

USE OF LYMPHSCINTIGRAPHY IN TRAUMATIC CHYLOUS ASCITES

F. Baulieu, J.L. Baulieu, D. Alison, J. Barsotti, R. Itti

Departments of Nuclear Medicine (FB, JLB, RI), Radiology (DA), and Surgery (JB), Trousseau University Hospital, Tours, France

ABSTRACT

This report describes the use of lymphoscintigraphy in a patient with traumatic chyloous ascites. Radioactivity "leakage" near the origin of the thoracic duct and accumulation into the peritoneal cavity were delineated.

Chyloous effusions may result from a variety of abnormal conditions, and pathogenesis often depends on examination of the fluid and contrast lymphography (1,2). The following case report illustrates the use of isotopic lymphoscintigraphy in diagnosis and management of chyloperitoneum.

CASE REPORT

A 25-year-old man sustained a self-inflicted gunshot wound of the liver and left hepatic vein. Eight days after operative repair, ascites was detected and abdominal paracentesis disclosed milky fluid which chemical analysis confirmed as chyle. Contrast lymphangiography at this time showed the cisterna chyli to be dilated and the thoracic duct was interrupted at the level of the 11th thoracic vertebra and "topped" by a patch of contrast material (Fig. 1). These findings were interpreted as obstructive dilatation of the initial portion of the thoracic duct and lymph leakage with local collection. Over the ensuing 12 days ascites decreased and lymphoscintigraphy was performed on the twentieth postoperative day to reevaluate the thoracic duct injury. 2mCi (74MBq) of ^{99m}Tc radiolabeled ammonium

sulfur colloid (Lymphoscint, Solabco Laboratory) were injected subcutaneously into the first and fifth interdigital spaces of both feet. Imaging was performed with a large field view camera (GE 53OT) interfaced with a computer (SOPHA SIMIS IV). One hour after injection, a thin band of activity between the left lobe of the liver and the left kidney was identified (Fig. 2a) consistent with leakage of chyle from the injured thoracic duct. Over the ensuing several hours, the abnormal radioactivity migrated and at 6 hours was visible in the right inferior part of the abdomen and in the pelvis (Fig. 2b). The scintigraphic observations were consistent with thoracic duct rupture adjacent to the liver injury with a small persistent lymph leak. Clinically the patient spontaneously improved without further therapy.

COMMENT

Chyloperitoneum may develop after traumatic rupture of the thoracic duct (3). A chyloous effusion is usually suspected from the milky appearance of the fluid and confirmed by biochemical analysis (4). On the other hand, milky effusion is not necessarily chyle and conversely chyle is not invariably milky (1,5,6), as the fat content of chyle depends largely upon dietary intake. Moreover, biochemical analysis of the fluid may be misleading in patients receiving parenteral nutrition (3).

The contrast lymphangiogram deline-

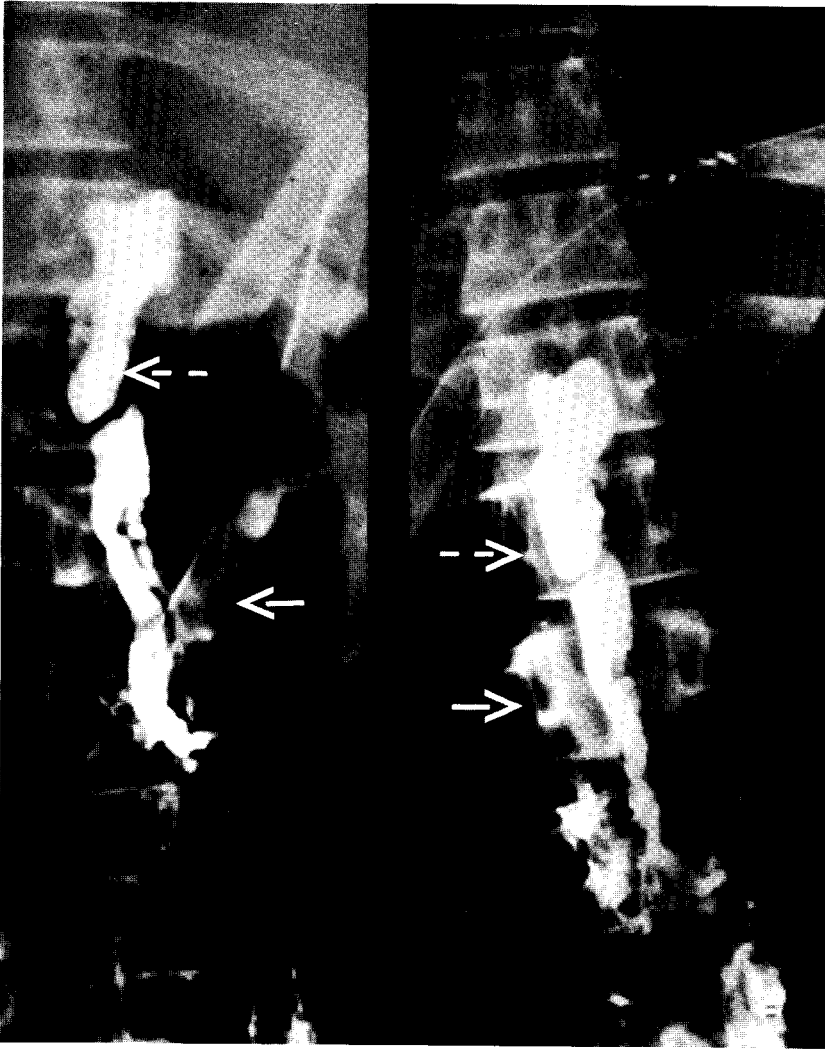


Fig. 1. Contrast lymphangiogram (24 hour post injection) in a 25-year-old man with chylous ascites 8 days after a gunshot wound of the left lobe of the liver and thoracic duct. Solid arrow displays dilatation of the origin of the thoracic duct and "dashed" arrow signifies a patch of contrast material above the injured thoracic duct between the 12th thoracic and 1st lumbar vertebra.

ated the origin of the ascites and the site of injury to the thoracic duct. This study provides high-quality imaging and anatomical details (2) but the procedure is technically cumbersome and use of an "oil" injected into lymphatics may induce lung complications especially in patients with limited pulmonary reserve (7).

