CASE REPORT

Fatal *Campylobacter jejuni* bacteraemia in patients with AIDS

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Two fatal cases of *Campylobacter jejuni* septicaemia in patients with AIDS were characterised by severe HIV-related immunodeficiency, negative stool cultures and presentation during hospitalisation, developing a clinical picture of fulminant septic shock despite therapy with appropriate antibiotics. *Campylobacter* spp. are important opportunist pathogens in HIV disease and may cause a septicemic illness in the absence of enteric disease.

Introduction

Campylobacter jejuni is an important cause of acute enteritis in the general population. Infection is acquired normally through contaminated food or water, or from infected animals [1]. Extra-intestinal *C. jejuni* infection is rare and occurs mainly at the extreme ages of life and in immunocompromised patients, although it has been reported in otherwise healthy subjects [2]. This paper describes two HIV-infected patients with rapidly fatal *C. jejuni* bacteraemia.

Case reports

Patient no. 1

A 58-year-old HIV-infected patient with a previous diagnosis of AIDS due to candida oesophagitis, and suffering from other severe underlying diseases (genital herpes, disseminated cytomegalovirus infection and cachexia), developed hyper-pyrexia and signs and symptoms of bacterial septicaemia after hospitalisation for 7 days. The CD4⁺ lymphocyte count was 11 cells/ μ l, but there was no significant neutropenia. Two consecutive blood cultures yielded *C. jejuni*; the pathogen was cultured on horse-blood agar at 42°C in a micro-aerophilic environment, and identified by its typical microscopic appearance and specific metabolic tests. No obvious exposure to campylobacter was apparent. Gastrointestinal symptoms were absent and there was no other obvious primary focus of infection. Stool cultures were negative for *Campylobacter* spp.

On the basis of in-vitro antimicrobial susceptibility tests, treatment was commenced with intravenous (i.v.) ciprofloxacin and co-trimoxazole. The initial clinical response was good, but the patient relapsed 4 weeks later. *C. jejuni* with the same antimicrobial susceptibility profile as the original isolate was grown from blood cultures. Stool cultures remained negative and there were no gastrointestinal features. Despite the administration of i.v. ceftriaxone (2 g/day) and netilmicin (300 mg/day), the patient developed sepsis and died 5 days later. Autopsy findings showed signs of end-organ failure due to septic shock and complicated by disseminated intravascular coagulation; CMV adrenal insufficiency was excluded.

Patient no. 2

A 28-year-old patient with full-blown AIDS, with liver cirrhosis, oesophageal candidiasis and systemic cytomegalovirus disease developed signs of septicaemia 11 days after admission to hospital. The CD4⁺ count was 136/ μ l but there was no neutropenia. *C. jejuni* was isolated repeatedly from blood cultures. Apart from a history of a mild intermittent diarrhoea, gastrointestinal symptoms and signs were absent. Repeated stool cultures were negative for *Campylobacter* spp. Antimicrobial treatment was commenced with i.v. ceftazidime (3 g/day) and amikacin (500 mg/day) but the patient developed septic shock and died, despite intensive supportive care. Autopsy findings supported the clinical picture.

Discussion

Campylobacter spp. (mostly *C. jejuni*, but also *C. fetus* and *C. coli*) are important enteric pathogens in patients

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with HIV disease, who acquire this infection by either the oral or sexual route [1, 3, 4]. *Campylobacter* enteritis is more common in AIDS patients than in the general population [5], although invasive or disseminated infection is rarely recognised. In a 15-year international literature survey (1983–1997) performed by the comprehensive Index Medicus-Medline, only 23 cases of bacteraemia caused by *Campylobacter* spp. were identified in HIV-infected patients, in 11 separate reports [3, 5–14]. Nineteen of 23 cases were caused by *C. jejuni* [3, 5–9, 13, 14]; *C. fetus* [10–12] and *C. coli* [10] were responsible for only three and one case, respectively. Signs and symptoms of enteric involvement or isolation of pathogens from stools, or both, were recorded in the majority of patients (16 of 22 evaluable cases) [3, 6–14]. Focal complications were observed occasionally, such as cholecystitis-cholangitis [6, 11, 12] and osteomyelitis [13]. Interestingly, campylobacter infection occurring during HIV disease has also been associated with immune-mediated disorders, such as thrombotic thrombocytopenic purpura [3] and Guillain-Barré syndrome [15]. Unlike the two patients described in the present report, the outcome of HIV-related campylobacteriosis was favourable (with or without disease relapses) in 21 of 22 patients, with only one fatal case secondary to septic shock. Most episodes of campylobacter infection, including those in HIV-infected subjects, are community-acquired [1, 3, 5, 7]. In both the cases described above, the campylobacter septicaemia occurred 7–11 days after admission to hospital. Severe HIV-related immunodeficiency, defined as a low CD4⁺ count, predisposes to a greater risk of septicaemia and recurrent infection [3, 5, 9]. The mean CD4⁺ count in HIV-infected patients suffering from campylobacter bacteraemia ranged from 74 to 108 cells/ μ l in two published series [3, 8]. Although campylobacter infections are associated usually with a low CD4⁺ count, frequency of relapse is less than with HIV-associated salmonella infections [8]. The two cases described above support the observation that bacteraemic campylobacter infections complicating HIV disease usually occur in individuals with a prior or concurrent diagnosis of AIDS [3, 5, 8], whose survival is shorter than the mean estimated for AIDS patients [5].

More recently, campylobacter-like organisms (CLO), now included in the genus *Helicobacter*, have been reported as pathogens in the setting of HIV disease [5, 16–19]. Acquired by either the enteric or sexual route, *H. cinaedi*, *H. fennelliae* and *H. laridis* cause proctitis-colitis, arthritis, cellulitis and other localised infections, often complicated by persisting or relapsing septicaemia, despite antibiotic administration.

Campylobacter spp. are usually susceptible to a broad range of antimicrobial agents, including macrolides, tetracyclines, β -lactams, chloramphenicol, rifampicin and quinolones. However, treatment failures have been reported in campylobacter infections complicating

HIV disease [3, 4, 9, 13, 14, 20]. These are generally associated with in-vitro antibiotic resistance (even against erythromycin, tetracyclines and fluoroquinolones), promoted by prolonged antimicrobial administration, and resulting in persistence of the organisms and multiple disease relapses. *Helicobacter* spp. isolated from HIV-infected patients have also been reported to be multi-resistant to antibiotics [17–19].

The two cases of AIDS-related *C. jejuni* bacteraemia described above were characterised by severe HIV-related immunodeficiency, no obvious exposure to the organism and negative stool cultures, and presented after hospitalisation for >6 days. Both cases were fatal following the development of septic shock, despite the administration of appropriate antibiotic therapy, probably because of severe immunodeficiency and multiple underlying diseases.

In conclusion, *Campylobacter* spp. are important pathogens in patients with HIV infection. Septicaemia may complicate AIDS even in the absence of enteric involvement and neutropenia, and may have a severe, rapidly lethal course despite antimicrobial therapy in immunocompromised hosts. They need specific culture requirements; both *Campylobacter* spp. and *Helicobacter* spp. may fail to grow in some blood culture systems [3, 21], and require specialised subculture protocols. Therefore, the frequency of these infections may be underestimated, explaining the lack of reported cases of campylobacter bacteraemia in several large series of bacterial complications of HIV disease [22–25].

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