CORRESPONDENCE

Fibrosing Pericarditis in a Patient with Encapsulating Peritoneal Sclerosis

KEY WORDS: Encapsulating peritoneal sclerosis; pericarditis; tamoxifen.

Editor:

Encapsulating peritoneal sclerosis (EPS) is a rare complication of long-term peritoneal dialysis (PD), characterized by fibrosis of the peritoneum (1). The diagnosis is made upon clinical signs of bowel obstruction or ileus and radiologic or surgical findings.

In a renal patient, an association between the fibrosing diseases EPS and pericarditis has not been described. Here, we report a patient with EPS who developed a fibrosing pericarditis with cardiac tamponade.

CASE REPORT

A 35-year-old female renal patient of Turkish descent presented with abdominal discomfort and distension 3 days after minor abdominal surgery. She was first diagnosed with focal segmental glomerulosclerosis in 1985 and was started on hemodialysis (HD) in 1988. Three years later, she received a postmortem kidney transplant, which had to be removed after 7 days because of complications after a kidney biopsy. She was treated with HD again for 1 year before she received a kidney from a living related donor and started with cyclosporine.

Over the next 3 years, she was diagnosed with idiopathic thrombocytopenic purpura, Graves disease, and hepatitis C. Because of recurrence of the focal segmental glomerulosclerosis, her graft failed in 1998, and she started on continuous ambulatory PD using lactate-buffered glucose solutions (Dianeal: Baxter Healthcare BV, Utrecht, Netherlands). During the subsequent 5 years, her small-solute transport status changed from low-average to high. She developed ultrafiltration failure with an ultrafiltrate of less than 400 mL in a 4-hour 2000 mL dwell with 3.86% glucose. She experienced 1 peritonitis episode with *Pseudomonas aeruginosa*, which led to an interruption of PD for 2 months. Because of the ultrafiltration failure, it was necessary to increase her

dialysate glucose concentration. In addition, she was started on icodextrin and also needed a fifth exchange and restriction of fluid intake to 1 L. After much insistence, she finally approved transfer to HD after being treated with PD for 80 months.

In January 2007, the patient underwent an extirpation of the left adnexa because of a cyst. Three days later, she had clinical signs of ileus, which lasted for 6 days and was confirmed by computed tomography (CT) imaging. The imaging showed extensive calcifications along the intestines and thickening of the peritoneum (Figure 1). Earlier CT imaging had also shown ascites. In the following months, she began to complain of abdominal discomfort and distension, loss of appetite, and vomiting of old food. On physical examination, her abdomen felt indurated. Infection was ruled out, and based on clinical history and the CT imaging, she was diagnosed with EPS and treated with tamoxifen 20 mg twice daily. After some weeks, that

Figure 1 — (A) Left ovary, showing fibrosis of the capsule, with slight monocytic inflammatory infiltrates, proliferation of small vessels, fibrin, and signs of old bleeding. Hematoxylin and eosin stain, 10× original magnification. (B) Peritoneum showing compact fibrosis, slight inflammation, and fibrin. Hematoxylin and eosin stain, 10× original magnification. (C) Abdominal imaging by computed tomography shows extensive calcifications along the intestines and thickening of the peritoneum. (D) Pericardium, showing fibrosis and fibrin. Hematoxylin and eosin stain, 10× original magnification.

treatment resulted in clinical improvement: she started eating normally, and her bowel felt less indurated on physical examination.

In March 2008, the patient presented with chest discomfort and dyspnea. A diagnosis of pericarditis was suspected on clinical grounds and was confirmed by echocardiography. Cultures of the pericardial fluid were negative, as was serology for viruses and cytology studies for malignant cells. She reported no chest trauma, and her urea levels were not high. No other signs of familial Mediterranean fever or systemic lupus erythematosus were present, and she had no mutation of the Mediterranean fever (*MEFV*) gene. An anti-nuclear antibody test was negative.

Because of worsening clinical signs of pericardial tamponade, confirmed by ultrasonography, a fenestration of the pericardium had to be made. Biopsy of the pericardium showed a nonspecific fibrosing inflammation (Figure 1), and a diagnosis of an idiopathic chronic fibrosing pericarditis was made. The patient was treated with colchicine and prednisone, is still receiving tamoxifen, and is not experiencing any abdominal complaints at the moment.

DISCUSSION

This case history describes the appearance of two fibrosing entities in a former PD patient. After a prolonged PD period, the patient developed a severe form of EPS. Within a short period, she also developed a fibrosing pericarditis. This report appears to be the first on such a remarkably coincident presentation of these fibrosing diseases.

