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Campylobacter coli Bacteremia In A Young Girl of Chronic Budd-Chiari Syndrome: First Case Report From India

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ABSTRACT

Introduction: *Campylobacter coli* are curved, Gram negative, microaerophilic, fastidious bacilli. They are the leading cause of gastroenteritis worldwide. These are zoonotic infections acquired by direct contact with animals or consumption of contaminated food products. The symptoms include diarrhoeal illness and fever. There are very few reports of extra-intestinal infections by *Campylobacter coli*. However, recent advancements in diagnostic technologies and automation have eased the identification of these pathogens. There are increasing reports of resistance to fluroquinolones, macrolides and third generation cephalosporins. Here, we present the case of bacteremia due to *Campylobacter coli* which is the first such case report from India.

Case Presentation: A 10 yrs. old female patient was admitted to pediatric gastroenterology ward with complaints of chronic diarrhoea for 5 years and abdominal distention for 2.5 months. The patient had dilated abdominal veins and gastric varices. The patient had fever 3 days prior to admission. *Campylobacter coli* was isolated from BACTEC blood culture bottle. The patient had associated diarrhea and anemia. The isolate was susceptible to macrolides and third generation cephalosporins but resistant to fluroquinolones. The patient responded well to azithromycin therapy.

Conclusion: *Campylobacter coli* is a rare cause of bacteremia. The disease burden caused by *Campylobacter coli* is undefined in Indian subcontinent. This is the first report of *C. coli* bacteremia from India.

KEYWORDS : Campylobacter coli, bacteremia, antibiotic

Introduction

Campylobacter species are non-spore forming, spiral or curved Gram-negative bacteria. They are catalase positive, oxidase positive chemoorganotrophs that utilize amino acids or tricarboxylic acid cycle intermediates as energy sources. They are fastidious organisms and grow in microaerobic conditions [1]. *C. jejuni* and *C. coli* are most commonly associated with diarrhea in human. However they are also associated with inflammatory bowel diseases, Barrett's esophagus, and colorectal cancer. The extraintestinal manifestations include lung infections, brain abscesses, meningitis, bacteremia, and reactive arthritis [2]. Bacteremia due to *C.coli* is very rare and is associated with various immunodeficient conditions.Due to improved diagnostic techniques and automated systems; this organism is increasingly isolated from various clinical conditions. Here, we report a serious case of bacteremia due to *C.coli* with no immunodeficiency conditions and this is the first case of bacteremia due to *C.coli* from India.

Case Report

A 10-year-old patient presented to a tertiary care center in India with complaints of increased frequency of stools since the age of 5 years. The patient had 5-6 episodes passage of semisolid stools per day. There was no history of blood or mucous in stools, pain in abdomen, rectal prolapse. Child was intermittently treated for diarrhea with oral medication with some response in symptoms. The patient had developed abdominal distention for 2 and a half months, and fever over 38^0C 3 days prior to admission which was associated with chills. There was no history of vomiting, constipation, pedal edema, periorbital puffiness. She had low blood hemoglobin concentration and low serum albumin. The patient was diagnosed with Chronic Budd Chiari syndrome with anemia, pseudo-obstruction and bacteremia.. Upon admission upper GI endoscopy was done, which showed large gastric varices, for which band ligation done. For these complaints, she received blood transfusion, diuretics and azithromycin. There was no history of exposure to contaminated food, poultry, or animal products. There was no history suggestive of infection with HIV, corticosteroid treatment, malignancy or other causes of immunosuppression.

On examination the patient was malnourished with weight 19 kg, Height 122 cm (both < 5^{th} centile). The patient had pallor and bitot's spot, but no jaundice, edema, cyanosis, clubbing. Abdominal examination revealed mild distended and prominent abdominal veins without dilatation or tortuosity. There was palpable hepatosplenomegaly.

