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Venolymphatic Communication

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In recent years there has been increased attentention to venolymphatic communications other than the well known thoracic duct subclavian vein junction. These communications serve as pathways when there is an increased lymphatic or venous pressure. There are only a few published cases of radiographic demonstration of these communications during lymphangiography (1, 2, 7, 8, 9). These cases confirm that contrast media can flow from the lymphatics into the venous system through these communications. However, to the best of our knowledge there has been no case report of reversal of this flow with visualization of the lymphatics of the lower extremity during venography, and therefore, we present this case.

This is the third admission for this 45 year old female complaining of progressive pain, swelling and reddish discoloration of the left lower extremity subsequent to stepping on a glass fragment approximately two months prior to this admission. On physical examination the left leg was red and hot with a two to three plus pitting edema. Peripheral pulses were intact. The patient's history included alcohol abuse with documented hepatic disease and severe anemia. One year ago the patient sustained multiple pelvic fractures, mostly on the right, following an automobile accident.

Films of the left leg revealed no evidence of osteomyelitis. Venograms of both lower extremities were done through one of the superficial veins on the dorsal aspect of both feet. Approximately 50 cc of Conray 60% was injected in either side. The examination was

Fig. 1a and 1b Radiograph of the left thigh and pelvis demonstrates the lymphatics of the left thigh (arrows) and inguinal lymph nodes (arrow heads).

S.F.V. = Superficial Femoral Veins

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Fig. 1b

normal on the right side. There was partial occlusion of the deep venous system of the left leg and thigh with simultaneous visualization of the lymphatic system from the ankle up to the left side of the pelvis including the inguinal lymph nodes (Fig. 1). There was an increased number of lymphatics which appear to be slightly dilated. The patient was treated conservatively for cellulitis and thrombophlebitis and was discharged after ten days with some improvement of the leg. Two weeks after discharge from the hospital the patient expired subsequent to severe ethanol intoxication.

Discussion

The presence of communication between the lymphatic and venous systems has been established. This communication can occur between the lymph nodes and veins, or lymphatic and veins. The excellent work of *R.F. Dunn* et al. (3, 4, 5, 6) documented that direct lymph node venous communications exist. This communication in the lower extremities has been shown anatomically in some cadaver specimens (8) between the lymph trunks of the saphena media group and long saphenous vein. The flow through such communication is noted to be from lymphatics to veins. This is believed to be due to higher lymphatic pressure compared to the venous system. This communication assumes added importance when there is lymphatic obstruction and an abnormally large amount of lymph is diverted into the venous system. This may result in pulmonary embolism when an oily contrast medium is used for lymphangiography. When there is no lymphatic obstruction, the usual thoracic duct-jugular tap will permit a slow transfer of a small amount of the oily contrast material into the venous system and subsequently into the lungs. Therefore the majority of patients to not show clinical symptoms after this examination. Under normal circumstances, the venolymphatic communications

are believed to be closed. However, they become patent when the lymphatic pressure increases (1–9). The compensatory shunting is temporary and stops entirely when the development of collateral lymphatics serves to reestablish the continuity of the lymphatic pathway. This occurs if the obstruction persists.

The reverse venolymphatic flow could be anticipated in deep venous occlusion of the leg. However, it has never been demonstrated. In deep venous thrombosis there is proportional dilatation of the subcutaneous lymphatics of the leg. The mechanism of this dilatation is not well known. It is possible that this dilatation be due to increased filling of the lymphatics secondary to an excessive amount of tissue fluid that is formed subsequent to increased venous pressure. There is also the possibility that increased venous tension is transmitted into the lymphatic trunks through direct venolymphatic communication. In our case the simultaneous visualization of the lymphatics during venography of the lower extremities uniquely demonstrates the reverse flow from the venous system into the lymphatics in the human, and supports the concept of a direct venolymphatic communication.

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