Case Report

Peritonitis in continuous ambulatory peritoneal dialysis due to *Cylindrocarpon lichenicola* infection

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**Introduction**

Continuous ambulatory peritoneal dialysis (CAPD) is a well established form of renal replacement therapy, used for approximately 45% of patients with end-stage renal failure in the UK. The most common serious complication of CAPD is bacterial peritonitis which is the commonest cause of treatment failure in the majority of patients on CAPD [1]. Fungal CAPD peritonitis is less common and is usually due to *Candida* species [2] and more rarely aspergillus. We report the first case of fungal peritonitis due to *Cylindrocarpon lichenicola*.

**Case**

A 42-year-old woman on CAPD was admitted to our unit with a 6-day history of abdominal pain, cloudy dialysate effluent, and vomiting. Three days prior to admission she had returned from a 6-week holiday in Kingston, Jamaica. Whilst on holiday she had developed symptoms and signs of peritonitis, she was treated with intraperitoneal antibiotics for 10 days, and the dialysate effluent cleared after 7 days of treatment. Six days after discontinuing treatment her symptoms returned, she did not seek further medical advice because she was returning to the UK.

She developed nephrotic syndrome in 1985, renal biopsy revealed type I mesangio-capillary glomerulonephritis. Since commencing CAPD in 1995 she had had three episodes of peritonitis: in March 1996 with a growth of mixed organisms, April 1997 secondary to a pyosalpinx and September 1997 secondary to *Corynebacterium* sp. In November 1997, she developed a *Staphylococcus aureus* exit site infection which was treated adequately with oral antibiotics for 2 weeks. Her admission medication was as follows: 1-alpha calcidol, omeprazole, erythropoietin and calcium carbonate. On physical examination she looked well, she had a low grade fever (37.6°C) and moderate rightsided abdominal tenderness, bowel sounds were present and there was no evidence of peritonism. Close inspection of her Tenckhoff catheter revealed a fungal hyphal ball (Figure 1).

**Fig. 1.** (a,b) Tenckhoff catheter with a fungal hyphal ball in it.
PD effluent was sent for microscopy and culture, her PD catheter was disconnected and the distal end sent for microscopy and culture. Microscopy of the contents of her PD catheter revealed fungal elements (Figure 2). Microscopy of PD effluent showed 200 leucocytes/μl, no micro-organisms were seen on a gram stain but culture yielded a light growth of a fungus, subsequently identified as *Cylindrocarpon lichenicola* which was resistant to both amphotericin and itraconazole.

She was treated with intravenous and intraperitoneal amphotericin, however her symptoms failed to improve and 48 h following admission her catheter was removed. Her symptoms resolved and she was discharged home well on haemodialysis.

**Discussion**

A variety of non-Candida fungi have been reported, including *Exophiala*, *Aspergillus*, *Fusarium* and *Tricosporon* [2]. This is the first reported case of *C. lichenicola* peritonitis. The *Cylindrocarpon* species are ubiquitous saprophytic soil fungi. They are known to be a rare cause of eye infection and have been implicated in mycetoma. Disseminated infection in a patient with acute myeloid leukaemia has been reported [3]. The macroscopic appearance of *Cylindrocarpon* sp. is similar to *Fusarium* but the microscopic appearance of their macroconidia may be used to distinguish the genera. The relevance of our patient’s travel history is unclear, but the time course suggests that the infection was acquired in Jamaica. The relatively benign course of our patient’s infection is in contrast with the outcome of infection with *Aspergillus* species [4] which although rare carries a high mortality, partly related to the severity of other underlying diseases and delay in diagnosis.

In most large studies, fungal infection accounts for 1–15% of cases of peritonitis [5]. The vast majority of cases are due *Candida* species (mainly *Candida albicans*).

The clinical features of fungal and bacterial peritonitis are similar with fever, abdominal pain and a cloudy dialysate being the cardinal signs. Occasionally, fungal peritonitis may take a more prolonged course than in cases secondary to bacterial infection. The gram stain is often negative and the causative organism may take several days to grow. Some studies have shown that the yield is significantly better from culture of the Tenkoff’ catheter [6]. Electron microscopy of catheters have shown that the organisms form an amorphous matrix on the surface thus making eradication difficult without catheter removal [7]. Management of fungal peritonitis almost invariably includes catheter removal. In cases of fungal peritonitis due to candida, some investigators have treated patients without removal of the Tenko catheter [8]. However, this should be reserved for patients in whom vascular access is impossible for haemodialysis or for those patients refusing catheter removal. Various antifungal regimes have been described; treatment may be guided by *in vitro* sensitivity results. It is of interest that our patient recovered despite treatment with amphoterocin to which the organism appeared resistant *in vitro*.

Infection is the most common complication of peritoneal dialysis, being an important cause of morbidity and mortality in renal patients. Prevention is important with good sterile techniques and attention to predisposing factors. The use of antibiotics has been shown to be a risk factor for fungal peritonitis [9]. However, the underlying cause for renal failure or the presence of immunosuppression do not appear to correlate with the incidence of fungal peritonitis [10].

Although fungal peritonitis is a relatively rare occurrence, it should be borne in mind in any patient with apparent culture-negative peritonitis. Attempts should be made at culture of the catheter and in cases in which it is difficult to isolate the organism, treatment may have to be instituted on clinical grounds alone. In this way the high mortality associated with this condition may be reduced.

**Fig. 2.** Microscopy of the contents of the patient’s peritoneal dialysis catheter. Gram stain × 100 magnification demonstrating fungal elements.

**References**

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