Peripheral Lymphatico-Venous Anastomoses

Report of Two Cases

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SUMMARY

Two cases of peripheral lymphatico-venous anastomoses are reported. These communications, which generally are only visualized in the presence of obstruction of the lymphatics, are of practical importance because of the potential danger of relative rapid transfer of oily contrast material into the pulmonary circulation. The existence and importance of these communications are discussed.

Additional Indexing Words:
Lymphography

Pulmonary oil embolization

The existence of communications between the lymphatic and the venous systems has been established. These communications may occur in the lymph nodes or between the lymphatic vessels and the veins. With the advent of lymphography, these communications have assumed practical importance since they provide a route for the sudden entrance of significant amounts of oily contrast material into the bloodstream, thereby resulting in undesirable and occasionally dangerous situations.

In recent publications, lymphatico-venous anastomoses have been demonstrated in the neck, retroperitoneal and pelvic areas, and thigh. In most instances, they were associated with obstruction involving the lymphatic system.

During the past few months, we examined two patients in whom the lymphograms demonstrated lymphatico-venous anastomoses in the distal leg and foot, one of which was not associated with obstruction. Such a peripheral site of lymphatico-venous communication has not been previously recorded. These two cases and a short review of this subject will be presented.

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Methods

All lymphangiograms were performed by the method described by Kinmonth. Following surgical preparation and cleansing of the dorsum of the feet, approximately 0.5 ml of patent blue-violet dye was injected intradermally between the first two web spaces. This dye rapidly entered the lymphatics. The skin on the dorsum of each foot was then infiltrated with a local anesthetic and the dye-filled lymph vessels were exposed by a surgical cutdown. These lymph vessels were cannulated with a 24 or 27-gauge needle and approximately 5 to 10 ml of Ethiodol (an iodinated ether of poppy seed oil) was injected into the vessels. A mechanical pressure injector was used. The time needed for the injection of the contrast material was usually between 20 and 45 minutes. At the end of injection, the needle was removed and the cutdown was closed with two or three 00-silk sutures.

Report of Cases

Case 1

This 16-year-old girl was seen in the hematology service of Barnes Hospital after biopsy of a cervical lymph node revealed Hodgkin's disease. As part of the patient work-up, a lymphangiogram was made. A lymphatico-venous communication in the foot was seen (fig. 1). The injection was immediately terminated on that side. Approximately 1.5 to 2.0 ml of Ethiodol was injected on the side of the lymphatico-venous anastomoses. On the contralateral side, a total of 8 ml of Ethiodol was injected. The time needed for injection was approximately 30 minutes.

Roentgenograms of the pelvis and retroperitoneal area showed extensive involvement and obstruction of the lymphatics in that region.
Figure 1

Case 1. Roentgenogram of the lower leg. The contrast medium is seen simultaneously in the veins and lymph vessels. Black arrows point to the typical appearance of oily contrast material in veins.

The patient tolerated the procedure well and exhibited no adverse clinical symptoms.

Case 2

This 26-year-old-man was admitted to the urology service of the Philadelphia General Hospital with a fungating ulcerating lesion of the entire foreskin of the penis, associated with balanitis and tender enlarged bilateral inguinal lymphadenopathy.

A lymphangiogram was performed. A total of 8 ml of Ethiodol was injected into each extremity. The time needed for injection was 30 minutes. The lymphangiogram showed only nonspecific inflammatory nodes of the pelvis (fig. 2). No obstruction was observed. Roentgenograms of the foot (fig. 3) showed the simultaneous filling of lymph vessels and veins in the distal part of the foot. A chest x-ray examination showed oil emboli in several small pulmonary arteries.

Partial penectomy was performed. The pathological diagnosis was condylomata acuminata with superimposed nonspecific infection.

Figure 2

Case 2. Lymphangiogram showing nonspecific inflammatory changes in pelvic and retroperitoneal vessels. No evidence of lymphatic obstruction.

Discussion

Since embryologically the lymph vessels originate from the developing venous network, communications between these systems may be expected. These can not usually be demonstrated radiographically unless the pressure in the lymph vessel is elevated as in lymphatic obstruction. Threefoot and associates\textsuperscript{6,7} demonstrated such communications in the retroperitoneum by using corrosion models as well as by injecting intralymphatically radioactively-tagged media and subsequently recovering this from the inferior vena cava. Pressman and associates\textsuperscript{12} demonstrated that air, bacteria, and large cells would pass directly from lymph nodes into veins.

Belan and co-workers\textsuperscript{13} demonstrated, by means of cineradiography, communications between the lymphatic and venous systems by way of the lymph nodes. Other case reports describing the existence of these communications, as seen on lymphograms, have been recorded.\textsuperscript{2-4, 8, 9, 11}
LYMPHATICO-VENOUS ANASTOMOSES

During lymphography, oil embolization to the lungs will occur. The usual thoracic duct-jugular tap will permit a relatively slow transfer of small amounts of the oily contrast material into the venous system and subsequently into the lungs. Fortunately, the great majority of these patients will exhibit little or no clinical symptoms when this occurs. The potential danger of the lymphatico-venous anastomoses, especially in the presence of lymphatic obstruction is that communication allows the relatively rapid transfer of large amounts of oily contrast material into the venous system and lungs. This may result in pulmonary infarction or in severe pulmonary insufficiency, especially if there is underlying lung disease. Life-threatening situations and deaths have occurred in these situations.

When the lymphatico-venous anastomoses are small and not associated with lymphatic obstruction, as reported in one of our cases, there is little likelihood of serious oil embolization and subsequent complications. Nevertheless, extreme caution must be exercised when these communications are demonstrated or are suspected.

References

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On Doubting

We doubt but do not deny. Our concept of doubt does not imply lack of respect for our contemporaries or lack of appreciation for the work of our predecessors. Our knowledge and wisdom are drawn in large measure out of the efforts of our predecessors. What appears erroneous, unreasonable or even naive today made much better sense against the background of yesterday’s more limited knowledge.

Doubt, as here conceived, implies humility and recognition of the fallibility of man, the fallibility of the doubter as well as of the doubted. Thus, the doubter must realize that even in some folktales an element of truth may lie, and he should never forget the lessons of foxglove, of cinchona bark and of Rauwolfia. Doubt recognizes the limitations of the human mind and thereby provides the stimulus whereby the mind of the doubter is led continually to enquire, to recognize the veils which obscure the truth, and to push them aside.—MAXWELL M. WINTROBE: Presidential Address: The Virtue of Doubt and the Spirit of Inquiry. Trans Ass Amer Physicians 78: 6, 1965.
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