

Campylobacter Bacteremia in a Patient with Gastric Cancer

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ABSTRACT

Introduction: Campylobacter jejuni is a major cause of gastroenteritis worldwide. Campylobacter species are spiral, rod-shaped, or curved gram-negative bacteria. Unlike Campylobacter fetus, Campylobacter jejuni does not have much association with bacteremia. This case report identifies a patient with gastric cancer who had developed Campylobacter jejuni bacteremia.

Case Presentation: The patient was a 65-year-old woman with gastric cancer who had undergone chemotherapy for the first time and was admitted to Imam Reza Hospital in Mashhad with complaints of diarrhea and fever. After initial examinations and with the possibility of Salmonella bacteremia for the patient, aerobic and anaerobic blood cultures, a stool exam for smear and culture and also Clostridium difficile toxin assay were requested. After six days of hospitalization, despite treatment with broad-spectrum antibiotics while her fever persisted, the patient's blood culture was positive for Campylobacter jejuni and finally, she was treated with appropriate antibiotics.

Conclusion: In immune-compromised patients with diarrhea and fever who do not respond to the initial antibiotic regimen, Campylobacter bacteremia should be considered in addition to the usual pathogens. So, aerobic and especially anaerobic blood cultures should be considered in addition to initial studies.

Keywords

Bacteremia, Campylobacter, Cancer

Introduction

Campylobacter species are gram-negative helical, rod-shaped, or curved bacteria that, depending on the species, have a unipolar or bipolar flagellum or may have no flagella. (1) Campylobacter jejuni and Campylobacter coli are confirmed causes of diarrhea in humans. (2) Campylobacter jejuni is a major cause of gastroenteritis worldwide. Campylobacter jejuni infection may lead to autoimmune conditions such as Guillain-Barré syndrome. Extra intestinal manifestations including bacteremia, lung infections, brain abscesses, meningitis, and reactive arthritis have also been reported in a number of patients. One of the most common extra intestinal manifestations of Campylobacter species is bacteremia, which is predominantly associated with Campylobacter jejuni, Campylobacter coli, and Campylobacter fetus infections. (1) Most cases of bacteremia occur in the elderly or immune-compromised patients with one or more concomitant pathologies including cirrhosis or liver neoplasms, with 10 to 15 percent mortality rate within 30 days of diagnosis (3, 4). Most Campylobacter infections are self-limiting and require no therapeutic intervention other than supportive treatment such as water and electrolyte balance. However, antibiotics are used in immune-compromised patients, patients with severe or persistent symptoms, and patients with extra intestinal manifestations (5, 6). Macrolides, fluoroquinolones, tetracyclines or amoxicillin are considered as the most effective agents for the treatment of Campylobacteriosis (7). Ciprofloxacin is a fluoroquinolone that is often used for the experimental treatment of gastroenteritis, especially in travel-related cases. However, in cases of Campylobacteriosis, macrolides are the preferred treatment. (8)

The aim of this study was to introduce a known patient with gastric cancer and Campylobacter jejuni bacteremia, which according to the study is the first case of isolation of this organism from the blood culture of a patient with gastric cancer in Iran.

Case Presentation:

The patient was a 65-year-old woman who had been diagnosed with gastric cancer recently. She had undergone the first course of chemotherapy with 5-fluorouracil (5FU), Oxaliplatin, Taxotere and leucovorin about a week before her

