
Conflict of interest statement. None declared.

doi:10.1093/ndt/gfi157

Advance Access publication 1 November 2005

**Treatment of peritoneal dialysis related fungal peritonitis with caspofungin plus amphotericin B combination therapy**

Sir, Fungal peritonitis is a rare but serious complication of peritoneal dialysis (PD) and is associated with significant mortality. Observational studies suggest that it accounts for approximately 2–7% of PD related peritonitis, but it can be difficult to clear, can result in catheter loss and can frequently lead to conversion to haemodialysis [1–3].

**Case.** A 65 year-old male patient on automated peritoneal dialysis (APD) for almost two years was admitted with a 24 h history of dysouria and fever. He had a history of recurrent urinary tract infections during the last 3 months. He had received multiple antibiotic regimes for three different pathogens and was carrying an indwelling urinary catheter. He had no prior episodes of PD-related peritonitis.

On admission, his temperature was 38.5°C, pulse 100 bpm and blood pressure 120/70 mmHg. His abdomen was slightly distended and he had pain on the pubic area with no rebound or guarding and normal bowel sounds. The PD catheter exit site did not show any evidence of infection. Laboratory investigation was remarkable for leucocytosis. Urine examination revealed severe pyuria. A urine culture was taken and he was empirically started on i.v. ciprofloxacin, as pyelonephritis was suspected. However, during the first 24 h after admission, he started complaining for abdominal pain and distension, a cloudy peritoneal fluid was noticed and the diagnosis of peritonitis was made. He was transferred to continuous ambulatory peritoneal dialysis and was put on intraperitoneal administration of cefuroxime and tobramycin, according to our PD-related peritonitis treatment protocol.

However, on the third hospital day, fungi were isolated from his urine, blood and peritoneal fluid cultures. The previous regime was stopped and he was started on fluconazole i.p. and i.v. and liposomal amphotericin B i.v. The patient remained febrile, complained of severe abdominal pain and became hypotensive. As the patient was becoming septic, the PD catheter was surgically removed and a right internal jugular venous catheter for haemodialysis was placed. The isolated pathogen was *Candida albicans* resistant to all azoles and sensitive only to amphotericin B. The patient remained febrile (39°C) and hypotensive for the next six days despite treatment with amphotericin B, without any signs of improvement. Caspofungin (Candidas®) 50 mg daily was added to his regimen and he became afebrile after three days of caspofungin plus amphotericin B therapy. The combined therapy was administered for a total of fifteen days without any adverse effects.

**Comments.** Fungal peritonitis is uncommon, but by no means rare (2–7%). It is associated with significant mortality (20–30%). Prior use of antibiotics, the immunosuppressed state, diabetes mellitus and malnutrition (low serum albumin levels) are risk factors for fungal peritonitis [2–4].

Our patient had received multiple antibiotic regimes in the past three months for recurrent urinary tract infections without any antifungal prophylaxis and he was carrying an indwelling urinary catheter. He also had evidence of candidaemia and systemic candidiasis, as *Candida albicans* was isolated from the urine specimens, blood cultures and peritoneal fluid. A possible explanation for the peritonitis episode might be the urinary tract colonization with fungus, as the patient had received many antibiotics without antifungal prophylaxis, resulting in candidaemia and peritonitis through the haematogenous route. Early removal of the PD catheter might have contributed to our patient’s favourable outcome in a way, but the patient did not improve and remained febrile, even after six days of amphotericin B administration. The addition of caspofungin to the initial regimen seems to have contributed to the favourable outcome, as the patient became afebrile only after three days of combination therapy.

There is no established therapy for fungal peritonitis and most centres use combination therapies with variable success. Most authorities suggest early PD catheter removal, because the catheter is usually contaminated with fungi [4]. Echinocandins is a new class of antifungal agents and caspofungin was the first of the class been licensed. There is only one report in the literature regarding caspofungin use in peritoneal dialysis, but no report of combination of caspofungin with amphotericin B. Madariaga *et al.* have described a patient intolerant to amphotericin B who presented peritonitis due to *Trichosporon inkin* and had a favourable outcome by caspofungin administration [5].

In conclusion, we report a case of fungal peritonitis due to *Candida albicans* resistant to azoles, with signs of systemic candidiasis (candidaemia) that responded to a combination therapy with caspofungin and amphotericin B without adverse effects. We do not suggest the routine empirical use of caspofungin for fungal peritonitis in PD as the available data are very limited, but our favourable outcome might indicate the addition of a new antifungal agent in our armamentarium against severe and life-threatening fungal infections in patients undergoing peritoneal dialysis.

Conflict of interest statement. None declared