Septic Shock with Multi Organ Failure Due to Fluoroquinolones Resistant *Campylobacter Jejuni*

Authors' Contribution:
Study Design A
Data Collection B
Statistical Analysis C
Data Interpretation D
Manuscript Preparation E
Literature Search F
Funds Collection G

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Conflict of interest: None declared

Patient:	**Male, 65**
Final Diagnosis:	**Septic shock with MOF due to fluoroquinolones resistant *Campylobacter jejuni***
Symptoms:	**Fever (37.4°C) • acute delirium**
Medication:	**—**
Clinical Procedure:	**—**
Specialty:	**Infectious Diseases**

Objective:	**Rare disease**
Background:	*Campylobacter jejuni* infections are typically self-limited, and severe extra-intestinal complications are uncommon.
Case Report:	We report a case of a man with septic shock due to fluoroquinolones resistant *Campylobacter jejuni*.
Conclusions:	This manuscript emphasizes the potential lethality of fluorquinolones resistant *Campylobacter jejuni* bacteremia.

MeSH Keywords:	***Campylobacter Jejuni* • Fluoroquinolones • Shock, Septic**

Full-text PDF:	https://www.amjcaserep.com/abstract/index/idArt/904337

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Background

Campylobacter spp infections are typically self-limited and severe complications are quite rare. Bacteremia caused by *Campylobacter spp* has been detected in less than 1% of patients with gastroenteritis due to these species. Attributable mortality of *Campylobacter spp* bacteremia has been estimate to be 4–16%. The impact of appropriateness of antimicrobial therapy on outcomes is controversial. Moreover, in the last 20 years, the incidence of fluoroquinolone resistance has been increasingly reported: in 2007, in the USA, it peaked at nearly 26% of human isolates.

Case Report

In May 2014, a 65-year-old male presented to us with low grade fever (37.4°C) and acute delirium. Past medical history was significant for HCV cirrhosis (Child-Pugh class C) and beta-lactam allergy. Clinical examination found hypotension (60/40 mm Hg), tachycardia (115/minutes), tachypnea (35/minutes), ascites with abdominal tenderness, and signs of portal-systemic encephalopathy.

Blood tests showed leukocytosis (19,000/µL), acute decompensation of liver function (AST 141 U/L, ALT 49 U/L, total bilirubin 12 mg/dL), disseminated intravascular coagulation (platelets 58,000/mm^3, PT and aPTT incoagulable, fibrinogen 30 mg/dL, D-dimer 36), and acute renal failure (increase in serum creatinine of 0.3 mg/dL from baseline within 48 hours from admission). His ammonium level was 86 µg/dL and HIV serology was negative. Thirty minutes after admission, it was decided to start the patient on empirical antibiotic treatment with intravenous ciprofloxacin 200 mg twice daily on the suspicion of spontaneous bacterial peritonitis. Lactulose enemas and parenteral branched-chain amino acids were also administered.

A Swan-Ganz catheter was not inserted due to coagulation disorders despite fresh frozen plasma administration. Ultrasound-guided resuscitation with crystalloids and norepinephrine was useful in achieving mean blood pressure over 65 mm Hg, adequate urine output and optimal lactate clearance. At 48 hours after admission, the patient was able to maintain stable vital signs; a total body computed topography (CT) was performed to rule out ongoing hemorrhages, pneumonia, choledocholithiasis, and abscesses. Twenty-four hours later, catecholamines were gradually interrupted and two blood culture specimens yielded *Campylobacter jejuni* resistant to fluoroquinolones and sensitive to macrolides.

Blood cultures were tested using BACTEC blood culture system according to the manufacturer's instructions. Spiral shaped or curved Gram negative rods identified from blood cultures that formed distinct colony morphology were further processed to campylobacter species using API Campy system. The isolate was tested for susceptibility to aminoglycosides, macrolides, and fluoroquinolones by means of the standard agar disk diffusion method.

Urine and stools remained negative

Because of antimicrobial susceptibility results and the patient's improvement and ability to take oral medication, empirical therapy was shifted to azithromycin 500 mg orally daily. For the same reason, lactulose enemas were suspended and the patient was commenced on lactulose oral solution.

One week after admission, the patient's acute decompensation of liver function, disseminated intravascular coagulation, and acute renal failure resolved. The patient was discharged one week later.

Discussion

Campylobacter jejuni is a microaerophilic, gram negative rod. Most frequently infections caused by *Campylobacter jejuni* manifest as a self-limited diarrheal illness with an associated abdominal pain.

In Europe, bacteremia due to *Campylobacter spp* was detected in less than 1% of the patients with gastroenteritis [1]. The low rate of detection could partly be explained by under diagnosis due to bactericidal properties of human serum against the species [2]. Another possible explanation is that blood cultures are not routinely performed for acute gastroenteritis, even when patients are febrile [2].

Campylobacter jejuni is the most frequently isolated species causing sepsis [1]. Septicemia occurs mostly among immuno-compromised patients (mainly AIDS) or those with other co-morbidities (malignancies and liver disease) [3]. In Italy, evidence is limited to some case reports [2,4].

The absence of a portal of origin is documented in less than 30% of the patients [1].

In the Pigrau et al. case series, only 1 out of 47 bacteremia cases were due *Campylobacter jejuni* developed septic shock [5]. Even if case fatality rate due to *Campylobacter jejuni* bacteremia is low, around 10% (but may be higher in HIV infected patients) [1], blood stream infections associated with high Pittsburgh Bacteremia Score can cause death [6,7]. In a recent retrospective study the mortality attributable to septic shock caused by *Campylobacter jejuni* was high (4 out of 4 cases died) [1]. In our patient, the severity of infection could have

been enhanced by his immunosuppression induced by cirrhosis. Fluoroquinolones resistance has been documented; and it is increasingly common in some countries such as Spain [1] and Taiwan [8] where these drugs should not be considered for empirical therapy. In addition, emergence of resistance could represent an important issue for returning traveler's diarrhea.

Nevertheless, in patients with *Campylobacter spp* bacteremia, the impact of an appropriate treatment on prognosis continues to be controversial and there is a lack of evidence, especially for severe infections [1]. Pacanowsky et al. reported that failure to administer appropriate antibiotics in bacteremia caused by *Campylobacter spp* was associated with fatal outcome [9].

However, in two recent Spanish [1] and Finnish [3] retrospective studies, inappropriate antimicrobial therapy did not alter outcomes. More studies are needed to determine the impact of appropriateness of therapy on mortality.

Conclusions

The presented case of septic shock caused by fluoroquinolone-resistant *Campylobacter jejuni* on one hand was treated with an inappropriate antibacterial therapy and on the other hand was treated with a timely point of care multi-organ ultrasound-guided resuscitation. We feel that the latter aspects could have contributed significantly to positive outcome.

Conflicts of interest

None.

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