

## CASE REPORTS

### Peritonitis Due to *Roseomonas fauriae* in a Patient Undergoing Continuous Ambulatory Peritoneal Dialysis

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***Roseomonas* is a newly described genus of pink-pigmented, nonfermentative, gram-negative bacteria that have been recognized as a cause of human infections. *Roseomonas fauriae* is a species rarely isolated from clinical specimens. We report the first known case of peritonitis caused by *R. fauriae* in a patient receiving continuous ambulatory peritoneal dialysis.**

#### CASE REPORT

A 65-year-old woman with end-stage renal disease began receiving continuous ambulatory peritoneal dialysis (CAPD) therapy in 1996. During this period she presented with three episodes of urinary tract infection caused by *Proteus vulgaris*, successfully treated with quinolones. In January 1998, the patient was admitted to the hospital with mild diffuse abdominal pain but she was afebrile. Physical examination revealed tenderness and positive rebound. The peritoneal dialysate was cloudy, and microscopic examination showed a concentration of 300 cells/mm<sup>3</sup>, with a predominance of neutrophils. Gram-stained smears prepared from the centrifuged sediment were negative. The diagnosis of peritonitis was established, and the patient was treated empirically with intraperitoneal administration of vancomycin in a dose of 2 g/bag for one 6-h period once every 5 days and netilmicin (150 mg) once every 3 days. Samples of dialysate were obtained and inoculated onto two plates of 5% sheep blood agar, MacConkey agar, and thioglycolate broth (BBL Microbiology Systems, Cockeysville, Md.) that were incubated aerobically and anaerobically at 37°C. Blood cultures were not taken. Anaerobic cultures were negative after 5 days of incubation. However, aerobic cultures yielded, in pure growth, short, gram-negative, nonvacuolated, and weakly oxidase-positive rods appearing in chains. After 72 h of incubation on blood agar at 37°C, colonies were pinpoint, becoming pale pink and mucoid after prolonged incubation at the same temperature. Growth occurred on Sabouraud agar and on buffered charcoal-yeast extract agar but not on MacConkey and cetrinide agars or at 25, 30, or 42°C. The organism was catalase and urease positive. It was differentiated from *Methylobacterium* species, another pink-pigmented rod, by the inability to produce acid from methanol, to assimilate acetamide, or to absorb the long-wave UV light (Table 1). Based on cellular morphology and biochemical tests described by Rihs et al. (8), the microorganism was identified as *Roseomonas fauriae*. The biochemical properties of the

isolate compared to properties of published strains are shown in Table 2.

Antimicrobial susceptibility testing of the isolate was carried out by the E-test (AB Biodisk, Solna, Sweden). Mueller-Hinton agar plates (BBL Microbiology Systems) and an inoculum equivalent to that of an 0.5 McFarland standard suspension were used according to manufacturer's guidelines. MICs were read 48 h after inoculation. *Escherichia coli* ATCC 25922 and ATCC 35218 were used as quality controls. The isolate was found to be susceptible to imipenem (MIC, 0.5 µg/ml), amikacin (MIC, 0.25 µg/ml), gentamicin (MIC, 0.25 µg/ml), netilmicin (MIC, 0.5 µg/ml), tobramycin (MIC, 2 µg/ml), ciprofloxacin (MIC, 0.5 µg/ml), clarithromycin (MIC, 2 µg/ml), and ceftriaxone (MIC, 6 µg/ml), and it was resistant to aztreonam, amoxicillin, amoxicillin-clavulanate, clindamycin, piperacillin-tazobactam, vancomycin, ticarcillin, cefepime, ceftazidime (MIC, >256 µg/ml), and metronidazole (MIC, >32 µg/ml).

After bacteriologic results were obtained, vancomycin treatment was stopped and the patient was treated with ciprofloxacin until complete recovery. Nine months later the patient had not had further episodes of peritonitis.

