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Case of Peritonitis Caused by *Ewingella americana* in a Patient Undergoing Continuous Ambulatory Peritoneal Dialysis

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Reports of serious infections caused by *Ewingella americana* have been rare. A case of *E. americana* peritonitis in a patient receiving continuous ambulatory peritoneal dialysis is described. This is the first report of *E. americana* causing such an infection.

Ewingella, previously known as enteric group 40, is a new genus in the family of *Enterobacteriaceae* and was first described by Grimont and coworkers in 1983 (5). This genus includes only one species, *Ewingella americana*. This microorganism is rarely found in human clinical samples. The most common source of human isolates has been blood, but it has also been isolated from sputum, urine, wounds, and stool (1, 4, 5).

In most instances, the pathogenic significance of this organism, although suggestive, has not been established. Recently, scattered reports of infections due to *E. americana* have appeared in the literature, documenting the pathogenic potential of this organism in humans (2, 6, 9, 10).

We report the first case of peritonitis caused by *E. americana* in a patient with end-stage renal disease undergoing continuous ambulatory peritoneal dialysis since 1994. The primary cause of renal failure was polycystic kidney disease.

Case report. A 70-year-old woman was admitted to the hospital with diffuse abdominal pain and fever of 37.4°C. Physical examination revealed tenderness and positive rebound. Upon admission, laboratory findings were as follows: hematocrit, 27%, leukocyte count, 11,900/mm^3 (with left shift); creatinine level in blood, 7.1 mg/dl; urea level in blood, 210 mg/dl; and glucose level in blood, 110 mg/dl.

The peritoneal dialysate was turbid, and microscopic examination showed 400 cells/mm^3, with a predominance of neutrophils. The diagnosis of peritonitis was established, and the patient was treated empirically with amikacin and vancomycin intravenously. Samples of dialysate were obtained and inoculated onto 5% sheep blood agar, McConkey agar, and thioglycolate broth (Becton Dickinson Microbiology Systems, Cockeysville, Md.) that were incubated, aerobically and anaerobically, at 37°C. Blood cultures were not performed. After 48 h of incubation, a short, gram-negative, lactose-fermenting rod that was oxidase negative and catalase positive grew. The isolate was identified by the Vitek and API 32 GN identification systems (bioMérieux Vitek Inc. Hazelwood, Mo.) as *E. americana*. The biochemical properties of the strain are compared to properties of published strains in Table 1 (3).

Antimicrobial susceptibility testing of *E. americana* was carried out by the E-test method (AB Biodisk, Solna, Sweden). The isolate was found to be susceptible to ampicillin, amoxicillin-clavulanate, ceftazidime, ceftriaxone, cefotaxime, cefepime, ofloxacin, gentamicin, carbenicillin, and amikacin and was moderately susceptible to cefuroxime but resistant to cephalothin, penicillin G, and vancomycin (Table 2). After bacteriologic results were obtained, vancomycin therapy was stopped and the patient was treated with amikacin until complete recovery.

E. americana is an infrequent opportunistic pathogen. Although most isolates in the series of Farmer et al. have been recovered from blood, the pathogenic significance of *E. americana* remains unclear (4).

In 1983, Pien et al. reported a case of bacteremia caused by *E. americana* in combination with an unusual *Pseudomonas* sp. in a patient after coronary bypass surgery (10). Since then, five more cases of bacteremia due to *E. americana* have occurred. All infected patients had undergone a surgery (2, 9). Recently, Heinzmann and Michel described a case of conjunctivitis due

TABLE 1. Biochemical characteristics of *E. americana* strains

Test	% of published strains with positive reaction[a]	Reaction of present strain[b]
Citrate	95	+
H_2S production (triple sugar iron)	0	−
Urea	0	−
Lysine decarboxylase	0	−
Arginine dihydrolase	0	−
Ornithine decarboxylase	0	−
Motility (36°C)	60	−
Malonate utilization	0	−
D-Glucose, acid	100	+
D-Glucose, gas	0	−
Fermentation of:		
Lactose	70	+
Sucrose	0	−
Mannitol	100	+
Adonitol	0	−
Inositol	0	−
Sorbitol	0	−
L-Arabinose	0	−
Raffinose	0	−
Rhamnose	23	−
Maltose	16	+
Xylose	13	−
Esculin hydrolysis	50	+
Acetate utilization	10	−
Oxidase (Kovács)	0	−
ONPG[c]	85	−
Pigment production	0	−

[a] Based on reactions of 44 previously studied *E. americana* strains (3) after 48 h of incubation at 36°C.
[b] +, positive at 48 h; −, negative at 48 h.
[c] ONPG, *o*-nitrophenyl-β-D-galactopyranoside.

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TABLE 2. MICs of 13 antimicrobial agents for *E. americana*

Antimicrobial agent	MIC (μg/ml)[a]
Ampicillin	8
Amoxicillin-clavulanate	0.12
Ceftazidime	0.19
Ceftriaxone	0.25
Cefotaxime	0.38
Cefepime	0.094
Ofloxacin	0.50
Gentamicin	0.50
Carbenicillin	6
Amikacin	0.75
Cephalothin	>256
Penicillin G	>256
Vancomycin	>32

[a] Determined by the E-test method.

to *E. americana* in a previously healthy woman (6). In addition, *E. americana* has been associated with an outbreak of pseudobacteremia, due to cross-contamination of blood culture bottles with nonsterile blood collection tubes (7, 8).

The present work is the first report in the English literature of a case of peritonitis caused by *E. americana* in a patient undergoing continuous ambulatory peritoneal dialysis. The source of infection was not defined. However, an environmental source such as domestic water is one possibility. *E. americana* is an organism without nutritional needs that can survive in water and citrate solution and preferentially grows at 4°C (8).

In conclusion, *E. americana* is a rare cause of human infection. Further information is needed to define its ecology and possible role in human disease.

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