CASE REPORT

Rothia dentocariosa Repeat and Relapsing Peritoneal Dialysis-Related Peritonitis: A Case Report and Literature Review

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Abstract

Peritonitis is well recognized as the Achilles tendon of peritoneal dialysis (PD). Reoccurrence of peritonitis due to the same organism, defined as either repeat or relapsing peritonitis under the 2005 guidelines by the International Society for Peritoneal Dialysis, often results in PD technique failure. Rothia dentocariosa, a low-virulent human oropharynx commensal, is a rarely reported pathogen in human infection, particularly infective endocarditis. R. dentocariosa PD-related peritonitis is exceedingly uncommon yet potentially results in repeat or relapsing peritonitis which requires catheter removal. We report a case of R. dentocariosa repeat and relapsing peritonitis in a PD patient who was treated successfully with antimicrobial therapy.

Keywords: peritoneal dialysis, repeat peritonitis, relapsing peritonitis, Rothia dentocariosa

INTRODUCTION

In the 2005 recommendations for the management for peritoneal dialysis (PD)-related infection management, the International Society for Peritoneal Dialysis (ISPD) had outlined the distinction between repeat, relapsing, and recurrent peritonitis. Common organisms involved include Staphylococcus aureus and Pseudomonas aeruginosa. Rothia dentocariosa is a pleomorphic gram-positive bacteria classified under the genus of Rothia. It can be found in human oropharynx as an innocent commensal. Rarely, R. dentocariosa may turn up as the unexpected pathogen in serious human infection, most commonly being infective endocarditis. R. dentocariosa PD-related peritonitis was, however, exceedingly uncommon. This organism draw our attention for its potential in causing relapsing or repeat PD-related peritonitis and high technical drop-out rate. We describe here a case of R. dentocariosa repeat and relapsing PD-related peritonitis which was successfully treated with antimicrobial without the need for catheter removal.

CASE REPORT

The patient was a 58-year-old gentleman with polycystic kidney disease. He was on hemodialysis from November 2007 till September 2008 before switching to continuous ambulatory peritoneal dialysis (CAPD) for personal reasons. He was doing well on CAPD until June 2009 when he presented with first episode of peritonitis. The peritoneal fluid culture grew Escherichia coli. He responded well to a 2-week course of intraperitoneal (IP) ceftazidime. Two weeks later, he again presented with classical symptoms of peritonitis. He had abdominal pain with cloudy peritoneal fluid. Dialysate fluid leukocyte count was 1400/μL (90% polymorph). He was treated empirically with IP cloxacillin and ceftazidime. He responded well with resolution of PD fluid leukocytosis within 5 days. The peritoneal fluid culture grew a peculiar organism of gram-positive rod. It was tested sensitive to amikacin, ciprofloxacin, amoxillin/clavulanate, ceftriaxone, trimethoprim, and vancomycin. In view of the good clinical response to the antibiotic regime and the doubt about the significance of the unusual organism, the IP antibiotic was maintained and completed for 3 weeks. Soon after that, the organism was eventually identified as Rothia spp. by the microbiologist. He developed another episode of peritonitis within 2 weeks after completion of the first course of antibiotic. The PD fluid again grew gram-positive rods which were rapidly recognized as Rothia spp. by the laboratory. He was treated with IP ciprofloxacin and amikacin following the sensitivity report. The
peritonitis resolved rapidly following the antibiotic. He again completed a 3-week course of IP antibiotic.

He remained well thereafter until March 2010 when he experienced his fourth episode of peritonitis. The culture of PD fluid grew the same gram-positive rod which was identified swiftly as *R. dentocariosa*. This episode of peritonitis was treated successfully with a 3-week course of IP vancomycin. As this organism was originally found in periodontal disease, he was referred to the dentist for oral assessment to rule out any persistent source of *R. dentocariosa* infection. The dental assessment showed good oral hygiene with negative culture from the gum swab.

Since then he had no more peritonitis. He was switched to continuous cycler peritoneal dialysis in April 2010.

**DISCUSSION**

On contrary to its presence as a naive commensal in human pharynx, *R. dentocariosa* had been repeatedly isolated from various cases of human infection notably infective endocarditis. Its association with vertebral osteomyelitis, pneumonia, and sepsis in immunosuppressed patients also had been reported.

