

## LYMPHOGRAPHIA

### SPONTANEOUS OPACIFICATION OF THE LYMPHATIC SYSTEM DURING VENOGRAPHY

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#### CASE REPORT

A 22 year old woman (primigravida) underwent lower limb phlebography to confirm suspected deep venous thrombosis of the calf. A superficial vein was cannulated on the medial aspect of the dorsum of the foot. Back-flow of blood was obtained and a test injection of normal saline was unremarkable. A tourniquet was placed just above the ankle and a non-ionic contrast agent (Iohexol-300 mg Iodine/100ml) was infused under fluoroscopic guidance.

Both the superficial and deep venous systems of the medial aspect of the calf were opacified but unexpectedly, filling of the medial group of lymphatics was also seen (*Fig. 1*). These lymph vessels were seen to follow the course of the greater saphenous vein (*Fig. 1A*); the superficial subinguinal lymph nodes were also demonstrated (*Fig. 1B*). The posterior tibial vein was detected at the ankle (*Fig. 1A*); however, the more lateral vessels in the calf were not opacified. Superior to the knee, contrast flowed more quickly in the veins and persisted in the subinguinal nodes and afferent lymphatics for several minutes longer (*Fig. 1B*).

The needle was removed and another injection site chosen. A subsequent venogram was uneventful and no thrombosis was seen. The patient did not complain of pain during the procedure. With mobilization, lower limb

edema resolved over the next few days, and no adverse effects were noted at the injection sites.

#### COMMENT

In the lower limbs, the anterior prefascial lymphatic trunks drain primarily a territory comprising the skin and subcutaneous tissues of the toes and the medial aspect of the ankle. These lymph vessels follow the course of the greater saphenous vein to the superficial inguinal nodes (*Fig. 1*). The superficial lymphatic system also consists of a lateral group of vessels not opacified in this study. The lateral lymphatics accompany the lesser saphenous vein and are connected to the popliteal nodes. The deep lymphatics are few in number and follow the deep blood vessels with connections to the popliteal lymph nodes.

During this venous study, an indirect lymphangiogram was inadvertently achieved presumably by the subcutaneous infusion of contrast medium with direct absorption into the lymphatic network. The contrast medium persisted in the lymphatics for several minutes longer than in the veins, reflecting slower flow in the lymphatics as well as gradual diffusion from the lymphatics and nodes into adjacent blood capillaries. This phenomenon has been previously observed during interstitial lymphography after distal interdigital



*Fig. 1. Visualization of leg lymphatics during peripheral venography. A: Fine thread-like anterior prefascial longitudinal lymphatics (arrowheads) are seen on the medial aspect of the ankle and calf, accompanying the greater saphenous vein. The transverse "band" seen just above the ankle is due to a tourniquet; B: Opacification of the superficial subinguinal lymph nodes (arrow) and its afferent lymphatics.*

injection of non-ionic contrast (1).

Conventional lymphatic imaging involves the introduction of direct oily contrast after cannulation of a lymphatic under direct

visualization after lymphatic coloration by blue dye. This time-consuming technique is typically a one-time procedure and occasionally is accompanied by pulmonary oil

embolism, local wound infection, reactive granulomatous adenitis and lymphangitis. With the development of computed tomography and magnetic resonance imaging to visualize lymph nodes, the use of conventional lymphography for purposes other than tumor imaging has virtually disappeared. Alternative approaches to visualize lymphatics are water-soluble lymphography, fluorescent microangiography and isotope lymphography. It is possible to detect precollectors by the subcutaneous infusion of Iotasul (2) and lymphatic capillaries using fluorescence microlymphography (3). Both methods cause only minor discomfort to the patient. The refined update of isotope lymphography as whole body lymphangioscintigraphy is consistently providing vivid images of peripheral lymphatics and insight into lymph flow dynamics. However, the intranodal architectural patterns seen well with oily contrast cannot be seen by these newer techniques, and lymph nodes cannot be routinely demonstrated by interstitial lymphography (1,2). Interstitial lymphangiography is recommended to evaluate lymphatic vascular disease but not nodal disease (1). Therefore, if the primary purpose of the examination is to outline lymph nodes, oily substances still represent the agent of choice.

This case report describes an unusual manifestation encountered during venography namely the visualization of peripheral lymphatics. The benign patient outcome tends to confirm the relative safety of interstitial lymphangiography as a technique when the newer low-osmolar non-ionic contrast agents are used.

#### REFERENCES

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