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Campylobacter bacteremia with psoas abscess: Case Report and review of the literature

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Abstract

Infection with *Campylobacter fetus* can result in bacteremia and disseminated endovascular infection as well as extraintestinal infections such as osteomyelitis, septic arthritis, or meningoencephalitis. We present a case of a 36-year-old man with Human Immunodeficiency Virus (HIV) who developed bacteremia and a left psoas muscle abscess after an acute episode of gastroenteritis due to *C. fetus*. The gastroenteritis appeared to resolve rapidly, but weakness, fatigue, and back pain started the following week. Magnetic resonance imaging of the lumbar spine revealed a left psoas abscess. The patient was treated with ertapenem for four weeks and had an experienced resolution of back pain at the three-month follow-up visit but was then lost to follow-up. This case highlights the importance of accurate initial identification and treatment of systemic campylobacteriosis in immunocompromised hosts and the potential for dissemination.

Keywords: Campylobacter, bacteremia, psoas abscess

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1. Introduction

Campylobacter fetus is a fastidious microaerophilic, gram-negative spiral-shaped rod. There are three subspecies: *venerealis*, *testudinum,* and *fetus* (1). Infection with *C. fetus* is uncommon, and in immunocompetent hosts, symptomatic illness usually presents as a self-limited gastroenteritis. In immunocompromised hosts, infection with *C. fetus* can result in a nonspecific febrile illness (1). Endovascular seeding due to endothelial tropism can occur with secondary metastatic foci of infection (2). The isolation of *C. fetus* from blood cultures can thus be an important part of the diagnostic workup, but the organism can be difficult to recover. We report a case of *C. fetus* infection in a patient with HIV under good control with rapid dissemination of infection. Accurate and timely identification of the gram-negative rod resulted in prompt initiation of appropriate therapy.

This clinical case describes an immunocompromised patient with *C. fetus* psoas abscess and aims to highlight the risk of dissemination and metastatic foci of infection with this organism.

2. Case Presentation

A 36-year-old male with well controlled human immunodeficiency virus (HIV) infection for 15 years presented to the emergency department for sudden onset of nausea, vomiting, abdominal pain, and multiple episodes of loose, non-bloody stool. The patient endorsed exposure to sick contacts with similar symptoms at home. He denied any recent travel history. Past medical history was significant for chronic paranoid schizophrenia. Surgical history was significant for the remote history of gunshot wounds to the chest and abdomen with retained shrapnel. The patient was allergic to paliperidone: current medications were bictegravir-emtricitabine-tenofovir alafenamide daily as a fixed-dose combination tablet and over the counter topical diclofenac 1% as needed for myalgia.

On presentation, he was afebrile and hemodynamically stable. Physical examination was unremarkable. Laboratory studies revealed a white blood cell count of 23.1×103 cells/µl, (reference range 4.0 X 10 3 cells/ul to 10.0 X 10 3 cells/ul) creatinine of 2.32 mg/dL (baseline creatinine over the last four years was 1.00 mg/dl to 1.19 mg/dl). A routine HIV viral load obtained six months before admission was undetectable, as were all viral loads obtained over the last four years. A CD4 count obtained at admission was 927 cells/mm3; all CD4 counts obtained in the previous four years were > 750 cells/mm3. The CD4 count nadir was unavailable.

During the patient's three-day hospital stay, he had a single episode of bloody diarrhea and was rehydrated with intravenous fluids without antibiotic therapy. He was discharged after three days with improvement of symptoms and a return of creatinine to baseline. Blood cultures drawn at the time of admission were negative at discharge.

The patient was seen one week after discharge with new onset back pain. Blood cultures from his previous admission were positive for spiral-shaped gram-negative rods, which were identified four days later as *Campylobacter fetus* (Figure 1). The patient was readmitted and started on imipenem. A transthoracic echocardiogram demonstrated a possible tricuspid vegetation, but a transesophageal echocardiogram did not reveal any vegetation. MRI of the brain showed no evidence of intracranial infection, but an MRI of the lumbar spine showed a 2.8 X 1.2 cm left psoas abscess (Figure 2).

Repeat blood cultures were negative: the patient was discharged on oral amoxicillin/clavulanate and azithromycin as he needed to leave the hospital emergently due to a family emergency. A peripherally inserted central catheter line was placed as an outpatient approximately three days later, and he completed four weeks of ertapenem. At one month follow-up, he had clinically improved, with a resolution of back pain at 12-week follow-up. He was subsequently lost to follow-up without completion of repeat imaging of the spine.

3. Discussion

C. fetus is a microaerophilic, gram-negative, spiral shaped bacterium that grows between 25°C and 37°C. In contrast to thermotolerant *C. jejuni* and *C. coli*, not all *C. fetus* isolates grow at 42°C. To date, *C. fetus* has been most often recognized as an infectious agent of animals such as cattle and sheep, but the sources for and routes of transmission of *C. fetus* to humans remain uncertain (3). Unlike *C. jejuni* and *C. coli*, poultry and pigs are not considered a source of *C. fetus*. Human-to-human transmission of *Campylobacter fetus* is suggested to occur more often among immunocompromised individuals (4).

