Campylobacter fetus septic arthritis and bacteremia in a thalassemic patient

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ABSTRACT

Campylobacter fetus subspecies fetus rarely causes arthritis with bacteremia in debilitated hosts. We have identified this infection in a patient with thalasemia/hemoglobin E and post-splenectomy who presented with additive polyarthritis. C. fetus subspecies fetus was recovered from blood and synovial fluid cultures and confirmed by PCR. It would be interesting whether thalasemia is also one of risk factors of C. fetus infection. (J Infect Dis Antimicrob Agents 2012;29:27-31.)

Note: This case was presented in the Interhospital Case Conference on Infectious Diseases (ICCID), 13 October 2011, Chonburi, Thailand.

INTRODUCTION

Campylobacter are slender, curved micro-aerophilic gram-negative bacteria. A number of different species of Campylobacter (for example C. jejuni, C. fetus subspecies fetus, C. fetus subspecies venerealis, C. coli and C. lari) have now been described as a cause of infectious disease in human.1 Campylobacter jejuni, and Campylobacter fetus subspecies fetus are commonly encountered as human pathogen. In contrast to C. jejuni, C. fetus subspecies fetus less frequently causes intestinal infections.1-4 The clinical presentations of C. fetus subspecies fetus infections are characterized by systemic illness with bacteremia, meningitis, vascular infections, and abscesses in debilitated hosts; however, arthritis associated with bacteremia is rare.5-10 Here, we report a case of C. fetus subspecies fetus septic arthritis associated with bacteremia in a thalassemic patient.

CASE REPORT

A 49 year-old military officer was admitted in Phramongkutklao Hospital because of acute swelling and pain of joints for 6 hr prior to admission. Four days earlier, he felt not well but without specific symptom. However, 2 days later, he developed watery diarrhea twice a day and had abrupt pain at both ankles. He denied previous trauma on the ankles. The pain was severe enough to prevent him from walking normally.
He had taken 400 mg of Ibuprofen to relieve the pain. One day before admission, his knees became swollen while ankles still had pain. He also had high grade fever without shaking chills. No other specific organ or system was noticed. He took neither antibiotic nor other medication. Six hours before admission, inflammation of right wrist developed and prompting him to seek medical attention.

He was a resident of Bangkok and had underlying \( \beta \)-thalassemia/HbE disease. Ten years ago, he had splenectomy due to an abdominal trauma. Notably, he did not frequently received blood transfusions. Apart from the time of operation, the last time he received blood transfusion for thalassemia was more than 20 years. He still drank about a half a bottle of alcohol every day for 10 years.

The physical examination revealed vital signs as follows: body temperature of 38.3°C, respiratory rate of 22/min., pulse rate of 92/min., and blood pressure of 130/70 mmHg. Signs of arthritis were observed on both ankles, knees, and right wrist joints.

The initial laboratory studies showed anemia with 16% of hematocrit. The white blood cell count was 25,000 /mm\(^3\) with 85% of neutrophils and 2% of band form. The renal function plasma glucose, liver function test and serum electrolytes were in normal limits. Left knee arthrocentesis was performed to obtain yellowish and turbid synovial fluid. The fluid showed white blood cell count of 105,000 cell/mm\(^3\) with 99% polymorphonuclear leukocytes. Gram stain of the synovial fluid was able to demonstrate numerous white blood cells and gram-negative curve bacilli (Figure 1). Only one day after admission, 2 specimens of gram-negative curve bacilli grew on the blood culture (Figure 2). Initially, intravenous ceftriaxone was given as empirical antibiotic. Once gram-negative curve bacilli were isolated, \textit{Vibrio} spp., \textit{Helicobacter} spp., and \textit{Campylobacter} spp. had to be considered. Therefore, azithromycin was added to the regimen because of concern about \textit{Campylobacter}. \textit{C. fetus} was finally reported from blood and synovial fluid culture. The PCR also confirmed the presence of \textit{C. fetus} subspecies \textit{fetus} in blood and synovial fluid (Figure 3). The identification of \textit{Campylobacter} spp. was based on the finding of 876 bp 16SrDNA. The species was identified using cdtB gene multiplex PCR and the 553 bp fragment. Fever disappeared after 3 days and after a week, he had no pain in all joints. Ceftriaxone and azithromycin were continued for 2 weeks.

**DISCUSSION**

The patient in this report presented with additive polyarthritis and synovial fluid analysis was compatible with septic arthritis. Epidemiologically, in a \( \beta \)-thalassemia/Hb E disease, status post splenectomy patient, bacteria like \textit{Staphylococcus aureus}, \textit{Streptococci} i.e. \textit{S. pneumoniae}, enteric gram-negative bacilli, and \textit{H. Influenzae} are among common causative pathogens. In the present report, \textit{C. fetus} septic joint was confirmed. The bacteria were susceptible to \( \beta \)-lactam antibiotics like amoxicillin/ clavulanate, ampicillin, cephalothin, to macrolides such as zithromycin and erythromycin, tetracycline, cotrimoxazole and gentamicin. However, the bacteria showed resistance to nalidixic acid and ciprofloxacin.

\textit{C. fetus} subspecies \textit{fetus} has been isolated from sheep, cattle, poultry, reptile, and swine. Clinical manifestations of \textit{C. fetus} infection are systemic illness with bacteremia, meningitis, vascular infections, abscesses, and gastroenteritis.

Up to now, 16 cases of septic arthritis from \textit{C. fetus} have been reported.\(^{11}\) Most of the cases presented with monoarthritis (13/16 cases). Three cases were oligoarthritis; (knee and elbow arthritis, hip and knee arthritis, hip knee and shoulder arthritis). Four cases were found in prosthetic joint infection. In this
series of septic arthritis: knee trauma, alcoholism, osteoarthritis, diabetes and cirrhosis are risk factors.

Gazaigne et al reported\textsuperscript{12} \textit{C. fetus} bloodstream infections from 21 patients in 7 years. Most of them (62\%) were associated with fever and non-digestive system symptoms (6 cardiovascular infections, 4 cellulitis, 1 meningitis, 1 arthritis and 1 primary peritonitis). Risk factors of infection in this study were diabetes, steroid therapy, cirrhosis and severe cardiovascular diseases. In the aspect of antimicrobial susceptibility, it was found that all \textit{C. fetus} isolates were susceptible to amoxicillin, amoxicillin-clavulanate, imipenem, gentamicin and chloramphenicol. Thirteen strains (62\%) had intermediate susceptibility to cefotaxime. Resistance to ciprofloxacin, tetracycline and erythromycin was observed for four (19\%), three (14\%) and one (4.7\%). All were resistant to nalidixic acid. This suggests that fluoroquinolones should not be used empirically once this bacterium is suspected as a cause of infection.

This is the first case of \textit{C. fetus} subspecies \textit{fetus} septicemia presenting with additive polyarthritis in setting of post splenectomised \(\beta\)-thalassemia/Hb E host. It would be interesting to determine whether

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\includegraphics[width=\textwidth]{image1.png}
\caption{Gram stain of synovial fluid shows gram-negative curved bacilli organisms.}
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\begin{figure}[h]
\centering
\includegraphics[width=\textwidth]{image2.png}
\caption{Gram stain of hemoculture shows gram-negative curved bacilli organisms.}
\end{figure}
thalassemia is also one of the risk factors of *C. fetus* infection.

References


