strated neutrophils in the inflammatory exudate and deeper granulation tissue. In the absence of pericolic abscess formation or extensive intramural hemorrhage, the localization of ^{111}In in the descending colon demonstrates uptake of neutrophils throughout the ischemic segment of bowel. This is compatible with an inflammatory response to ischemia.

This case confirms that [^{111}In]leucocyte imaging is useful in demonstrating noninvasively the anatomical extent of colonic disease, which may also suggest alternative diagnoses such as ischemic colitis. In cases of ischemic colitis, it may provide information as to the site and extent of the disease preoperatively. This technique does not give a pathological diagnosis and it is, therefore, important to pursue this with further appropriate investigations such as colonoscopy, barium enema, or even exploratory laparotomy.

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Chylothorax on Technetium-99m Antimony Sulfide Colloid Scan

TO THE EDITOR: Interstitial injection of a radiolabeled colloid will allow visualization of regional lymph nodes. We have performed lymphoscintigraphy in two patients with chylous pleural effusions. The studies were performed with technetium-99m (^{99m}Tc) antimony sulfide colloid and satisfactorily demonstrated the abnormal thoracic localization.

The first patient, a male infant, was born prematurely at 26 wk gestation. He required surgery for necrotizing enterocolitis, and received hyperalimentation for five months. This process was complicated by bilateral subclavian vein thrombosis related to subclavian venous line placement. At the age of 9 mo he was readmitted to hospital with increasing respiratory distress. He was found to have a right-sided pleural effusion that was tapped repeatedly but which continued to reaccumulate. It was noted to be chylous in appearance, and in an attempt to better characterize the mechanism of abnormal fluid accumulation, a radionuclide scintigram was performed.

After obtaining informed consent 100 μCi of [^{99m}Tc]antimony trisulfide was injected subcutaneously into the web space between the first and second toes of each foot. Using a low-energy, all-purpose collimator, 10-min images were obtained at 2, 4, 6, and 24 hr after injection. Overlapping images allowed visualization of activity in the lower limbs, abdomen, and thorax. Lateral and oblique views helped to localize abnormal foci of activity. By 2 hr activity was noted within the right hemithorax. This was more evident by 4 hr, at which time it was mainly at the right base in the supine position (Fig. 1). The patient subsequently died from respiratory failure complicated by bilateral pneumothoraces. There were fibrous adhesions involving the distal one-fourth of the thoracic duct and the great veins at autopsy.

The second case, a 7-yr-old girl, was initially seen with staphylococcal pericarditis. Treatment at that time included stripping of the pericardium on two occasions. During surgery, the thoracic duct was damaged, and was tied off in the upper mediastinum. She then presented because of persistent coughing. Chest x-ray showed bilateral pleural effusions and prominent vascular markings. Pulmonary function tests indicated a severe restrictive defect.

Symptomatically the patient deteriorated, with persistent pleural effusion and marked engorgement of pulmonary lymphatics. She slowly became hypoxemic and was prone to

