Peritoneal Dialysis and Pulmonary Function

Instillation of 2 L of dialysis fluid into the peritoneal cavity, through a temporary or permanent catheter (Tenckhoff) has long been used for the treatment of acute or chronic renal failure, or for removal of poisons. Intermittent peritoneal dialysis (exchange of 1 to 2 L of fluid every hour for 10 to 15 hours thrice weekly for renal failure) or more recently, continuous ambulatory peritoneal dialysis (CAPD) (exchange of 2 L of fluid every six hours, seven days a week) allows transfer of uremic solutes across the peritoneal membrane. Peritonitis is the major complication of CAPD, whereas in acutely-ill patients with renal failure, it is well recognized that intermittent peritoneal dialysis may give rise to several pulmonary complications such as atelectasis, pneumonia, purulent bronchitis, chronic pleural effusions, and, rarely, hydrothorax from diaphragmatic leakage of peritoneal dialysis fluid into the chest cavity, which can also occur in CAPD. Of more topical interest is the potential impairment of pulmonary function in the large number of patients (10,250 at June 1984, in the United States alone and rising by 200 per month) with end-stage renal disease managed by CAPD. The article in this issue of the Chest (see page 874) by Singh et al is, therefore, a timely one.

Other reports of pulmonary function in CAPD patients have shown that after insertion of the Tenckhoff catheter and initiation of peritoneal dialysis, in the first week of CAPD, a fall in functional residual capacity, and arterial oxygen tension (especially in the supine position with 2 L of fluid in the peritoneal cavity) was observed, with any such changes ameliorating at follow-up six months after beginning CAPD.

Similar findings have been observed early in CAPD although not associated with significant reduction in PaO₂ while others have observed no changes in pulmonary function late in CAPD. During the acute phase of bacterial peritonitis, however, pronounced falls in vital capacity and in arterial oxygen tension may occur.

There is little question that the volume of dialysis fluid instilled into the abdomen is important and the recent trend in adults toward using high volume (3 L or greater) low frequency (three times daily instead of four) CAPD is not tolerated by some patients because of the increased intraperitoneal volume and pressure associated with dyspnea and reduction in forced vital capacity and forced expiratory volume at one second.

Most of the above studies have been single acute studies in patients recently begun on CAPD or followed up at a time distant to the initiation of CAPD. Singh et al, on the other hand, have followed pulm-...
Cardiac Legionellosis

There is an expanding clinical spectrum of disease caused by the genus Legionella which now includes cardiac legionellosis. We recently reported a case of Legionella pericarditis and another group reported the first case of culture-proven Legionella endocarditis. Neither case was associated with pneumonia. Cardiac involvement during Legionella infection can present as pericarditis, myocarditis or endocarditis. All have been documented by direct fluorescent antibody (DFA) stain or culture. There have been five cases of Legionella pericarditis reported—three with pneumonia and two without. They have ranged in age from 13 to 53 (mean 32 years of age). Of those with pneumonia, one presented with tamponade responsive to periocardiodenstion, but required pericardietomy two days later for constriction without effusion. He recovered after erythromycin was started postoperatively. Another presented with a painless pericardial rub and paradox pulse in addition to pneumonia, but did not develop radiologic evidence of the pericardial effusion until the fifth hospital day, after which he was immediately started on erythromycin and recovered without sequelae. The third presented with pneumonia alone, but developed pericarditis with effusion on the tenth hospital day. Erythromycin was not begun until the 12th day and, although the patient recovered from the acute episode of pneumonia and pericarditis, pericardectomy was performed three months later for constriction. Both patients with pericarditis without pneumonia presented with fever and pericardial chest pain. Neither had upper or lower respiratory symptoms except for dyspnea in one which resolved promptly after thoracocentesis of a bilateral sterile transudative effusion. Both responded to anti-inflammatory agents without erythromycin, but one month later one suffered a relapse and the other underwent pericardectomy for constriction. The only extrathoracic manifestation which occurred in any patient with pericarditis, with or without pneumonia, was myalgia in four and asymptomatic mild sterile pyuria with proteinuria in one of these four. The only Legionella risk factors appreciated were the male sex in four, smoking in one and employment in a large public office building in another. Diagnosis was made by seroconversion in four and by culture of pericardial fluid in the fifth. Of those undergoing pericardectomy, none had positive culture, DFA or Dieterle stain of the pericardium. It is interesting that of the three patients requiring pericardietomy, one was an alcoholic who had a history of inadequately treated pulmonary tuberculosis ten years earlier and another had had mediastinal radiation for Hodgkin's lymphoma (with no evidence of recurrence) 17 years earlier. It is also noteworthy that the pericarditis patient escaping constriction or relapse was also the only one who received intravenous erythromycin not later than the day pericardial effusion became radiologically evident.

Myocarditis has been reported in two patients with Legionella pneumonia. Both of these had clinical or histologic/immunofluorescent evidence of widespread extrathoracic involvement. A 51-year-old woman who seroconverted to Legionella had rhabdomyolysis, renal failure, diarrhea and delirium associated with myocarditis presenting as congestive heart failure with elevated cardiac enzymes and transient changes in the electrocardiogram and thallium scan. The second case was an autopsy report of a 55-year-old alcoholic man who died of pneumonia complicating hepatic failure. Although there was apparently no evidence of congestive heart failure at post-mortem examination, focal nonspecific myocarditis without atherosclerosis was identified and DFA for Legionella demonstrated organisms in the heart, lungs, kidney and spleen.

Recently, a case of prosthetic valve endocarditis with Legionella pneumophila was reported. This patient