Campylobacter fetus-Associated Epidural Abscess and Bacteremia[▽]

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***Campylobacter fetus* has been isolated as an infrequent cause of abscesses. We report a case of *Campylobacter fetus* epidural abscess and bacteremia in a debilitated elderly man who had a fatal outcome.**

CASE REPORT

An 83-year-old European man presented to his general practitioner with a nonspecific febrile illness that was treated with oral flucloxacillin. While receiving this treatment, the man developed bilateral lower-leg erythema and lower-back pain. The erythema progressed over a period of about 10 days, and he became systemically unwell and presented to the hospital. On admission, the patient had fever, confusion, unsteadiness, painful legs, diarrhea, and fecal incontinence. He also complained of increasing dyspnea and angina and a mild productive cough lasting 2 days. This patient also had multiple other medical problems, including class III ischemic heart disease, congestive heart failure, a history of perforated duodenal ulcer, malignant melanoma of the forehead, mild Parkinson's disease, and chronic obstructive pulmonary disease, and he had previously undergone surgery for coronary bypass and aortic aneurysm repair.

On admission, the patient was afebrile (36.4°C), with a blood pressure of 82/31 mm Hg, a heart rate of 86 beats/min, a respiratory rate of 28 breaths per minute, a peripheral blood oxygen saturation of 90% on air, and a blood glucose concentration of 13.4 mmol per liter. Clinical examination revealed bibasal crepitations, bilateral painful, erythematous shins, and no obvious neurological deficit. Hematological investigations showed the hemoglobin concentration was 112 g per liter, the platelet count was 125×10^9 per liter, the creatinine concentration was 0.19 mmol per liter (normal range, 0.05 to 0.11 mmol per liter), the urea concentration was 12.5 mmol per liter (normal range, 2.7 to 7.8 mmol per liter), and the troponin T concentration was raised at 0.43 μ g per liter (normal range, <0.03 μ g per liter).

The provisional diagnoses made at the time of the patient's examination were bilateral leg cellulitis, concurrent left ventricular failure, probable chest infection, and dehydration. He was treated with intravenous flucloxacillin (2 g every 6 h) and subcutaneous enoxaparin, with clinical improvement of the cellulitis. He complained of increasing lumbar (L) back pain over the L2-to-L4 region and developed decreased knee re-

flexes and bilateral leg weakness. The blood samples taken on day 4 during an episode of fever and diarrhea became positive 2 days after incubation for a *Campylobacter* species. Oral ciprofloxacin (500 mg, twice daily) was added to the treatment regimen. A subsequent magnetic resonant imaging scan showed an epidural abscess of 51 by 10 by 12 mm extending from the L3–L4 disc to the L4–L5 disc, with marked compression of the theca. An emergency L4 laminectomy-and-drainage procedure was performed on the same day. An aspirate of this epidural abscess was sent for microbiological examination, and a *Campylobacter* species was cultured. Postoperatively, the patient was treated with intravenous cefotaxime (1 g, twice daily).

An underlying immunosuppressive condition was suspected, and subsequent investigations revealed an abnormal serum protein profile showing a monoclonal band in the β region. Results of a subsequent bone marrow examination were inconclusive, and monoclonal gamma globulinopathy of uncertain significance was diagnosed.

The patient was treated with cefotaxime (10 weeks), followed by oral ciprofloxacin, with resolution of the epidural abscess demonstrated by magnetic resonant imaging. His clinical condition gradually improved, and he was transferred to a rehabilitation hospital on day 25 of his admission. However, the clinical course was subsequently complicated by intermittent diarrhea, *Clostridium difficile* enterocolitis, and an episode of sepsis. He died on day 63 after his admission. A postmortem was declined by the family.

