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Key Word

Compression therapy

Compression Therapy: A New Demonstration of Its Effectiveness

Compression therapy (CT) is the cornerstone of treatments of venous and lymphatic disorders. It is essential in acute alterations, as deep-vein thrombosis or superficial phlebitis, as well as in chronic damage like chronic venous insufficiency (CVI), gravitational dermatitis, lipodermatosclerosis, leg ulcers or lymphedema. CT is helpful in the prevention of thromboembolism too. Other indications include edema prevention in pregnancy, long and microgravity flights or softening of burn scars among others.

Compression may be achieved by different modalities as nonelastic bandages (Unna boot), multilayered wrapped dressings, short, medium and long stretch bandages, compression stockings or legging orthosis (Circ-Aid®). External pneumatic compression devices and mercury baths are alternative modalities.

The major criticisms of CT are the patient's compliance and the difficulty to apply hosiery or bandages to elderly patients. On the other hand, CT is highly cost effective.

Beneficial effects of CT have been well known for several centuries and have been demonstrated by numerous clinical studies. CT effects on vessels and tissues have also been largely investigated. CT mechanisms of action may be classified as:

venous: compression may achieve narrowing of veins, restoration of valvular competence, partial regression of parietal degenerative changes, reduction or suppression of venous reflux, diminution of venous pressure, acceleration of venous flow, improvement of venous pumping, diminution of venous pool and blood shift into the central compartment;

arterial: reduction of cutaneous arterial perfusion in a first step, then paradoxical improvement of arterial flow as a result of edema reduction;

lymphatic: improvement of lymphatic function and drainage;

microcirculatory: decrease in edema, acceleration of capillary blood flow, diminution of inflammatory mediators;

tissular: increase in intratissular pression, edema resorption, decrease in tissular protein concentration, softening of lipodermatosclerosis;

hematological: enhancement of fibrinolysis.

Numerous investigation techniques have been used to demonstrate these effects of CT, including echography, duplex sonography, phlebography, various plethysmographic devices, foot volumetry, peripheral venous pressure measurements, isotopic lymphography, xenon-133 clearance, radioactive tracers as labeled erythrocytes and albumin among others.

In this issue of *Dermatology*, Piérard-Franchimont et al. demonstrate another effect of CT on tensile properties of the skin in elderly patients.

CVI induces leg edema, which may be treated and prevented by CT. Skin distensibility is decreased at the site of edema. In this study, it has been objectively demonstrated that there is some reversibility of the maximum distension and hysteresis of skin alterations caused by gravitational edema after CT. This improvement consecutive to CT is quite interesting and might even be more demonstrative, if methodological problems did not oblige the authors to have their patients sitting inactive for 30 min after removing their hosiery. This condition induces edema in patients suffering from CVI and may impair the results of measurements.

Numerous methods demonstrate the effectiveness of CT in gravitational edema and other vascular alterations of the legs. Piérard-Franchimont et al. introduce a new technology, assessing this effect of CT. The study of tensile properties of the skin might also be used for the evaluation of phlebological treatments, as sclerotherapy or surgery in severe CVI, and for the objectivation of venoactive drug effects.

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