recent hospitalization. She referred to Imam Reza Hospital in Mashhad with complaint of fever and watery diarrhea 8-9 times a day and was admitted to the hematology ward. There was no recent travel history or other specific findings in the patient's history. At the time of presentation, blood pressure was 110.70 mm Hg, pulse rate: 115 / min, respiratory rate: 22 / min and oral temperature: 39 ° C and moderate dehydration. Other physical examinations were normal. Laboratory tests revealed the following values: WBC: 400 / mm, Hb: 9.4g / dl, PLT: 25,000 / μ l. Serum biochemistry and creatinine and liver enzyme tests were normal. Urine analysis had no specific findings and urine culture was negative. Chest radiographs were also normal. The patient was initially treated with meropenem, and on the advice of an infectious disease specialist, due to suspicion of salmonella bacteremia, aerobic and anaerobic blood cultures, a stool smear and culture, and Clostridium difficile toxin test were performed and the antibiotic regimen was changed to ceftriaxone. Six days after admission, while her fever persisted, the patient's blood culture was positive for *Campylobacter jejuni*. Ceftriaxone was changed to azithromycin. The patient's diarrhea and fever disappeared and finally the patient was discharged with good general condition and stable vital signs with the prescription of azithromycin for 14 days until the end of the treatment period.

Discussion:

The most common clinical manifestation of *Campylobacter jejuni* infection is gastroenteritis, which leads to watery diarrhea, abdominal pain, fever, and dysentery. Extra-intestinal manifestations of *Campylobacter* infection include arthritis, meningitis, cholecystitis, infective endocarditis, and Guillain-Barré syndrome. (9) Bacteremia due to *Campylobacter* species is rare and occurs in less than 10% of patients with gastroenteritis due to these species. (10) In contrast to *Campylobacter jejuni*, *Campylobacter fetus* species are usually isolated from blood samples and are less associated with enteritis. (11, 12) Compared to *Salmonella* infections, *Campylobacter jejuni* infection is rarely complicated by bacteremia or extra-intestinal localization. (11, 13) *Campylobacter* bacteremia is primarily limited to patients with advanced HIV infection and other debilitating conditions. In the Tee study, severe and advanced HIV prior to antiretroviral therapy was named as the most important underlying condition in *Campylobacter* bacteremia. (14) In particular, there is an association between *Campylobacter* bacteremia and humoral immunodeficiency. (15, 16) *Campylobacter* bacteremia has also been described in bone marrow and solid organ transplants, including liver and kidney (17, 18, 19). Other predisposing conditions for *Campylobacter* bacteremia include hematologic malignancies (20, 21, 22) and solid tumors (23). The reported patient had gastric cancer and had recently undergone chemotherapy. There have been few reports of *Campylobacter jejuni* being isolated from blood in developing countries. The first case of *Campylobacter jejuni* bacteremia in Iran has been reported in a patient with ALL in Shiraz (24). The present study is the first study in Iran that reports the isolation of *Campylobacter jejuni* from the blood of a patient with gastric cancer. Failure to report this organism in cultures may be due to not considering it in the differential diagnosis of gastroenteritis in immune-compromised patients and as a result of not requesting an appropriate diagnostic test including aerobic and anaerobic blood cultures, and this can increase mortality especially in this particular population. Many *Campylobacter* infections are self-limiting. However, antibiotics are used in immune-compromised patients, patients with severe or persistent symptoms, and patients with extra-intestinal manifestations (5, 6). The importance of macrolides for the treatment of *Campylobacter* infections is that ciprofloxacin resistance is relatively high for *Campylobacter* species due to the use of antibiotics in the poultry industry, animal husbandry operations and the continued use of ciprofloxacin to treat infectious diseases in humans. (25) Another issue related to antibiotic resistance in *Campylobacter* infections is the emergence of multidrug-resistant strains (MDRs), which have been reported from many countries around the world. The rate of MDR species in humans is still relatively low (<25%) (26). The patient described in this report was successfully treated with azithromycin. The results of the study by Sun Hee Park et al. on the antimicrobial susceptibility of *Campylobacter jejuni* isolates from patients with diarrhea in Busan showed that 3% of *Campylobacter jejuni* isolates were resistant to azithromycin, 3% to erythromycin and 89% to ciprofloxacin. The proportion of MDR cases was 18% and usually included quinolones. Macrolides appear to be an appropriate option for the empirical treatment of *Campylobacter jejuni* infections before antibiogram results are available. (27)

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