JOURNAL OF CLINICAL MICROBIOLOGY, May 1985, p. 838–839
0095-1137/85/050838-02$02.00/0

Vol. 21, No. 5

Unusual Bacterium, Group Ve-2, Causing Peritonitis in a Patient on Continuous Ambulatory Peritoneal Dialysis

MARCIA R. SILVER,[1]* TERRANCE P. FELEGIE,[2]† AND MICHAEL I. SORKIN[1]

Renal-Electrolyte Division, Department of Medicine, University of Pittsburgh School of Medicine and Department of Medicine, Veterans Administration Medical Center,[1] and Department of Pathology, Presbyterian-University Hospital,[2] Pittsburgh, Pennsylvania 15261

Received 3 January 1985/Accepted 7 January 1985

We report a case of peritonitis in a continuous ambulatory peritoneal dialysis patient with an unusual bacterium known as group Ve-2. This is the first reported case of peritonitis attributable to this organism and only the second well-documented case of infection with this organism in the English literature.

We isolated an unusual gram-negative organism, rarely considered a human pathogen, which appeared to cause peritonitis in one of our continuous ambulatory peritoneal dialysis patients.

A 54-year-old man with chronic glomerulonephritis developed end-stage renal disease in January 1981. His past medical history was also remarkable for adult-onset diabetes mellitus of approximately 15 years' duration. (Because his proteinuria predated the diabetes and was mild, and he did not have retinopathy, he was believed to have two separate diseases.)

The patient was started on intermittent peritoneal dialysis with a Tenckhoff catheter in January 1981 and was trained and able to go home on intermittent peritoneal dialysis in March 1981. His course was uneventful, and he returned to work as a steamfitter. In August 1981, he developed peritonitis with *Acinetobacter calcoaceticus* var. *anitratus*. He was treated with tobramycin and peritoneal lavage and recovered without adverse sequelae. In October 1981, he again developed peritonitis. This time, an *Escherichia coli* isolate was identified. The organism was susceptible to cephalosporins, and the patient responded to treatment with cefazolin and peritoneal lavage. A retraining session revealed a problem with the patient's technique, which was considered the probable source of contamination and of the several episodes of peritonitis described. The errors were corrected, and the patient did well for some time thereafter.

The patient subsequently decided to transfer to continuous ambulatory peritoneal dialysis, and his training course was begun in July 1982. On his first training day, his peritoneal fluid was cloudy. Cefazolin was added to his peritoneal dialysis bags. The patient was asymptomatic, his cultures were negative, and he made an uneventful recovery.

On 10 September 1982, while participating in a study of a bacteriological filter for continuous ambulatory peritoneal dialysis (Peridex; Millipore Corp., Bedford, Mass.), the patient developed abdominal pain, nausea, vomiting, and cloudy peritoneal fluid. Gram stain of a centrifuged 10-ml sample of dialysate showed many polymorphonuclear cells but no organisms. Review of the patient's record revealed that 2 days previously, on 8 September, when the patient was asymptomatic, he had a routine filter change as part of the filter study. Both dialysate and filter cultures from that date grew the same gram-negative rod. The leukocyte count of a sample of dialysate taken on September was 10 cells per mm^3. Cefazolin and tobramycin were prescribed pending culture results from the day the patient became ill. Subsequently, the cultures from 10 September (of cloudy dialysis fluid) and from 8 September (when the patient was asymptomatic and his fluid was clear) grew a gram-negative rod identified as group Ve-2.

The patient made an uneventful recovery and completed a 10-day course of intraperitoneal tobramycin. No filter was used during treatment of the peritonitis, but the patient did resume use of the filter after his antibiotic course was completed. He had no further episodes of peritonitis during 3 more months of participation in the filter study and, at this writing, has completed an additional year of successful therapy on continuous ambulatory peritoneal dialysis without any further episodes of peritonitis.

Organisms designated group Ve-1 and group Ve-2 are gram-negative, yellow-pigmented, oxidative bacilli resembling pseudomonads (3). Similar organisms have been called *Chromobacterium typhiflavum*, but overlapping definitions and nomenclature make this designation inaccurate (3). These organisms are not commonly seen in hospital microbiology laboratories. Pedersen et al. reported isolation of bacteria from these groups only 14 times over a 2-year period from various sources including sputum, blood, urine, eye swab, cervical cultures, and inhalation therapy equipment (6). None of the isolates was judged to be clinically significant. We were able to locate only one report of clinical infection attributed to group Ve-2 organisms in the English literature. In that report, Pien described a well-documented case of bacteremia with this organism in a severely traumatized neurosurgical patient (7). The anatomical source of the bacteremia was never identified. The Centers for Disease Control in Atlanta have collected 37 strains of this group cultured from various anatomical sites. One was collected from the patient studied by Pien. The rest were collected from various hospital laboratories, but there is insufficient information available to determine whether they were pathogenic (R. E. Weaver, personal communication).

