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# SHOULD ALL BACTERAEMIA BE TREATED? A CASE REPORT OF AN IMMUNOCOMPETENT PATIENT WITH CAMPYLOBACTER UPSALIENSIS BACTERAEMIA

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**Abstract – *Introduction:*** *Campylobacter upsaliensis* is responsible for various infections and diseases and can cause bacteraemia in debilitated and immunocompromised patients. Here we report a case of an immunocompetent patient with C. upsaliensis bacteraemia.
***Case Presentation:*** A 34-year-old immunocompetent man with no medical history presented with dizziness, weakness and epigastric pain. One out of 6 blood cultures returned positive after 70 hours of incubation. *Campylobacter upsaliensis* was identified by matrix-assisted laser desorption/ionisation time-of-flight (MALDI-TOF) mass spectrometry. As the clinical examination found no abnormalities, the patient did not receive antibiotic treatment. The outcome was spontaneously favourable. The route of infection remains unknown.
***Conclusions:*** *Campylobacter upsaliensis* bacteraemia can occur in immunocompetent patients. In such cases, however, antibiotic treatment may not be necessary. This is an important finding in a context of growing antibiotic resistance.

**Keywords:** *Campylobacter upsaliensis*, Bacteraemia, Immunocompetent, Blood cultures, Bloodstream infection, Case report.

## INTRODUCTION

Infections or diseases due to *Campylobacter* spp. are fairly common, with approximately 1.3 million cases reported in the United States each year[1]. In particular, *Campylobacter upsaliensis* is responsible for various infections and diseases, including diarrhoea and extra intestinal infections, spontaneous human abortion, haemolytic uremic syndrome and Guillain-Barre syn-

drome[2]. This microorganism can also cause bacteraemia in debilitated and immunocompromised patients[3]. Here we report a case of an immunocompetent patient with *C. upsaliensis* bacteraemia.

## CASE REPORT

The patient was a 34-year-old man with no medical history who developed *C. upsaliensis* bacteraemia in November 2020. A native of Reunion Island was admitted to the emergency room for dizziness and weakness. The clinical examination found epigastric pain but no fever. The total white blood cell count and the polymorphonuclear neutrophil count were 14.2 G/L and 11.7 G/L, respectively. Serum C-reactive protein levels were normal (< 5 mg/L). The patient was discharged without treatment. One out of 6 blood cultures returned positive after 70 hours of incubation. *Campylobacter upsaliensis* was identified by matrix-assisted laser desorption/ionisation time-of-flight (MALDI-TOF) mass spectrometry (Bruker MicroFlex L). The isolated strain was sensitive to ampicillin, macrolide and ciprofloxacin. Since laboratory contamination with *C. upsaliensis* is exceptional, the patient was contacted for a follow-up visit. The visit revealed no underlying immunosuppression. Upon questioning, the patient stated that he had suffered for several months from an eating disorder with frequent vomiting. The abdominal ultrasound and gastroscopy performed at the time were normal and the eating disorder had disappeared two months before the emergency room visit. The patient had no history of pet ownership and no one in his entourage had pets. He had no contact with anyone with diarrhoea or colitis. As he was no longer symptomatic, it was decided not to administer antibiotic treatment. Control blood cultures performed one month after the follow-up visit were negative. No complementary examination was carried out to confirm the route of infection.

## DISCUSSION

No recommendations currently exist for the management of *Campylobacter* bacteraemia, largely due to a lack of sufficient data. While *Campylobacter jejuni* bacteraemia have been well described, less attention has been paid to bacteraemia caused by less common species like *C. upsaliensis.*

In England and Wales, routine infection surveillance over a period of 11 years detected 394 cases of *Campylobacter* bacteraemia, 2 of which were caused by *C. upsaliensis*[4]. In the United States, surveillance data found *C. upsaliensis* to be the third most common cause of *Campylobacter* bacteraemia after *C. jejuni* and *Campylobacter coli*[5]. Compared with *C. jejuni* infections, *C. upsaliensis* infections were shown to be more common in female and Hispanic patients and less likely to be associated with travel[5]. A 2019 French study identified as *C. upsaliensis* 2 out of 132 *Campylobacter* spp. and related strains isolated from blood cultures[6]. In a Swedish population-based study[7] examining 28,576 paediatric patients, *C. upsaliensis* was isolated in 17 blood samples taken from 16 patients, all of whom had an underlying disease. Note that these data can be considered reliable since the misidentification of *Campylobacter* strains as *C. upsaliensis* has been shown to be very unlikely[8].

Mortality from *Campylobacter* bacteraemia is not negligible, with published mortality data ranging from 2 to 15%[6]. However, only one fatal case of *C. upsaliensis* bacteraemia has been reported to date[3].

One possible route of *C. upsaliensis* transmission is water or food contaminated with pet faeces. Indeed, *C. upsaliensis* has been frequently isolated from (sick or healthy) cats and dogs, with a prevalence ranging from 5% to 66% in cats and from 5% to 48% in dogs[9]. Poultry could also be a source of infection in humans, as some cases of *C. upsaliensis* colonisation in this species have been reported[9]. Although no cases of *C. upsaliensis* infection in animals have been reported in Reunion Island, unknown animal species could serve as reservoirs for this bacterium.

In a study of Ethiopian children[10], *C. upsaliensis* was detected in stool along with 6 other *Campylobacter* species, suggesting that it belongs to the human microbiota.

According to antibiotic susceptibility testing, *C. upsaliensis* is sensitive to aminoglycosides, cephalosporin, tetracycline and nalidixic acid and sometimes to erythromycin. However, it is resistant to vancomycin, methicillin, piperacillin and chloramphenicol[11].

Currently, fluoroquinolones and macrolides are the most commonly used classes of antibiotics for the treatment of *Campylobacter* bacteraemia. However, resistance to these antibiotics is growing. In this context, recommendations for the management of *Campylobacter spp.* bacteraemia are needed. Our case report indicates that immunocompetent patients with *C. upsaliensis* bacteraemia do not necessarily require antibiotic treatment.

## CONCLUSIONS

*Campylobacter upsaliensis* bacteraemia can occur in immunocompetent patients. In such cases, antibiotic treatment may not be necessary, which is an important finding in a context of growing antibiotic resistance. Our case report contributes to a better understanding of *Campylobacter* bacteraemia, facilitating the development of recommendations for their management.

### Conflict of Interest

The authors declare no conflict of interest.

### Authors' Contributions

KD, FA, YK, AB and PP contributed to manuscript drafting; NZ performed the microbiological interpretation and contributed to manuscript drafting; all authors issued final approval for the version to be submitted.

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### Consent for Publication

The patients gave consent for publication

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