The patient is a 63-year-old woman with end-stage renal failure due to analgesic nephropathy. This was diagnosed in January, 1986 during treatment for high grade lymphoma (parotidectomy and chemotherapy). In July, 1987 the serum creatinine level reached 915 micromol/L. A Tenckoff catheter was inserted and continuous ambulatory peritoneal dialysis (CAPD) was started at a regimen of four exchanges of 2 L/day. Between July, 1987 and February, 1988, the patient suffered four episodes of peritonitis due to *E. coli* that responded to conventional cotrimoxazole intraperitoneal and oral therapy. In March, 1988, the patient complained of dyspnea. Physical examination evidenced a moderate bronchospasm with signs of right pleural effusion. There was no evidence of cardiac failure or infectious disease. A chest x-ray film confirmed the right pleural effusion (Fig 1). Thoracocentesis yielded 1,500 ml of a clear transudate. Cultures for bacteria, fungi and acid-fast bacilli were repeatedly negative. There were no malignant cells at cytologic examination.

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Figure 1
**Diagnosis: Hydrothorax secondary to CAPD**

We instilled 99mTc sulfur colloid into the abdomen with a 3 L dialysis exchange. Isotopic activity recordings showed a pathway from the peritoneal cavity into the right anterior cardiophrenic region, rapidly filling the pleural cavity (Fig 2).\(^1\) A tube was inserted into the right chest and dialysis limited to four exchanges of 1 L per day. No improvement occurred as ½ of the dialysis fluid drained through the chest tube. Right thoracotomy was then performed. No anomaly of the diaphragm and no peritoneo-pleural fistula could be seen. Six L of fluid dyed with methylene blue were injected into the peritoneal cavity and hyperpression was applied to the abdominal wall. No massive leakage of fluid into the chest resulted; only swelling of unstained diaphragmatic lymphatics was noticed. After the operation, long-term hemodialysis was planned, but due to a slight increase in residual renal function, the serum creatinine level stabilized at 500 micromol/L for a few months before it started to increase slowly again. Dialysis could therefore be interrupted for six months. The Tenckhoff catheter was eventually removed due to infection of the subcutaneous tunnel. The patient has been treated by hemodialysis since then, without further complications.

**Comment**

Hydrothorax is an uncommon complication of CAPD, occurring in less than 2 percent of patients.\(^\text{5,6}\) As in our case, no clinical or laboratory risk factor such as heart failure or hypoalbuminemia can usually be detected. It develops mostly between 15 days and one year after the beginning of peritoneal dialysis. Men and women are probably equally affected, but hydrothorax is much more common on the right side of the chest.\(^\text{4}\) Pathogenesis of this phenomenon is unclear. It may be caused by a transfer of the dialysis fluid to the pleural space along the phrenic lymphatics; these are more numerous on the right than on the left side of the diaphragm. Alternatively, the dialysate may flow through anatomic defects; these, too, are more common on the right side of the diaphragm. The operative findings in our patient support the lymphatic transfer theory.

Data from the literature suggest that about half the cases of hydrothorax will resolve after a short interruption of CAPD or with the use of small exchange volumes. Chemical pleurodesis may be attempted for the resistant effusions. Surgery should be regarded as a last resort measure, as successful repair has been more the exception than the rule.\(^\text{5,6}\) even when, as in our patient, isotopic tests suggest an anatomic defect. Khanna's recommendation that this complication requires permanent discontinuation of CAPD and a switch to hemodialysis remains, therefore, valid for about 50 percent of patients.\(^\text{7}\)

**References**