Peritonitis Due to *Brevibacterium otitidis* in a Patient Undergoing Continuous Ambulatory Peritoneal Dialysis

GEORGES WAUTERS,1* BERNARD VAN BOSTERHAUT, 2 VÉRONIQUE AVESANI, 1 RENÉ CUVELIER, 2 JACQUELINE CHARLIER, 1 MICHÈLE JANSENS, 1 AND MICHEL DELMÉE1

Microbiology Unit, Faculty of Medicine, University of Louvain, B-1200 Brussels, 1 and Centre Hospitalier de Mouscron, 7700 Mouscron, 2 Belgium

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*Brevibacterium otitidis* is a coryneform rod and, as far as is known, is isolated only from infected ears. We report the first known case of peritonitis caused by *B. otitidis* in a patient undergoing continuous ambulatory peritoneal dialysis.

CASE REPORT

A 73-year-old woman was started on continuous ambulatory peritoneal dialysis (CAPD) in May 1997 because of renal insufficiency due to nephrosclerosis. In November 1998, peritonitis with methicillin-resistant, coagulase-negative *Staphylococcus* sp. was diagnosed and treated with intraperitoneally administered vancomycin, resulting in clinical resolution within 48 h.

In September 1999, the patient complained of moderate subcostal pain, her temperature was 37.5°C, and the dialysate effluent was cloudy. The subcutaneous tunnel and the exit site of the CAPD catheter were unremarkable. The cell count of the effluent disclosed 160 white blood cells/mm³, of which 46% were polymorphonuclear neutrophils. Her peripheral leukocyte count was 6,870/mm³, and the C-reactive protein level was 2.0 mg/dl. Other results disclosed a state of relative malnutrition, with an albuminemia of 3.2 g/dl and a total cholesterol level of 144 mg/dl.

Empirical intraperitoneal therapy with cefazolin and gentamicin was initiated, and rapid clearing of the effluent resulted. On follow-up dialysate examination 5 days after institution of therapy, no significant numbers of leukocytes were seen. Subsequently, we clearly identified the cause of the infection as inadequate manipulation of the bag connector with a screwdriver.

Microbiological findings. The dialysate was cultured on blood agar plates, and 10 ml was inoculated into a blood culture bottle (BACTEC plus aerobic/F³). All cultures grew a gram-positive coryneform rod. Colonies were smooth and slightly yellowish. There was no growth at 20°C. The organism was nonmotile, catalase positive, and urease negative and did not acidify any carbohydrates. Gelatin and casein were hydrolyzed, and the organism was susceptible to all of the antibiotics tested.

Susceptibility of the strain was tested by the disk diffusion method on Mueller-Hinton blood agar incubated at 37°C for 24 h. Paper disks (Becton Dickinson, Cockeysville, Md.) containing penicillin, ampicillin, cefotaxime, cephalothin, erythromycin, ciprofloxacin, gentamicin, and vancomycin were used, and the results were interpreted in accordance with the criteria established for staphylococci by the National Committee for Clinical Laboratory Standards in 1997 (5a). The isolate was susceptible to all of the antibiotics tested.

Discussion. Poor socioeconomic conditions and the low education level of the patient, resulting in inadequate manipulation of the bag connector, may explain the recurrent episodes of peritonitis during her CAPD treatment. Her relative malnutrition may have also contributed to the infection.

Coryneform bacteria belonging to the genus *Brevibacterium* have been increasingly involved as opportunistic pathogens in various clinical, mostly nosocomial, settings (3). The vast majority of the isolates are *B. casei* (2). Brevibacteria have already been isolated in cases of CAPD peritonitis (4). Four strains...
studied by Funke and Carlotti and isolated from peritoneal dialysate belonged to the species *B. casei* (2). One strain of *B. iodinum* was isolated from the peritoneal fluid of a CAPD patient with peritonitis associated with acute urticaria (1). *B. iodinum* has, to the best of our knowledge, never been isolated from humans in other instances, and it must be noted that the description of the isolate in the foregoing study was very limited and that the species identification was based only on the oxidase test. *B. otitidis* is a new species recently described and has so far been isolated only from infected human ears (6). Our isolate is the first of *B. otitidis* recovered as a relevant pathogen outside the ear.

*Brevibacterium* sp. should be differentiated from other non-fermentative coryneform bacteria, especially *Arthrobacter* spp., nonfermenting *Microbacterium* (formerly *Aureobacterium*) species, and "*Corynebacterium aquaticum*." Chemotaxonomic properties are useful for this purpose, as the peptidoglycan of these genera does not contain *meso*-diaminopimelic acid (3). Some *Arthrobacter* species may be difficult to distinguish from *Brevibacterium* sp. routinely. Strong and rapid methane-thiol production is helpful to confirm brevibacteria. The former *Aureobacterium* species, recently transferred to the genus *Microbacterium* (9), and "*C. aquaticum*" are also yellow pigmented, but they oxidatively acidify carbohydrates, in contrast to brevibacteria. *B. otitidis* is metabolically less active than *B. casei* and *B. epidermidis* and is similar in this respect to *B. mcbrellneri* (6). However, colonies of *B. otitidis* are smooth and yellowish while those of *B. mcbrellneri* are dry and crumbly (5). In addition, pyrrolidonyl peptidase is strongly positive in *B. otitidis* and negative in *B. mcbrellneri*. The main differential characteristics of *Brevibacterium* species isolated from clinical specimens are reported in Table 1.

This observation emphasizes the need to identify coryneform bacteria more accurately for better assessment of their pathogenic role in opportunistic infections.

**REFERENCES**