Blood cultures taken on day 4 of admission during this patient's febrile episode were incubated in an automated BacT/Alert system (bioMérieux, Durham, NC). Both aerobic and anaerobic bottle cultures became positive after 2 days of incubation for faintly staining, motile, gram-negative bacilli. The organism was subcultured onto 5% sheep blood agar, chocolate agar, and MacConkey agar. The plates were incubated at 36°C in a 5% CO₂ environment. The sheep blood agar plate was incubated in a microaerophilic environment at 42°C. After 24 h of incubation, colonial forms were present. The organisms were identified as *Campylobacter* species by their morphology on wet preparation, a positive catalase test, resistance to nalidixic acid, and susceptibility to cephalothin. *Campylobacter* species were also isolated from the MacConkey agar plate, chocolate agar, aztreonam agar, and *Campylobacter*-selective agar. The second bottle of the same set of blood cultures also grew a *Campylobacter* species. According to nonstandardized disc sensitivity test results, the isolate was

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sensitive to erythromycin, gentamicin, ciprofloxacin, ceftriaxone, clindamycin, tetracycline, and chloramphenicol. There was no obligate anaerobe isolated. The epidural abscess aspirate received 3 days later was identified similarly.

Further identification was performed by 16S rRNA sequencing (12) using a BigDye Terminator kit version 3.0 and an ABI prism 3100 genetic analyzer (Applied Biosystems). The partial sequence was then compared to 74 sequences from representative taxa in the class *Epsilonbacteria* (which includes the *Campylobacter*, *Arcobacter*, and *Helicobacter* taxa, among others), using established methods (10). The sequence was 100% similar to equivalent sequences derived from the type strains of the two *Campylobacter fetus* subspecies. The abilities of the strain to grow at 42°C and on MacConkey agar are characteristic traits of *Campylobacter fetus* subsp. *fetus* (11).

Campylobacter fetus subsp. *fetus* was originally isolated from aborted cattle and has been isolated from aborted human fetuses whose mothers were infected during the second trimester. The major reservoirs are cattle and sheep, and the organism usually causes opportunistic infection in debilitated hosts. The usual source of isolation is the bloodstream. The organism is less commonly isolated from feces. In comparison to that of *Campylobacter jejuni*, *C. fetus* subsp. *fetus* infection tends to cause more invasive disease and has a predilection for vascular sites. Affected patients are less likely to present with abdominal pain or diarrhea. Cases of *C. fetus* bacteremia have been noted to be associated with cutaneous manifestations, often described as cellulitis (1a, 1b, 4a, 12a, 12b). In many of these cases, there is a multifocal nature to the cellulitis. In comparison with the other campylobacter infections, patients with invasive *C. fetus* infections have a more prolonged clinical course and usually have a higher mortality.

C. fetus infection has also been associated with abscesses. According to the available literature, the organism has been isolated from cases of brain abscess (7), gluteal abscess (2), colonic abscess (5), and pulmonary abscess (13). Cases of meningoenitis, septic arthritis, spontaneous bacterial peritonitis, pelvic infection, pericarditis, endocarditis, mycotic aneurysms of the abdominal aorta, thrombophlebitis, empyema, urinary tract infection, cholecystitis (8), and vertebral osteomyelitis (16) have also been described. Other *Campylobacter* species that have reportedly been isolated from abscesses include *Campylobacter curvus* from hepatic abscesses (15), oral *Campylobacter* strains from breast, liver abscess, and pneumonia (4), *C. jejuni* from liver abscesses (15) and a perirectal abscess (6), *Campylobacter upsaliensis* from a breast abscess (3), and *Campylobacter sputorum* from an axillary abscess (9).

To our knowledge, this is the first reported case of an epidural abscess caused by *C. fetus* infection. It is presumed the patient's infection had a bacteremic origin as the blood cultures were positive after admission, and it is likely that the patient's blood was positive for some time. It is possible that this case represented a cutaneous manifestation of systemic *C. fetus* infection. Our patient was a debilitated, elderly, retired office worker in whom we did not find any documented exposure to farms or animals prior to his hospital presentation. The source or portal of entry of *C. fetus* remains clinically unclear.

C. fetus infection is uncommon, but in patients with back pain or progressive neurological deficit, particularly in the setting of multiple medical problems, immunosuppression, and cellulitis, it is worth considering this organism as a possible causative organism. Patients with *C. fetus* infection may not necessarily have prolonged bacteremia and may require invasive procedures to obtain appropriate specimens from metastatic deposits to establish a microbiological diagnosis and direct antimicrobial treatment. Our patient demonstrated the clinical associations of *C. fetus* infection, and this case adds to the evidence that these infections have a high mortality.

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