CASE PRESENTATION

A 71-year-old African-American woman presented to the authors’ hospital with recurrent falls and confusion. She reported fatigue, loss of appetite and weight loss that had been progressing over several months. In the two days before her presentation, she felt dizzy and the family noticed intermittent confusion. She denied fever, respiratory or urinary symptoms. She reported chronic constipation but no abdominal pain or vomiting. Her medical history was significant for rheumatoid arthritis (RA) and hypertension. The patient's RA had never been treated, despite disease progression over the years; meanwhile, her hypertension was well controlled on hydrochlorothiazide and amlodipine. The patient denied smoking, alcohol abuse or illicit drug use. She also denied any recent medical procedures or dental work.

On examination, she was afebrile, with a temperature of 37.4°C and a blood pressure of 96/58 mmHg. Her heart rate was 92 beats/min and her oxygen saturation was 94% on room air. She was cachectic with no lymphadenopathy. She was edentulous with no gum line swelling or tenderness. Her skin was intact, with no bruising or rashes. She had clear lung fields, regular heart sounds without murmurs and soft abdomen with no organomegaly. She had obvious chronic joint deformities related to her RA. Her neurological examination was nonfocal.

Laboratory test results revealed a hemoglobin level of 98 g/L and white blood cell count of 10.6×10⁹ cells/L. Chemistry tests showed a creatinine level of 106.1 µmol/L and albumin level of 19.0 g/L; alkaline phosphatase, total bilirubin and liver transaminase levels were normal. Computed tomography scans of the brain were negative. Urinalysis and chest x-ray were negative. The anaerobic bottles of the above, an underlying abdominal or pelvic pathology, especially a malignancy, was suspected. She underwent computed tomography scan of the abdomen and pelvis with contrast as well as colonoscopy that did not reveal any lesion. The patient was started on benzathine penicillin G and clindamycin. The patient had no history of diabetes mellitus or HIV.

DISCUSSION

Bacteremia due to obligate anaerobes is uncommon. Clostridium species account for <1% of positive blood cultures and are second to Bacteroides among isolated anaerobes (1-3). C perfringens is the most commonly isolated Clostridium species in blood cultures. A retrospective population-based surveillance in Calgary, Alberta, identified 904 cases of anaerobic bacteremia between 2000 and 2008, with an overall population incidence of 8.7 per 100,000 per year (1). The most commonly identified bacteria were Bacteroides fragilis, Clostridium non-perfringens species, Peptostreptococcus species and C perfringens, respectively.

Clostridium species are nonmotile, obligate anaerobic Gram-positive bacteria that are capable of forming endospores and are ubiquitous in nitrate-rich environments, such as sewage and soil, as well as in the intestinal tract of humans and animals (2). C perfringens has been implicated in causing a wide variety of clinical syndromes ranging from skin and soft tissue infections and gas gangrene, to gastroenteritis and enteritis necroticans (3-6).

After acquiring the bacteria, or its spores, from exogenous or endogenous sources, and in the presence of suitable anaerobic conditions, C perfringens vegetates and multiplies rapidly, producing a wide variety of toxins that mediate its pathogenicity. These toxins include...
cytolytic enzymes, enterotoxins, collagenases, proteases and other necrotoxins (7-9).

Clinical correlates determine the exact significance of clostridial bacteremia. It may be a transient bacteremia or, potentially, a pseudo-bacteremia (a contaminant), if the patient had no risk factors or symptoms and signs consistent with an infection (10). More commonly, however, it is a life-threatening event, and the patient is profoundly septic and at high risk for death (10,11). Furthermore, it can be a surrogate of underlying malignancy necessitating further investigation (4).

Reported C. perfringens bacteremia risk factors include neutropenia and other immunocompromising disorders, advanced age, hemodialysis and inflammatory bowel diseases (12-16). Poorly attended trauma wounds and suboptimal surgical techniques can also put the patient at risk for this infection (5,7,8). This bacteremia has rarely complicated colorectal infection (11). A large series of patients undergoing colonoscopy, evacuating molar pregnancy, obstetric intervention disrupts the bacterial anaerobic environment and, in the absence of an underlying malignancy, is considered to be the drug of choice, either alone or in combination with clindamycin, although emergence of resistance against the latter has been reported (3). Ngo et al (1) reported the susceptibility of 71 C. perfringens blood isolates to penicillin, metronidazole and clindamycin (1). None of the above isolates were resistant to penicillin or metronidazole, although 11 (15.5%) were resistant to clindamycin. Other commonly used effective antibiotics include ampicillin/sulbactam and piperacillin/taizobactam (4). Exchange transfusion and hyperbaric oxygen therapy may be of help in bacteremia cases complicating skin or soft tissue infections, especially if shock and hemolysis are evident (17). The latter intervention disrupts the bacterial anaerobic environment and, hence, facilitates eradication of the microbe in small abscesses and ischemic infected tissues.

DISCLOSURES: The authors have no conflicts of interest to declare.

REFERENCES