Case Report

Mycobacterium fortuitum Peritonitis in a Patient Undergoing Continuous Ambulatory Peritoneal Dialysis

Takashi Ando, Munekazu Ryuzaki, Michiko Handa, Tsunejiro Sekita, Takashi Sakurai

We report here one case of Mycobacterium fortuitum peritonitis in a patient undergoing continuous ambulatory peritoneal dialysis (CAPD). Owing to scarce clinical findings specific for this infection, the catheter was removed and CAPD abandoned. Clinicians must consider this type of organism if refractory peritonitis is encountered. Precise and prompt diagnosis and commencement of adequate antibiotic(s) may alter the prognosis of this disease. [Hong Kong J Nephrol 2003;5(2):101–4]

Key words: Mycobacterium fortuitum, peritonitis

INTRODUCTION

Recent advances in disconnecting technology have greatly reduced the incidence of peritonitis in patients undergoing continuous ambulatory peritoneal dialysis (CAPD). Although many cases of successful treatment have been reported recently [1–3], both mycobacterial and fungal peritonitis represent troublesome complications and they remain major and serious problems for both patients and clinicians. Encapsulating peritoneal sclerosis (EPS) is a late complication in CAPD patients that is also a worrisome and unsolved problem [4]. It has not been fully elucidated how refractory peritonitis contributes to EPS.

Several cases of Mycobacterium fortuitum peritonitis associated with CAPD have been described since 1983 [5]. Owing to the difficulty in early diagnosis and prompt commencement of adequate antimicrobial agents, catheter removal has been recommended to date [5,6]. Here, we report the case of a Japanese CAPD patient who suffered from M. fortuitum peritonitis, treated by catheter removal, and who recovered with no symptoms of EPS.

CASE REPORT

A 59-year-old Japanese male patient was found to have chronic renal failure due to glomerulonephritis in 1994. He was started on hemodialysis in August 2001, at the age of 66 years, when he was uremic and severely malnourished. Due to patient preference, hemodialysis was stopped in the same month and CAPD was commenced. He was admitted to hospital on November 24, 2001 with complaints of cloudy peritoneal dialysis fluid and weight gain.

On admission, his body temperature was 37.3°C and his body weight was 10 kg above his dry weight. His serum C-reactive protein (CRP) was 0.176 g/L (normal range, < 0.004 g/L) and serum albumin level was 22 g/L (normal range, 36–50 g/L). He had suffered from a fever for a week prior to admission. He was edematous but showed no abdominal tenderness. There was no complaint of severe abdominal pain either before or during admission.

He was treated with intraperitoneal ceftazidime 1 g/1.5 L daily. Clinically, his condition improved. Repeated cultures, including those for acid-fast bacilli,
showed no organisms. On the third hospital day, however, due to poor peritoneal fluid outflow, hemodialysis was started and antimicrobial peritoneal irrigation (with gentamicin) and systemic administration (with piperacillin) were carried out. As the peritoneal catheter was enwrapped by the omentum (Figure 1), it was laparoscopically released on day 16 after admission. After the second encapsulation and inability to withdraw fluid, the catheter was removed and CAPD was abandoned. There was no positive growth from the peritoneal fluids until the removal of the Tenckhoff catheter.

Ten days after catheter removal, acid-fast bacilli of unknown species were cultured from the pulled-out catheter specimen. As the patient was considered to be immunocompromised, in that he had received hemodialysis and had potentially been exposed to tuberculosis (due to the presence of a tuberculosis unit in the same district), he was started on anti-tuberculosis therapy (isoniazid, ethambutol, rifampicin).

After the anti-tuberculosis therapy, *M. fortuitum* was identified by electro-microscopic examination (Figure 2) and mycobacterial culture. Following the results of drug resistance testing, the anti-tuberculosis treatment was changed to levofloxacin for 2 months. He was also given prednisolone for 6 months to prevent peritoneal sclerosis. After commencement of sensitive chemotherapy, CRP and erythrocyte sedimentation rate improved. Follow-up abdominal computed tomography (CT) scan revealed no sign of EPS and the patient is now on long-term hemodialysis.

**DISCUSSION**

*M. fortuitum* peritonitis was first reported by Pulliam et al [5]. However, since there have not been many cases reported [5,7–13], to date, there are no definite symptoms specific for *M. fortuitum* peritonitis (Table). As this infection is not well known to clinicians, early diagnosis is difficult and it can easily develop into refractory peritonitis. All the reported cases were difficult to diagnose and catheter removal was required to treat the infection. In general, prognosis is worse than for infections caused by other bacteria.