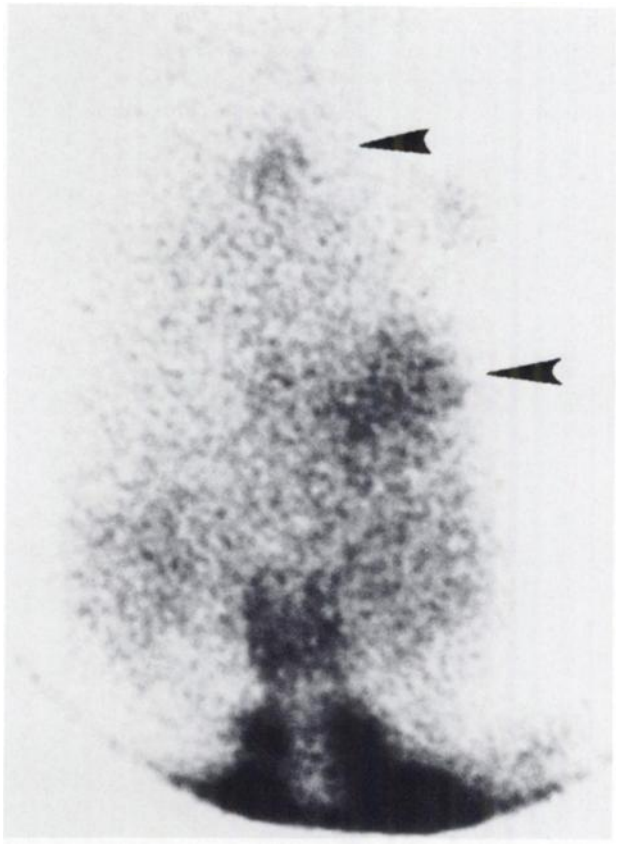

FIGURE 1
Posterior image obtained at 4 hr in 9-mo-old boy shows abnormal accumulation of activity in right lung, mainly at base (arrowheads). Activity is also noted in abdominal lymphatics and in liver and spleen

recurrent lung infections. There was no evidence for an immunologic disorder, and the sweat test was normal. She was maintained on a low fat diet that contained medium chain triglyceride, to limit the flow of lymph that was thought to be accumulating in her chest. There was no evidence of intestinal lymphangiectasia by upper GI series and realtime ultrasound but it was thought likely that she had congenital pulmonary lymphangiectasia with lung fibrosis, pleural effusions, and atelectasis. However her restrictive lung disease made her a poor candidate for open lung biopsy. Ultrasound showed homogeneous echogenic material in both pleural spaces, thought to be pus, blood or fibrosis, but not free fluid. A thoracentesis revealed blood stained fluid that contained fat-laden cells characteristic of lymph.

A [^{99m}Tc]antimony trisulfide colloid study was performed. After obtaining informed consent, 250 μCi was injected into the interstitial space between the first and second toes bilaterally. Sequential images were obtained as before. There was good visualization of inguinal, internal iliac and paraaortic lymph nodes. By 4 hr there was diffuse activity throughout both lung fields, and some localization in the liver and spleen (Fig. 2). The patient continues to do poorly and is managed symptomatically and with supplementary oxygen.

Lymphoscintigraphy has not been extensively utilized in children with problems relating to abnormal lymphatic drainage. Lymphedema of the lower extremities may be related to previous surgery, trauma, infection, neoplasm or to a congenital anomaly. The scintigraphic findings have been described in several case reports (*1–4*). Experimentally it has been shown that lymphatic involvement may be detected before clinical changes occur (*5*).

Equally important, lymphoscintigraphy has proved useful in demonstrating lymphatic leaks that may be either congenital or acquired (*6,7*). Such a leak may result in either chylous ascites or chylothorax. In such cases there is an abnormal accumulation of the radiopharmaceutical within the fluid collection.

The cases reported here confirm the utility of lymphoscintigraphy in patients with lymphatic leaks. In the first patient the etiology of the pleural effusion was clearly demonstrated. The second patient presented a difficult clinical problem. The persistent bilateral pleural effusions were thought to be due to either lymphangiectasia within the lungs, or a leak from the thoracic duct. The finding of prominent lung activity with some uptake in the liver and spleen, was interpreted as suggesting obstruction of the thoracic duct, with subsequent clearance from the lungs into the systemic circulation.

Lymphoscintigraphy, performed with [^{99m}Tc]antimony sulfide colloid, proved to be a useful study in the patients with chylothorax reported here. Although lacking in anatomic detail, useful information may also be provided in children with lymphedema, chylous ascites and possibly neoplastic disease. The study is simpler than contrast lymphangiography, which is infrequently performed in pediatric patients.