*Roseomonas* is a newly proposed genus of pink-pigmented, oxidized, coccoid rods that includes three named species, *R.*

TABLE 1. Biochemical reactions of *Methylobacterium* and *Roseomonas* spp.<sup>b</sup>

Test	<i>Methylobacterium</i> spp.	<i>Roseomonas</i> spp.
Oxidase	+	+
Oxidation of methanol	+	–
Growth		
On MacConkey agar	–	+
At 42°C	–	+
Urease	+	+
UV absorption of colonies <sup>a</sup>	+	–
Assimilation of acetamide	+	–
Colonial morphology	Dry, coral	Mucoid, pink
Gram stain morphology	Vacuolated rod	Coccoid rod

<sup>a</sup> Colonies appear dark when exposed to long-wave UV light.

<sup>b</sup> Data from Koneman et al. (2).

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TABLE 2. Characteristics of *Roseomonas* strain isolated from peritoneal fluid compared to those of other strains<sup>a</sup>

Test	<i>R. gilardii</i> <sup>b</sup>	<i>R. cervicalis</i> <sup>b</sup>	<i>R. fauriae</i> <sup>b</sup>	Genomospecies <sup>b</sup>			Present strain <sup>c</sup>
				4	5	6	
Arginine dihydrolase	—	—	—	—	—	—	—
Ornithine decarboxylase	—	—	—	—	—	—	—
Lysine decarboxylase	—	—	—	—	—	—	—
Citrate	+	V	V	—	V	+	+
Esculin hydrolysis	—	—	+	—	—	+	+
ONPG <sup>d</sup>	—	—	—	—	—	—	—
H <sub>2</sub> S production	—	—	—	—	—	—	—
Nitrate reduction	—	—	+	+	—	+	+
Indole production	—	—	—	—	—	—	—
Acid production from:							
Arabinose	V	V	+	V	V	—	+
Xylose	V	V	+	+	V	—	+
Glucose	V	—	V	—	—	—	—
Lactose	—	—	—	—	—	—	—
Raffinose	—	—	—	—	—	—	—
Sucrose	—	—	—	—	—	—	—
Rhamnose	—	—	—	—	—	—	—
Adonitol	NA	NA	NA	NA	NA	NA	—
Inositol	NA	NA	NA	NA	NA	NA	—
Mannitol	V	—	—	—	—	—	—

<sup>a</sup> Data from reference 7.

<sup>b</sup> +, ≥95% of strains positive; —, ≤5% of strains negative; V, variable; NA, not available.

<sup>c</sup> +, positive at 48 h; —, negative at 48 h.

<sup>d</sup> ONPG, *o*-nitrophenyl-β-D-galactopyranoside.

*gilardii*, *R. cervicalis*, and *R. fauriae*, and three unnamed genospecies (8). The natural reservoir of *Roseomonas* spp. is not well known. A few strains have been isolated from various environmental sources, such as potable water, saline contaminant, and plastic ice balls (8, 12). Most of the isolates have been recovered from blood of patients with clinical signs of sepsis (1, 3, 6, 7, 11), but isolates have also been recovered from cerebrospinal fluid, wounds, exudates, abscesses, and genitourinary sites (2, 8, 10). Other infections reported to be caused by *Roseomonas* spp. were vertebral osteomyelitis (5) and peritonitis in a CAPD patient (9). The clinical significance of the isolates remains uncertain (1, 10). Struthers et al. (10) reviewed, retrospectively, 35 cases in which *Roseomonas* strains were isolated. They concluded that only 60% of all isolates were associated with disease either as primary or secondary pathogens. The most frequently isolated species was *R. gilardii*, from patients who had an underlying clinical illness, whereas genospecies 5 was recovered as a commensal from urogenital specimens in young adults (10). In this series of cases, no strains of *R. fauriae* were identified. In fact, *R. fauriae* is an infrequently recovered species, significantly associated with bacteremia and wound infection (8). To the best of our knowledge, this is the first reported case of peritonitis due to *R. fauriae* in a CAPD patient, confirming the clinical significance of the isolate as a potential pathogen in these patients. The source of infection in this case remained undetermined, but an environmental source such as potable water is possible. However, no sample of the patient's domestic water supply was collected. This isolation increased the list of etiologic agents responsible for infection in patients undergoing CAPD.

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