soft to provide comfort for patients and protection for the skin. Roller diameters may vary from 2 to 3 cm according to the body area to be treated. We chose to use rollers composed primarily of foam (“integral skin”) for its suitable flexible characteristics.

Cautions should be exercised with the intensity of cutaneous pressure, speed of application, and maintaining a consistent sequence of lymphatic drainage methodology during each therapy session. Of particular importance is that this technique may be easily self-administered by the patient. In this preliminary study, lymphoscintigraphy demonstrated improved regional lymph transport in the lymphedematous leg after treatment.

REFERENCES

1. Casley-Smith, JR, J Casley-Smith: *High Protein Oedemas and the Benzo-pyrones*. JB Lippincott Company, Sidney, 1986.
2. Cordeiro, AK, FF Baracat: *Linfologia*. Fundo Editorial Byk Prociencx, 1983.
3. Földi, M, E Földi: *Lymphoedema. Methods of Treatment and Control*. English Translation Andrew C. Newell. 1st edition, New York, 1993.
4. Kurz, I: *Textbook of Dr. Vodder's Manual Lymph Drainage*. Publishers Karl F. Haug Verlag-Heideberg, 4th edition, Germany, 1997.
5. Nieto, S: *Kinesioterapia del Linfedema*. Symposium Zyma Sobre linfedema. Buenos Aires, Argentina, 1992.
6. Volgelfang, D: *Linfologia Básica*. Ícone (Ed.), São Paulo, 1995.

José MARIA Pereira de Godoy, MD
Rua Floriano Peixoto, 2950
CEP 15010-020
São Jose do Rio Preto
São Paulo, Brazil
E-mail: godoyjmp@riopreto.com.br