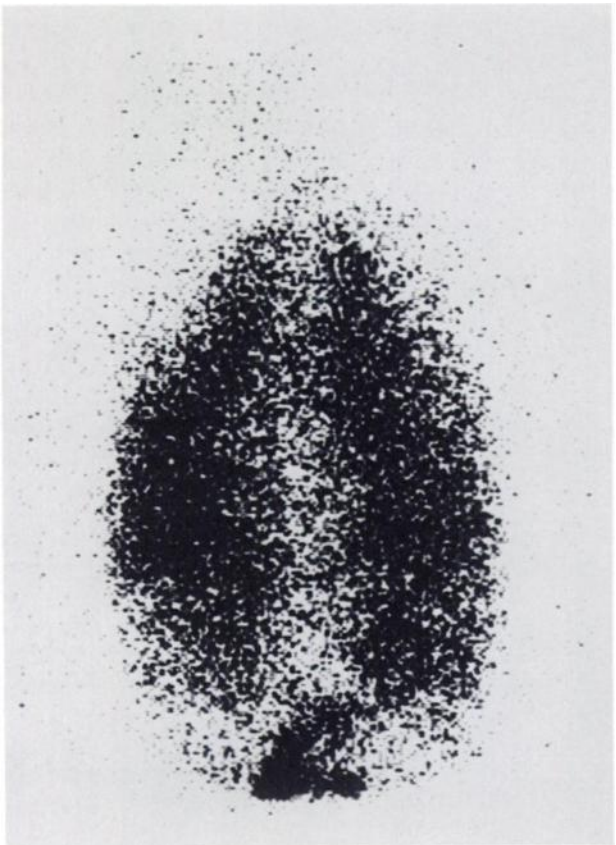

FIGURE 2
Lymphoscintigram in 7-yr-old girl demonstrates diffuse accumulation throughout both lung fields, shown in posterior projection. Uptake is also noted in liver and spleen

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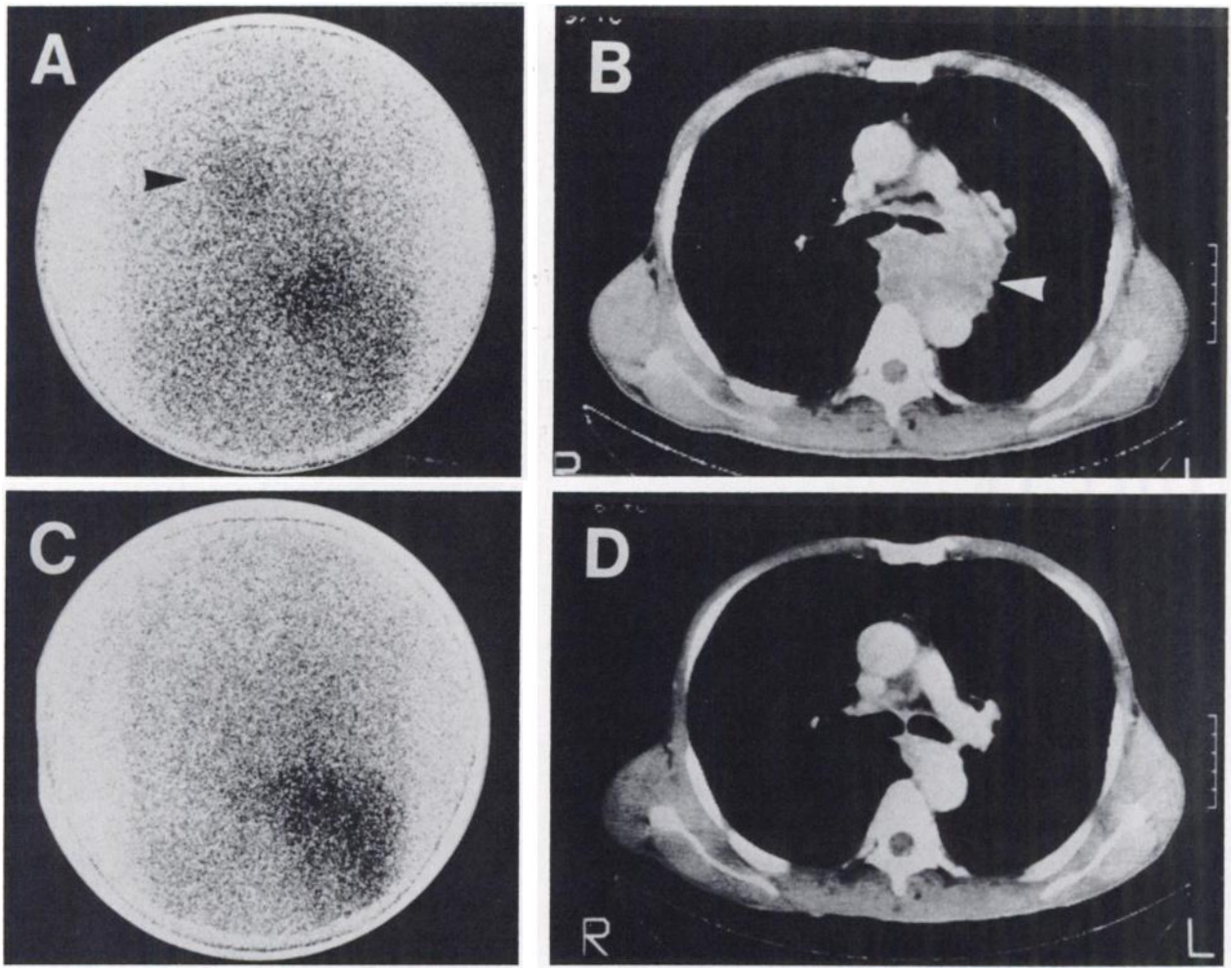

