Trichoderma Harzianum Peritonitis in Peritoneal Dialysis

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Dear Sir,

Fungal peritonitis is a rare [1] but feared complication of peritoneal dialysis [2], leading to significant mortality and morbidity [3, 4]. Diagnosis is difficult, because fungus peritonitis usually follows a bacterial episode [1,5] and clinical features that may be confused with a bacterial relapse are similar [6]. Negative gram stain and slow culture may be attributed to the recent antimicrobial therapy, and treatment is inappropriately directed towards the previous germ. This explains a delayed diagnosis, leading to serious complications like abdominal abscess [7], peritoneal sclerosis [8], relapse, or death [4, 9, 10]. A quick appropriate treatment is needed to avoid complications and sometimes catheter removal [5]. Candida species are the most frequently involved yeast [2, 4, 9, 11], but the list of fungi is expanding [10]. Unusual yeast species reported are Verticillium [1], Trichosporon [6], Lecythophora [10], Exo-phiala, Fusarium, Drechslera [12] or Bipolaris [13], Torulopsis [14], Rhodotorula [8], Aspergillus, Nocardia [11], Aureobasidium [15]. We observed a severe fungal peritonitis due to Trichoderma harzianum, a soil myco-parasitic fungus used as a biocontrol agent for its ability to produce antibiotic and fungal cell wall degrading enzymes [16].

A 82-year-old hypertensive non-insulin-dependent diabetic man initiated peritoneal dialysis in December 1992. Peritoneal dialysis was chosen because he had an advanced dilated hypertensive cardiomyopathy. He experienced several peritonitis episodes due to Staphylococcus epidermidis (July 1993),

Enterobacter aerogenes (September 1993), and Acinetobacter (November 1993, July 1994, February 1995). A Pseudomonas aeruginosa episode due to a catheter exit site infection led to catheter removal (April 1995). He relapsed on July 25, and an intra-peritoneal netilmicin and oxacillin antimicrobial therapy was initiated. Poor response after 72 h prompted us to institute an intra-peritoneal ceftazidime/amikamycin and intravenous vancomycin regimen. On the 12th day, peritoneal fluid remained cloudy and an unidentified yeast grew, then oral ketoconazole and intraperitoneal 5-fluorocytosine were substituted. Unfortunately the patient's condition worsened, and he died on August 14.

The yeast strain was subsequently identified as T. harzianum by the Institute Pasteur, Paris, where the strain was sent. The yeast was sensitive in vitro to amphotericin B, nystatine,

miconazole, ketoconazole and econazole; it was resistant to 5-fluorocytosine and clotrimazole.

A Medline search failed to find any report of a human *T. harzianum*-associated pathogenic effect. The clinical features confirm that a fungal agent should be suspected early when a peritonitis occurs following bacterial episodes in the last 3 months. If gram stain and conventional cultures are negative and dialysis fluid remains cloudy after a 48-hour conventional antimicrobial course, a prompt antifungal treatment should be considered, as proposed by Cheng et al. [6].

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