detecting lecitinase and urease production, were done to confirm the result.

Although botulism, tetanus, and other clostridial diseases may arise exogenously, the source of most clostridial infections is the patient's own flora, and endogenous infections involving clostridia require special circumstances for the development of disease [5].

Penicillin G has excellent activity against most strains of \textit{C. perfringens} and is the drug of choice for treatment of \textit{C. perfringens} infections. We performed in vitro susceptibility testing by means of the E-test (AB BIODISK, Solna, Sweden), and the following MICs were obtained: penicillin G, 0.064 \(\mu\text{g/mL}\); metronidazole, 1.0 \(\mu\text{g/mL}\); and imipenem, 0.125 \(\mu\text{g/mL}\). These MICs are below the breakpoint values (penicillin G, 4.0 \(\mu\text{g/mL}\); metronidazole, 16.0 \(\mu\text{g/mL}\); and imipenem, 8.0 \(\mu\text{g/mL}\)).

Our patient received a 6-week treatment course of penicillin G (12–24 million U/day [according to renal function]); at the time of his discharge, laboratory and clinical findings were normal, except for hemiplegia. Evaluation 6 months after discharge did not reveal any complaints or physical findings except for hemiplegia. The principal aspects of this case were the absence of active infection during the preoperative period and the precocity of the manifestations. The possibility of contamination of the prosthetic material cannot be ruled out. Despite the rarity of anaerobic bacteria as causative agents of prosthetic valve IE, blood cultures under anaerobic conditions should always be considered as diagnostic tools for this infection.

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References


\textbf{Development of \textit{Aeromonas hydrophila} Bacteremia in a Patient Recovering from Cholera}

\textit{Aeromonas} bacteremia most commonly occurs in patients with underlying medical conditions, such as cirrhosis, hematologic malignancies, and solid tumors [1]. We report a case of \textit{Aeromonas hydrophila} bacteremia in a previously healthy woman who was recovering from cholera in the hospital.

A 24-year-old previously healthy Malay woman was admitted to the hospital because of a 3-day history of watery diarrhea of increasing frequency. On the day of admission, she reported episodes of diarrhea every 15 minutes and had vomited three times. She was one of a large number of patients admitted that day who gave a history of eating food prepared by an itinerant food hawker who had been found to be a carrier of \textit{Vibrio cholerae} biotype El Tor Ogawa (serogroup O1). She was not taking any medication.

Physical examination revealed that she was conscious, afebrile, and dehydrated. Her blood pressure was 110/70 mm Hg, and her pulse rate was 90. Chest auscultation and abdominal palpation did not reveal any abnormalities. A full blood cell count was normal. Blood biochemistry analysis disclosed the following abnormal values: urea, 12.6 mmol/L; creatinine, 153 \(\mu\text{mol/L}\); and potassium, 2.4 mmol/L. A clinical diagnosis of cholera was made. Intravenous rehydration with potassium supplementation was commenced, and therapy with oral tetracycline (500 mg four times daily) started. Approximately 4 hours after admission, a temperature of 37.9°C was recorded, and blood specimens were taken; cultures of these specimens subsequently remained sterile. Four hours later the patient was afebrile. Three stool samples were submitted for culture, and \textit{V. cholerae} biotype El Tor Ogawa (serogroup O1), which was susceptible to tetracycline, was isolated.

Over the next 6 days, the patient remained afebrile, and the frequency of diarrhea decreased; the stools became semiformal. On the seventh day after admission, the patient became ill; physical examination revealed a temperature of 40°C and a blood pressure of 100/60 mm Hg but no other abnormalities. Blood was taken for culture.

The following day gram-negative bacilli were isolated from both aerobic and anaerobic blood cultures. The patient remained febrile and unwell; therapy with tetracycline was stopped, and administration of intravenous ceftriaxone (3 g once daily) was started. The blood culture isolates were identified as \textit{A. hydrophila} by the criteria described by Janda et al. [2]; disk diffusion testing demonstrated that the isolates were susceptible to ceftriaxone, cefuroxime, gentamicin, and ciprofloxacin and were resistant to ampicillin, ampicillin/sulbactam, co-trimoxazole, and tetracycline.

The patient became afebrile on the fourth day of ceftriaxone therapy, and she was discharged 14 days after admission. One stool sample, taken before the start of ceftriaxone therapy, was examined for the presence of \textit{A. hydrophila} but was found to be negative.

\textit{Aeromonas} bacteremia occurs more commonly in male patients than in female patients and is more often acquired in the community than in the hospital. Most patients with \textit{aeromonas} bacteremia have one of several clinical conditions, including hematologic malignancy, solid tumors, hepatic disease, and traumatic injury, and...
these conditions are believed to predispose to the development of bacteremia [1]. Aeromonas bacteremia is rare in patients without the above-mentioned conditions, and relatively few individual cases have been reported in the literature [3–8]. There was no evidence that our patient had any underlying medical condition, and before her hospitalization with cholangitis and bacteremia, she was well. It is tempting to speculate that cholangitis could have made the patient more susceptible to aeromonas bacteremia, but there is little evidence to support this. In most situations it is believed that aeromonas bacteremia originates from the gastrointestinal tract, but A. hydrophila was not isolated from stool specimens from our patient. It is possible that it may have been overlooked, and only one specimen was specifically examined for its presence before the start of ceftriaxone therapy. Mucosal damage during gastroenteritis may predispose to the development of bacteremia, but cholangitis produces diarrhoea by the elaboration of toxin and is noninvasive. Nosocomial acquisition of A. hydrophila infection by the patient cannot be ruled out as the clinical onset of septicemia was on the seventh day after admission. A peripheral intravenous catheter was present from the day of admission to the onset of bacteremia; however, there was no evidence of sepsis at the insertion site, and the catheter tip was not cultured. Lynch et al. [6] described an immunocompetent man with nosocomial cellulitis and bacteremia, and in a study of extraintestinal aeromonas infections in Australia, Kelly et al. [9] described one patient in whom aeromonas bacteremia developed in the hospital following endoscopic retrograde cholangiopancreatography and two patients who had infections at insertion sites of intravenous catheters. The A. hydrophila isolate described in our case was unusual in that it was resistant to both tetracycline and co-trimoxazole. In a study of antibiotic susceptibilities of 74 strains of A. hydrophila in Australia, Koehler et al. [10] found 100% and 81% of isolates to be susceptible to tetracycline and co-trimoxazole, respectively. It is possible that either the patient was infected with a tetracycline-resistant strain or resistance developed during treatment for cholangitis.

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