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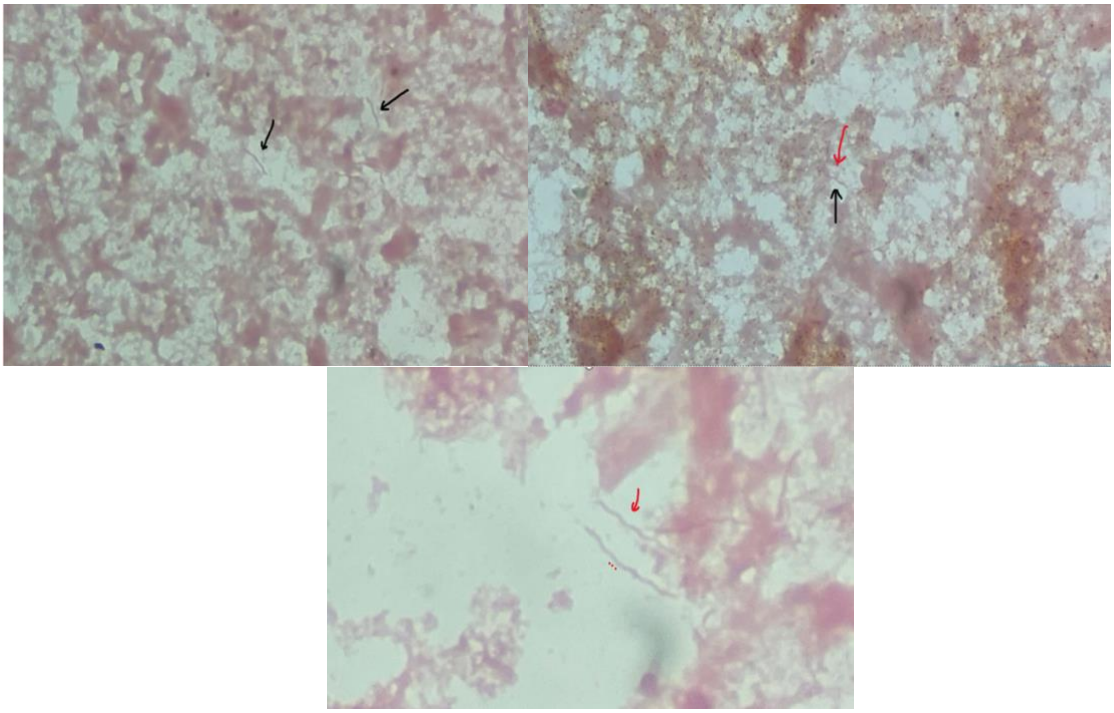

Figure 1. *Microscopic slides of patient's blood culture identifying the spiral-shaped bacterium indicated in Campylobacter fetus (arrows).*

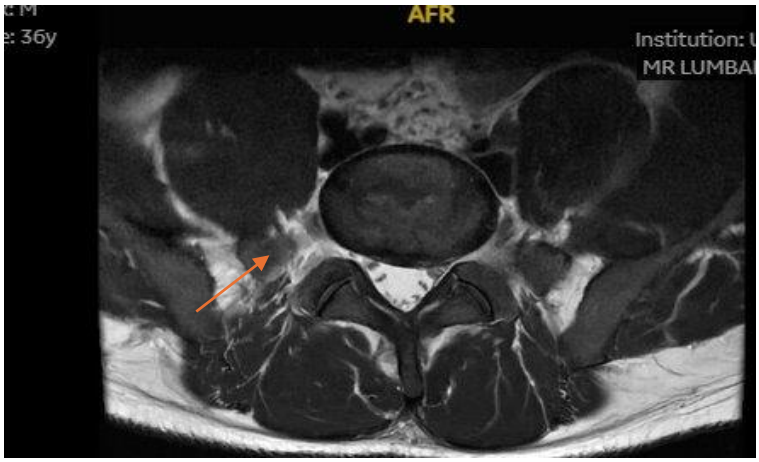

Figure 2. *MRI of the lumbar spine revealing a small abscess located at the left psoas, overlying the L3 nerve (arrow)*

Conditions that result in immunosuppression include diabetes mellitus, extreme age, pregnancy, cardiovascular disease, cirrhosis, HIV, hematological malignancy, splenectomy, transplant population, and neonates (3-5).

Campylobacter fetus infection may initially be clinically insidious, as evidenced by this case, but clinical signs of a *C. fetus* infection vary from mild, self-limited diarrheal illness to systemic illness. The presentation can include fever without apparent localized infection, neurological infections (e.g., meningitis, meningoencephalitis, subdural empyema, or brain abscesses), osteomyelitis, arthritis, and perinatal infections (e.g., infection in utero, abortion, or placentitis) (6-8). *C. fetus* infections may also cause vascular pathology (e.g., mycotic aneurysms, endocarditis, vasculitis, thrombophlebitis, or pericarditis) (2).

The development of systemic illness is strongly associated with immunosuppression (6). In this case, despite the rapid resolution of initial symptoms, there was a rapid development of the psoas abscess. While other household family members had a self-limited diarrheal illness at the

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same time, there were no other cases of disseminated infection.

Antibiotic treatment for intestinal diseases in immunocompetent hosts is usually not needed (9). Specific medication regimens are indicated in immunocompromised patients or patients with prolonged or severe disease. Macrolides are beneficial in mild cases, and fluoroquinolones are preferred for severe infections due to increasing reports of resistance in non-*C. jejuni* spp. Systemic *C.fetus* is generally resistant to penicillin, cephalosporins, macrolides and fluoroquinolones. Carbapenems are indicated in severe disease including endocarditis.

Although *Campylobacter* endocarditis is rare, the mortality rate is 25%, with relapse occurring in 8% of cases (2). As a result, cardiac imaging should be considered in patients presenting with *C. fetus* bacteremia. In this patient, the presence of persistent weakness, fatigue, and rapid onset of back pain, as well as the growth of spiral-shaped gram-negative bacterium on blood cultures after an episode of acute gastroenteritis presentation, led to suspicion of *C. fetus* bacteremia with disseminated infection, but TEE did not confirm endocarditis. Finally, prolonged clinical follow-up of patients with disseminated *C. fetus* is recommended: case reports of *C. fetus* relapse seven years after initial infection have been reported (8).

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