FIGURE 1
Pretreatment [^{131}I]MIBG posterior chest image (A) shows abnormal uptake (black arrowhead) in tumor which is delineated as irregular shaped mass involving left hilum and posterior mediastinum (white arrowhead) in CT image (B). After chemotherapy and radiation therapy, abnormal deposit disappeared (C). This finding is agreed with remarkable shrinkage of tumor in CT image (D)

Iodine-131 MIBG Uptake in a Small Cell Carcinoma of the Lung

TO THE EDITOR: Meta-iodobenzylguanidine (MIBG) is an analog of guanethidine, resembling norepinephrine (NE) in chemical structure (*1*). Iodine-131 (^{131}I) MIBG has been used to scintigraphically locate pheochromocytomas and neuroblastomas, and for treatment of these tumors. Besides these tumors, [^{131}I]MIBG uptake was also noted in a nonsecreting paraganglioma, carcinoid tumor, primary and metastatic medullary thyroid carcinoma. All these tumors are derived from the neural crest (*2*). The small cell carcinoma of the lung, which has in common with a variety of neuroendocrine tumors neurosecretory granules (*3*) and neuron-specific enolase (NSE) (*4*), has the potential to be delineated by [^{131}I]MIBG (*5*). We experienced a case of small cell carcinoma of the lung in which [^{131}I]MIBG uptake was observed in the tumor and disappeared after chemotherapy and radiation therapy.

A 56-yr-old man was diagnosed as having a small cell carcinoma of the left main bronchus by examinations of chest x-ray films and sputum cytology in April 1985. He was referred to our department for further examinations and therapy of his disease. On April 24–25, before his admission, [^{131}I] MIBG imaging was performed in this patient using a scintillation camera with dual detectors: After blocking of thyroidal uptake of ^{131}I and i.v. injection of 0.5 mCi of [^{131}I]MIBG, 24-hr anterior and posterior images were obtained from the skull to the pelvis. An abnormal deposit of [^{131}I]MIBG in the left hilar region (Fig. 1A) with clear portrayal of the salivary glands, liver, and urine bladder was noted in these overlapping images.

At admission on May 8, his symptoms included cough, hemosputum, dyspnea, and difficulty in swallowing. There were no symptoms suggesting hypercatecholaminemia. Blood pressure was 100/76 mmHg with a regular pulse rate of 90/min. The levels of plasma NE and epinephrine (E) concentrations and the urinary excretion rates of NE, E, normetane-