The organism from our patient initially formed small, yellow colonies on sheep blood agar plates. Upon further incubation, these colonies grew larger and wrinkled. Identification of this isolate as group Ve-2 was based on the

* Corresponding author.
† Present address: Department of Laboratory Services, Veterans Administration Medical Center, Washington, DC 20422.

TABLE 1. Results of antimicrobial susceptibility tests

Antimicrobial agent	Disk diffusion interpretation[a]	MIC (μg/ml)
Ampicillin	S	2
Carbenicillin	S	8
Cephalothin	R	32
Cefoxitin	R	16
Cefamandole	R	64
Gentamicin	S	≤0.25
Tobramycin	S	≤0.25
Cefotaxime	I	2
Moxalactam	I	2
Piperacillin	S	2
Chloramphenicol	S	8

[a] S, Susceptible; I, intermediate; R, resistant.

characteristic colonial morphology and biochemical reactivity described by Hugh and Gilardi (4). Biochemical reactions were determined with conventional techniques. This isolate produced catalase, grew on MacConkey agar, produced acid from glucose oxidatively, and hydrolyzed starch and urea. It was motile at both 25 and 37°C. The following reactions were negative: oxidase, nitrate reductase, DNase, gelatinase, Tween 80 esterase, and esculin hydrolysis.

Initial antimicrobial susceptibility tests were performed with the Kirby-Bauer disk diffusion technique and interpretations approved by the National Committee for Clinical Laboratory Standards (1, 5). In addition, MICs were determined with a freeze-dried microtiter dilution system (Sensititre; GIBCO Diagnostics, Madison, Wis.) with unsupplemented Mueller-Hinton broth as a diluent (Table 1). The antibiogram determined for our isolate was consistent with those reported by other investigators for group Ve-2 (2, 6).

The group Ve-2 organisms are easily identified by a few biochemical tests once the characteristic wrinkled morphology is recognized. However, since the wrinkled appearance usually does not appear until day 2 or 3 of incubation, definite identification of the organism may be delayed. The clinician will most likely have earlier access (usually at 48 h) to the antibiogram. These organisms are generally susceptible to ampicillin, which, although not used in our patient, may offer an effective alternative to the use of aminoglycosides.

The source of this organism remains something of a puzzle, as there are no published reports of the normal habitats of this group. The organism can probably be thought of as one of many rarely pathogenic nonfermenters which are soil and water saprophytes, survive in moist environments, and can often be cultured from sinks and other wet institutional surfaces (G. L. Gilardi, personal communication). We are tempted to speculate on some relationship between our patient's occupation as a steamfitter and the organism that caused his peritonitis. Another source to consider was the bacteriological filter that the patient was using. Because the filter had been in use for a month before the appearance of the organisms and since there are no other reports suggesting any deviation from sterility in these products, we doubt that the filter was responsible.

In summary, we have presented a case report of peritonitis that occurred in a patient on continuous ambulatory peritoneal dialysis and that was attributable to an unusual bacterium known as group Ve-2. We believe this to be only the second well-documented case of infection with this organism reported in the English literature.

LITERATURE CITED

1. **Bauer, A. W., W. M. Kirby, J. C. Sherris, and M. Turck.** 1966. Antibiotic susceptibility testing by a standardized single disk method. Am. J. Clin. Pathol. **45**:493–496.
2. **Fass, R. J., and J. Barnishan.** 1980. In vitro susceptibilities of nonfermentative gram-negative bacilli other than *Pseudomonas aeruginosa* to 32 antimicrobial agents. Rev. Infect. Dis. **2**:841–853.
3. **Gilardi, G. L., S. Hirschl, and M. Mandel.** 1975. Characteristics of yellow-pigmented nonfermentative bacilli (groups Ve-1 and Ve-2) encountered in clinical bacteriology. J. Clin. Microbiol. **1**:384–389.
4. **Hugh, R., and G. L. Gilardi.** 1980. Pseudomonas, p. 288–317. *In* E. H. Lennette, A. Balows, W. J. Housler, Jr., and J. P. Truant (ed.), Manual of clinical microbiology, 3rd ed. American Society for Microbiology, Washington, D.C.
5. **National Committee for Clinical Laboratory Standards.** 1982. Performance standards for antimicrobic disk susceptibility tests (second informational supplement), p. 49–69. National Committee for Clinical Laboratory Standards, Villanova, Pa.
6. **Pedersen, M. M., E. Marso, and M. J. Pickett.** 1970. Nonfermentative bacilli associated with man. III. Pathogenicity and antibiotic susceptibility. Am. J. Clin. Pathol. **54**:178–192.
7. **Pien, F. D.** 1977. Group Ve-2 (*Chromobacterium typhiflavum*) bacteremia. J. Clin. Microbiol. **6**:435–436.