The diagnosis of EPS in this case was made because of clinical features of intestinal obstruction and radiologic signs on CT imaging. Although no consensus has emerged on specific pathology findings in EPS, biopsy of the peritoneum showed compact fibrosis, slight inflammation, and fibrin (Figure 1). The most prominent risk factor in our patient was the development of ultrafiltration failure (2,3), confirmed by high transport status in a peritoneal equilibration test conforming to the definition of the International Society for Peritoneal Dialysis. Other risk factors in our patient that likewise could have contributed to EPS development were her young age (2,4), use of icodextrin (2), use of a profibrotic calcineurin inhibitor within the time of her second transplantation surgery (2), peritonitis with *P. aeruginosa* (4), high cumulative glucose exposure (4), and discontinuation of PD after a switch to HD (3). Discontinuation of PD may predispose to EPS because of the termination of lavage of profibrotic factor.

Pericarditis has both infectious and noninfectious causes, which can be autoimmune, neoplastic, metabolic, traumatic, and drug-related. In our patient, all of the foregoing were excluded based on clinical grounds and specific tests. The literature contains only one report of the combination of sclerosing peritonitis and pericarditis—in a nonrenal patient, by Hunt *et al.* from 1975 (5)—probably attributable to the use of practolol, which is no longer in use.

The coincidence of these two fibrosing diseases is remarkable. This rare dual occurrence and the fact that both diseases presented within in a short period raises the question of whether a common cause is involved. Immunostaining of the pericardium and the peritoneal biopsy showed infiltrates consisting mainly of CD3+ T cells in both samples.

Reports of fibrosing pericarditis coinciding with other fibrosing diseases such as retroperitoneal fibrosis have also been published (6,7). Recently, a chronic inflammatory state was implicated in the pathogenesis of both retroperitoneal fibrosis and EPS. That finding is underscored by the presence of lymphocytes, macrophages, and (for instance) regulatory T cells in biopsies (8,9). Although the hypothesis is premature, the EPS and sclerosing pericarditis in our patient might be postulated to be the result of the same inflammatory fibrosing disease.

Tamoxifen has been associated with lower mortality in patients with EPS (10), and it produced a good result in our patient's abdominal symptoms. However, the suggestion has also been made that tamoxifen does not improve outcomes in patients with EPS (3), and spontaneous clinical improvement is well recognized. Ongoing fibrosis of the pericardium resulting in a cardiac tamponade in our patient presumably argues against tamoxifen.

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DISCLOSURES

None of the authors has any financial conflicts of interest to declare.

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REFERENCES

1. Chin AI, Yeun JY. Encapsulating peritoneal sclerosis: an unpredictable and devastating complication of peritoneal dialysis. *Am J Kidney Dis* 2006; 47:697–712.
2. Korte MR, Sampimon DE, Lingsma HF, Fieren MW, Looman CW, Zietse R, *et al.* Risk factors associated with encapsulating peritoneal sclerosis in Dutch EPS study. *Perit Dial Int* 2011; 31:269–78.
3. Balasubramaniam G, Brown EA, Davenport A, Cairns H, Cooper B, Fan SL, *et al.* The Pan-Thames EPS study: treatment and outcomes of encapsulating peritoneal sclerosis. *Nephrol Dial Transplant* 2009; 24:3209–15.
4. Hendriks PM, Ho-dac-Pannekeet MM, van Gulik TM, Struijk DG, Phoa SS, Sie L, *et al.* Peritoneal sclerosis in chronic peritoneal dialysis patients: analysis of clinical presentation, risk factors, and peritoneal transport kinetics. *Perit Dial Int* 1997; 17:136–43.
5. Hunt D, Frew JL. Letter: Pericarditis and peritonitis associated with practolol therapy. *Br Med J* 1975; 1:92–3.
6. Klisnick A, Fourcade J, Ruivard M, Baud O, Souweine B, Boyer L, *et al.* Combined idiopathic retroperitoneal and mediastinal fibrosis with pericardial involvement. *Clin Nephrol* 1999; 52:51–5.
7. Hanley PC, Shub C, Lie JT. Constrictive pericarditis associated with combined idiopathic retroperitoneal and mediastinal fibrosis. *Mayo Clin Proc* 1984; 59:300–4.
8. van Bommel EF, de Mol M, Langerak AW, Westenend PJ. Idiopathic retroperitoneal fibrosis mimicking malignant lymphoma. *Pathol Int* 2011; 61:672–6.
9. Wu J, Catalano E, Coppola D. Retroperitoneal fibrosis (Ormond's disease): clinical pathologic study of eight cases. *Cancer Control* 2002; 9:432–7.
10. Korte MR, Fieren MW, Sampimon DE, Lingsma HF, Weimar W, Betjes MG and the investigators of the Dutch Multicentre EPS Study. Tamoxifen is associated with lower mortality of encapsulating peritoneal sclerosis: results of the Dutch Multicentre EPS Study. *Nephrol Dial Transplant* 2011; 26:691–7.

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