*M. fortuitum* is the commonest of the group IV (Runyon’s classification), rapidly growing, non-tuberculous mycobacteria. It is easily isolated from environmental sources, e.g. soil, dust, water [14]. It does not usually cause human infection, but catheter insertion or the presence of a foreign body may result in clinical symptoms [15].

In our patient, the abdominal wall closed after catheter removal and we could not isolate the same

![Figure 1](image1.png)
**Table. Mycobacterium fortuitum peritonitis.**

<table>
<thead>
<tr>
<th>Case</th>
<th>Reference</th>
<th>Age/Sex</th>
<th>Race</th>
<th>Etiology</th>
<th>On admission</th>
<th>History of CAPD</th>
<th>Past history of peritonitis</th>
<th>Fever</th>
<th>Abdominal tenderness</th>
<th>Other symptoms</th>
<th>PD-WBC (n/mm³)</th>
<th>PMN (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Pulliam et al, 1983 [5]</td>
<td>57/M</td>
<td>Caucasian</td>
<td>DM</td>
<td>8-day history of cloudy dialysate</td>
<td>3 mo</td>
<td>NA</td>
<td>No</td>
<td>No</td>
<td>None</td>
<td>6,700</td>
<td>82</td>
</tr>
<tr>
<td>2</td>
<td>Woods et al, 1986 [7]</td>
<td>32/M</td>
<td>Caucasian</td>
<td>Unknown</td>
<td>Confusion and visual hallucination</td>
<td>7 mo</td>
<td>4</td>
<td>Yes</td>
<td>No</td>
<td>37.5°C</td>
<td>3,845</td>
<td>83</td>
</tr>
<tr>
<td>3</td>
<td>LaRocco et al, 1986 [8]</td>
<td>15/M</td>
<td>Caucasian</td>
<td>Unknown</td>
<td>Persistent peritonitis</td>
<td>2 yr</td>
<td>NA</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>173</td>
<td>92</td>
</tr>
<tr>
<td>5</td>
<td>Soriano et al, 1989 [9]</td>
<td>40/M</td>
<td>Spanish</td>
<td>DM</td>
<td>Stroke</td>
<td>17 mo</td>
<td>0</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>130</td>
<td>NA</td>
</tr>
<tr>
<td>6</td>
<td>Kolmos et al, 1992 [10]</td>
<td>35/M</td>
<td>Danish</td>
<td>CGN</td>
<td>Unsuccessful renal transplant</td>
<td>10 mo</td>
<td>4</td>
<td>NA</td>
<td>NA</td>
<td>Yes</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>9</td>
<td>Youmbissi et al, 2001 [12]</td>
<td>45/F</td>
<td>Arab</td>
<td>Unknown</td>
<td>Tunnel infection</td>
<td>3 yr</td>
<td>NA</td>
<td>Yes</td>
<td>No</td>
<td>Weight loss</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>10</td>
<td>Osada et al, 2001 [13]</td>
<td>67/F</td>
<td>Japanese</td>
<td>Unknown</td>
<td>Peritonitis</td>
<td>7 yr</td>
<td>NA</td>
<td>Yes</td>
<td>Yes</td>
<td>NA</td>
<td>5,000–6,000</td>
<td>NA</td>
</tr>
<tr>
<td>11</td>
<td>Ando et al, 2003 [present study]</td>
<td>66/M</td>
<td>Japanese</td>
<td>CGN</td>
<td>Cloudy dialysate</td>
<td>4 mo</td>
<td>0</td>
<td>Yes</td>
<td>No</td>
<td>Weight gain</td>
<td>5,650</td>
<td>89.4</td>
</tr>
</tbody>
</table>

**CAPD** = continuous ambulatory peritoneal dialysis; **PD-WBC** = peritoneal dialysate white blood cell count; **PMN** = polymorphonuclear leukocytes; **DM** = diabetes mellitus; **CGN** = chronic glomerulonephritis; **NA** = not available.
drugs. For better therapy, clinical reports, including this case, must be accumulated.

The pathogenesis of EPS has not been fully elucidated, but refractory peritonitis is known to be a predisposing cause [4]. Although EPS-like symptoms after *M. fortuitum* peritonitis have been reported [13], whether it contributes to EPS or not is uncertain. In our patient, for whom 2 months of antibiotic therapy was prescribed, we also decided to give 6 months of steroid therapy. Further careful observation is required, although there were no abnormal findings in the early follow-up abdominal CT scan and laboratory data.

**REFERENCES**