Mycobacterium Abscessus: A Case Report Of Peritoneal Dialysis Peritonitis

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Abstract: Peritonitis due to mycobacterium abscessus in peritoneal dialysis (PD) patients is rare. Mycobacterium abscessus is a rapidly growing mycobacterium (RGM). RGM are opportunistic pathogens, mostly affecting compromised patients as those with end stage renal failure, who received continuous ambulatory peritoneal dialysis (CAPD). However, when it occurs, PD catheter removal is required in most cases because of resistance to antibiotic therapy. We report a case of Mycobacterium abscessus peritonitis within a week after PD catheter insertion. The mycobacteria were identified as M. abscessus by rpoB gene and due to drug resistance, PD catheter removed. Culture negative peritonitis should alert nephrologists to look for atypical mycobacteria.

Keywords: Peritonitis, mycobacterium abscessus, Rapidly growing mycobacterium.

Introduction

Mycobacterium abscessus is a rapidly growing mycobacterium (RGM). Infections caused by the RGM have received greater clinical attention in recent years because of their increasing rate of the infection. RGM are opportunistic pathogens, mostly affecting compromised patients as those with end stage renal failure, whom received continuous ambulatory peritoneal dialysis (CAPD)

As renal replacement therapy (RRT)12. Reports of RGM exit site infection and peritonitis in PD patients are rare13. We report here a PD peritonitis cased by M. abscessus.

Case report

A 65-year-old man known end stage renal disease (ESRD) hypertensive etiology on PD as RRT.

He had been on CAPD since April 2009. The PD access was achieved through double cuff coiled Tenckhoff catheter which was inserted surgically. One week post insertion he developed severe exit site infection manifested as purulent discharge from the exit site and peritonitis presented with turbid effluent, fever and abdominal pain. He received empirical treatment of intra peritoneal (IP) cefazolin and ceftazidime in addition to topical gentamicin at the exit site. The effluent and swab from the exit site revealed no growth by normal routine culture. There was vancomycin IP was commenced as a second line treatment but with poor response. A whole effluent bag was send to the central microbiology laboratory for reculture. The dialysate analysis revealed a total white blood cell count of 1400 cells/cubic millimeter [73% neutrophil and 27% lymphocyte], and negative result of the direct gram stain and Ziehl-Neelsen stain. Culture was done by inoculating 5ml from the effluent directly into brain heart infusion broth (BHI) and similar volume into thioglycollate broth medium. Subculture was done day 5 on MacConkey agar and blood agar medium (incubated aerobically at 37°C) and chocolate agar (incubated in candle gar) up to 3 days, in addition to sabouraud dextrose agar (incubated at 37°C and at room temperature) up to seven days. The isolate was identified as M. abscessus by rpoB gene sequencing. The PD catheter was removed on June 2009 and transferred to hemodialysis. The patient received ciprofloxacin and gentamicin according to the sensitivity test for three weeks with good clinical response.

Discussion

Rapidly growing mycobacteria are defined as mycobacteria that show growth within seven days. They are common inhabitants of the environment, found in water and soil worldwide. Their presence in the environment and resistance to the commonly used disinfectants can result in infection due to contamination of instruments during procedures.
Coagulase-negative staphylococcus, *Staphylococcus aureus*, and Gram-negative bacteria are the most commonly encountered pathogen in PD patients. Peritonitis or exit site infection in long-term dialysis patients due to rapidly growing mycobacteria is rare. *M. fortuitum*, *M. abscessus*, *M. chelonae* and *M. simiae* were reported to cause infections in dialysis patients.

*M. abscessus* is one of the most antibiotic resistant species of the pathogenic RGM. *M. abscessus* isolates have been determined to be uniformly resistant to all antituberculosis drugs including isoniazid, rifampicin, ethambutol, and pyrazinamide. Thus, routine treatment with antituberculosis drugs is not recommended for this species. In a series of 74 clinical isolates of *M. abscessus* the susceptibility pattern were as follow: amikacin (99%), cefoxitin (99%) and clarithromycin (91%) were active against most isolates. Moxifloxacin (73%), ciprofloxacin (57%) and imipenem (55%) had activity against a moderate number of isolates. Doxycycline (7%) and tobramycin (36%) were the least active. However, *M. abscessus* is not an easy organism to treat. Prolonged combination of multiple antibiotics and peritoneal dialysis catheter removal was required in most cases. A combination of amikacin, ciprofloxacin and clarithromycin were used successfully for the treatment of peritoneal dialysis peritonitis caused by *M. abscessus*. In this report, the case was treated by a combination of ciprofloxacin and gentamicin for three weeks.

Differentiation between RGM is important for treatment reasons. Some species had a unique susceptibility pattern of resistance. *M. smegmatis* group and *M. fortuitum* third biovariant complex sorbital positive are intrinsically resistant to the new macrolides, including clarithromycin. Since clarithromycin has been considered the cornerstone of antimicrobial therapy for RGM infections, it becomes vital to identify RGM isolates to the species level. The use of conventional tests alone are unable to differentiate between RGM because of their overlapping biochemical features.

Gene sequencing of 16S RNA, 16S-23S rRNA internal transcribed, sodA, hsp65, and rpoB gene contributed to the identification of RGM, but the discriminatory power of the analysis for some genes was limited by the high sequence similarity between species of RGM. *M. abscessus* is indistinguishable from *M. chelonae* and *M. massiliense* by partial 16S rRNA gene sequencing. 16S-23S rRNA internal transcribed can distinguish between *M. abscessus* and *M. massiliense* but cannot differentiate *M. abscessus* from *M. chelonae* or *M. bolletii*. rpoB gene has high discriminator power to distinguish between RGM. In this report we identified the clinical isolate using rpoB gene sequencing. The isolate had 99% identity with the previously published rpoB sequence for *M. abscessus*. In conclusion: Culture of atypical mycobacteria is necessary in individuals with peritonitis culture negative and failure to respond to the initial antibiotic therapy. Atypical mycobacterial infection should be considered in such conditions. Our results should raise awareness of the clinicians for this type of infection.

**References**