Lymphoscintigraphy is based upon the physiologic transport of interstitially in-

jected radiocolloid. Although usually performed to stage visceral malignancy or to delineate structural abnormalities in peripheral lymphedema, lymphoscintigraphy has on occasion been performed to investigate chylous effusion. Gates used ^{198}Au injected into the foot followed by scintiscanning for identification of a neonatal chylothorax (8), Woolfenden visualized a non-traumatic chylothorax in an adult af-

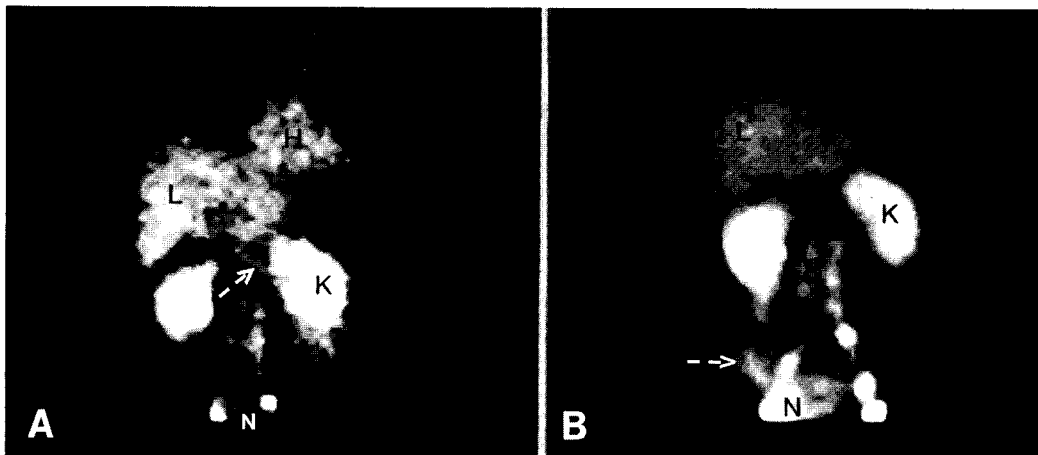


Fig. 2. Isotopic lymphoscintigraphy (1 hour post injection, anterior view) in patient described in Fig. 1 20 days after operation demonstrating leakage from the thoracic duct below the level of the left lobe of the liver (A) and 6 hours post injection migration of radioactivity (B). L = liver, K = kidney N = nodes, H = heart.

ter oral administration of ^{131}I triolein (9) and Mine demonstrated by radiocolloid scintigraphy leakage of lymph into the pleural cavity in a patient with non-traumatic chylothorax (10). As a physiologic and non-invasive technique isotopic lymphoscintigraphy may have particular merit to delineate chylous effusion particularly where contrast lymphography is contraindicated.

ACKNOWLEDGEMENT

The authors thank N. Mainet for the preparation of the manuscript.

REFERENCES

1. Freundlich, IM: The role of lymphangiography in chylothorax. A report of six non-traumatic cases. *Am. J. Roentgenol. Radium Ther. Nucl. Med.* 125 (1975), 617.
2. Shieber, W: The demonstration of thoracic duct abnormalities by lymphangiography. *Angiology* 25 (1974), 73.
3. Press, OW, NO Press, SD Kaufman: Evaluation and management of chylous ascites. *Ann. Int. Med.* 96 (1982), 358.
4. Lesser, GT, MS Bruno, K Enselberg: Chylous ascites. Newer insights and many remaining enigmas. *Arch. Int. Med.* 125 (1970), 1073.
5. Bessone, LN, TB Ferguson, TH Burford: Chylothorax. *Ann. Thorac. Surg.* 12 (1971), 527.
6. Roy, PH, DT Carr, WS Payne: The problem of chylothorax. *Mayo Clin. Proc.* 42 (1967), 457.
7. Silvestri, RC, JS Huseby, I Rughani, et al: Respiratory distress syndrome from lymphangiography contrast medium. *Am. Rev. Respir. Dis.* 122 (1980), 543.
8. Gates, GF, EK Dore, V Kanchanapoom: Thoracic duct leakage in neonatal chylothorax visualized by ^{198}Au lymphangiography. *Radiology* 105 (1972), 619.
9. Woolfenden, JM, TB Struse: Diagnosis of chylothorax with ^{131}I -triolein: Case report. *J. Nucl. Med.* 18 (1977), 128.
10. Mine, H, K Tamura, K Tanegashima, et al: Non-traumatic chylothorax associated with diffuse lymphatic dysplasia. *Lymphology* 17 (1984), 111.

Dr. F. Baulieu
Biophysique
Faculte de Medecine
BP 3223
37032 Tours Cedex, France