The terms recurrent, repeat, and relapsing peritonitis have been used loosely. In 2005, ISPD published new guidelines on PD-related peritonitis. The terminology of peritonitis had been revised. Any recurrent episode of peritonitis caused by the same organism is defined as either repeat peritonitis if the interval is more than 4 weeks or relapsing peritonitis if the interval is less than 4 weeks. The term recurrent peritonitis is used for the description of episodes of peritonitis caused by different organisms.

*R. dentocariosa* PD-related peritonitis is extremely rare. From literature search via PubMed, only three cases of *R. dentocariosa* PD-related peritonitis had been reported. Interestingly one of the case reported involved similar scenario of repeat peritonitis. From the detailed review of the case report, we found the case description of recurrent peritonitis, if we adhere strictly to the ISPD 2005 guidelines, should otherwise be defined as repeat or relapsing peritonitis as the organism responsible was the same. These three reported cases involved two males and one female with age ranging from 41 to 66 years (Table 1). There was no similarity in terms of comorbidity, epidemiological background, and antimicrobial regimes used. *R. dentocariosa* was isolated from dental culture in two of the patients. Different antimicrobial regimes, including IP cefazolin plus netilmicin, oral amoxicillin/clavulanate plus intravenous amikacin, and IP vancomycin/gentamicin plus oral trimethoprim-sulfamethoxazole were described. All three patients were reported to respond to antimicrobial therapy but two of them had Tenckhoff catheter removed subsequently for recurrent or relapsing episodes of peritonitis.

In our patient, he responded well to two separate courses of antimicrobial, namely IP ciprofloxacin/amikacin and IP vancomycin given for 2 and 3 weeks, respectively. In contrary to the previous reports, our patient recovered with antimicrobial therapy without the need for catheter removal. His dental culture was negative for *R. dentocariosa*.

The association of *R. dentocariosa* in infective endocarditis suggesting hemogenous is the likely route of spread. The presence of *R. dentocariosa* in any infection should prompt one to look for dental plaque or caries which may cause low-grade bacteremia.

Its predilection for prosthetic valve also explains the potential of *R. dentocariosa* in causing relapse or repeat peritonitis in the presence of peritoneal catheter as foreign body. *R. dentocariosa*-related peritonitis should be treated aggressively with antimicrobial for appropriate duration. High technique failure rates following *R. dentocariosa*.

**Table 1. Summary of published cases on *Rothia dentocariosa* PD-related peritonitis.**

<table>
<thead>
<tr>
<th>Case</th>
<th>Age/ gender</th>
<th>Etiology of kidney failure</th>
<th>Years on PD</th>
<th><em>R. dentocariosa</em> from dental culture</th>
<th>Antibiotic therapy</th>
<th>Antibiotic duration</th>
<th>Outcome</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>66/M Gouty nephropathy</td>
<td>10</td>
<td>Undefined</td>
<td>PO AMX/CLA + IV AN&lt;sup&gt;a&lt;/sup&gt;</td>
<td>14 days</td>
<td>Cure&lt;sup&gt;b&lt;/sup&gt;</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>50/M Undefined</td>
<td>2</td>
<td>Yes</td>
<td>IP CFZ + NET</td>
<td>Undefined</td>
<td>Cure</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>41/F Ureteric reflux</td>
<td>10</td>
<td>Yes</td>
<td>IP GM</td>
<td>7 days</td>
<td>Repeat peritonitis after 5 weeks</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>IP VM + GM + PO TMP-SMZ&lt;sup&gt;c&lt;/sup&gt;</td>
<td>14 days</td>
<td>Relapse peritonitis after 18 days</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>VM + GM + TMP-SMZ&lt;sup&gt;c&lt;/sup&gt;</td>
<td>2 weeks post catheter removal</td>
<td>Cure after catheter removal</td>
<td></td>
</tr>
</tbody>
</table>

Notes: AMX/CLA, amoxicillin/clavulanate; AN, amikacin; CFZ, cefazolin; NET, netilmicin; GM, gentamicin; VM, vancomycin; TMP-SMZ, trimethoprim-sulfamethoxazole; IP, intraperitoneal; IV, intravenous; PO, oral.

<sup>a</sup>Patient was initially treated with oral TMP-SMZ but discontinued for leukopenia and thrombocytopenia.

<sup>b</sup>Peritoneal catheter was removed subsequently for “relapsing peritonitis.”

<sup>c</sup>Vancomycin and gentamicin were started as the initial regime. Oral TMP-SMZ was added later on.
related peritonitis were noted from literature review. However, complete cure with proper antimicrobial therapy is possible without catheter removal. In our opinion, the duration of microbial therapy is crucial.

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**REFERENCES**


