Peritoneal Dialysis–Related Peritonitis Triggered by *Clostridium difficile*– Associated Colitis

Editor:

We present a patient with peritoneal dialysis (PD)–related peritonitis triggered by *Clostridium difficile*–associated diarrhea with colitis. In this patient, we suspect that the peritonitis was caused by transmural migration of the enteric bacteria, which did not grow in culture presumably because of the antibiotics the patient had already received for pneumonia.

A 63-year-old man who had been undergoing continuous ambulatory PD for approximately 12 years because of end-stage renal disease resulting from hypertension, presented with nausea, vomiting, abdominal pain, and cloudy dialysate for 2 days. He had also been experiencing diarrhea 3 – 4 times daily for about 4 days. Because of pneumonia, he had been treated with piperacillin–tazobactam for 10 days at another hospital.

Physical examination revealed hyperactive bowel sounds, abdominal pain and tenderness, and rebound tenderness on palpation. A white blood cell count in peritoneal effluent was 1160/mm³, with neutrophil predominance. Gram stain of effluent did not show any micro-organisms. Microscopy of stool revealed abundant leukocytes and erythrocytes, but no parasites. A stool *C. difficile* toxin B assay was positive.

The patient was diagnosed with PD-related peritonitis accompanying *C. difficile*–associated diarrhea; however, we could not find *C. difficile* or its toxin in peritoneal effluent. Peritoneal effluent and stool cultures did not grow any micro-organisms. After a microbiology evaluation, the patient was given an empiric antibiotic regimen consisting of cephazolin and amikacin intraperitoneally, and metronidazole orally. On day 3 of this treatment, he rapidly improved, and his effluent white blood cell count declined to 30/mm³. His diarrhea continued, however.

A rectosigmoidoscopy was then performed, and a segment of the colon up to 70 cm was examined. During the endoscopy evaluation, mucosal edema and patchy erythematous areas were seen. The endoscopic diagnosis was colitis. In addition, 2 sessile polyps were observed. On day 5 of metronidazole treatment, the diarrhea stopped. Intraperitoneal antibiotic therapy was given for a total of 2 weeks. Metronidazole therapy was continued for 10 days. The Tenckhoff catheter was not removed.

C. difficile causes antibiotic-associated colitis. It can result in a series of clinical manifestations, including asymptomatic carriage, *C. difficile*–associated diarrhea with colitis, pseudomembranous colitis, and fulminant colitis. Manifestations of *C. difficile*–associated diarrhea with colitis include diarrhea, lower abdominal pain, low-grade fever, and leukocytosis. Fecal leukocytes are present, and occult bleeding may be seen. Rectosigmoidoscopy may reveal any of a spectrum of findings, from patchy mild erythema to severe pseudomembranous colitis (1). On the other hand, in some cases, pseudomembranes may be absent in the rectosigmoid area, but may be seen more proximally with colonoscopy, which is not indicated for diagnosis of the infection (2). The diagnosis should be based on a laboratory test detecting *C. difficile* toxin or on endoscopic examination (1).

In the present patient, *C. difficile*–associated diarrhea with colitis was established. He had a history of antibiotic use for pneumonia. The *C. difficile* toxin B assay in stool was positive. Fecal examination revealed abundant leukocytes and erythrocytes. Mucosal edema and patchy erythematous areas were seen in rectosigmoidoscopy.

Culture-negative peritonitis may be attributable to either infectious or noninfectious causes. Infectious culture-negative peritonitis is usually a result of recent antibiotic exposure for an unrelated reason, technical problems during PD effluent culture, or unusual organisms (3). Recent antibiotic therapy was likely to have been the cause of culture-negative peritonitis in our patient.

The literature contains several case reports of *C. difficile* peritonitis, including a fatal case in a neonate (3–5). In addition, a case report noted that toxigenic *C. difficile* was isolated from effluent in a fatal case of PD-related peritonitis (6). In contrast, *C. difficile* itself did not seem to cause the peritonitis in our patient, because it was not isolated from effluent. However, an evaluation for *C. difficile* toxin A or B was not performed in PD effluent from our patient.

Metronidazole 500 mg orally 3 times daily for 10 – 14 days is preferred for the initial treatment of non-severe *C. difficile*–associated diarrhea in adults (7). In our patient, *C. difficile*–associated diarrhea with

culture-negative peritonitis responded well to metronidazole therapy for 10 days.

Keeping the present report in mind, *C. difficile* might potentially be considered the responsible microorganism in patients with culture-negative peritonitis and diarrhea.

DISCLOSURES

All authors declare that they have no financial conflicts of interest.

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