Investigations : Hemoglobin was 9.7 mg/dl, Platelet count was 77,000/dl, TLC was 8.4 x1000/ul. Microbiological investigations included urine culture, stool culture and Blood culture. Urine culture was sterile after 24 hrs of incubation. Stool culture was negative for *C. coli*. Blood culture: 10 ml of blood was inoculated in a set of Bactec Blood culture bottles ((Becton Dickinson, Franklin Lakes, USA). On 4^{th} day of incubation the Blood culture bottle flagged a positive signal. It was subcultured on Blood agar and Mac Conkey agar. A Gram's smear was made. The smear showed Gram negative curved rods as shown in figure 1. The culture plates were incubated both aerobically and anaerobically. The Blood agar plates showed 2-3

mm size, non haemolytic, translucent colonies which were catalase and oxidase positive. The isolate was identified as *C. coli* by Phoenix automated system and confirmed by VITEK MALDI-TOF MS (Biomerieux). The patient tested negative for HIV infection.

Antimicrobial susceptibility was carried out for ciprofloxacin 5µg/l, levofloxacin 5µg/l, ofloxacin 5µg/l, trimethoprim-sulfmethaxazole, gentamicin 10µg/l, azithromycin 15µg/l, erythromycin 15µg/l, ceftazidime 30µg/l, ceftriaxone 30µg/l, Chloramphenicol 30µg/l by Kirby Bauer disc diffusion method. It was susceptible to gentamicin,azithromycin, erythromycin, ceftazidime, ceftriaxone, Chloramphenicol, doxycycline and tetracycline and resistant to all the fluroquinolones.

Diagnosis The patient was diagnosed as a case of *Campylobacter coli* bacteremia with chronic budd-chiari syndrome.

Treatment The patient was managed conservatively and treated with azithromycin 10mg/kg orally for 7 days.

Outcome and follow-up The patient responded well to treatment and the fever subsided. He was discharged in stable condition

Discussion

Infections with *Campylobacter spp*. have been on rise in the last century. The incidence and prevalence of campylobacter species have increased in both developed and developing countries over the last decade. There has been a dramatic increase in number of cases in North America, Europe, and Australia. There is inadequate data from Africa, Asia, and the Middle East[3]. In India, data from an infectious disease hospital in Kolkata reported that, 7.0% of hospitalized patients with gastroenteritis were culture positive for Campylobacter species. 70% of the isolates were identified as *C. Jejuni*[4]. A study from Vellore, South India, reported 4.5% of children under the age of 5 years with diarrhea were positive by PCR for *C. jejuni or C. Coli*[5]

Campylobacter coli associated bacteremia is rare. It is primarily associated with elderly or immunocompromised patients with other co-morbidities like such as liver cirrhosis, splenectomy or malignancy [6]. It carries 15% mortality within 30 days of a positive blood culture[6]. Absence of appropriate antibiotic treatment and the prescription of third-generation cephalosporins among patients with bacteremia due to Campylobacter species other than *C. fetus* were identified as independent risk factor for death. There is a report of myopericarditis caused by C. coli associated with campylobacter colitis from Australia [7]

Antibiotics in Campylobacter spp. are indicated in immunoco mpromised patients and those with extra intestinal infections. More over *C. jejuni* bacteremia might be transient in immunocompetent patients and treatment with antimicrobial agents is debatable, and transient *C. fetus* bacteremia can resolve without antimicrobial chemotherapy [8].Inadvertent use of antimicrobial agents in animal industry and poultry has increased the rate of drug resistance. Fluoroquinolone resistance in Campylobacter spp has been reported worldwide [9,10]. Emergence of multidrug-resistant (MDR) defined as strains with resistance to three or more antibiotics have emerged. In cases confirmed by culture, when antimicrobial therapy is indicated, macrolides primarily erythromycin or azithromycin remain the frontline agents for treatment[11,12]. Nonetheless, variations in antibiotic resistance have been observed over time in different geographical areas among different species. This warrants the need for continued public health monitoring of Campylobacter resistance in different environments, from isolates recovered from humans, animals, and food, to enable the early detection of emerging resistance patterns and to assess the impact of strategies designed to mitigate antimicrobial resistance.

Figure/Table Captions:

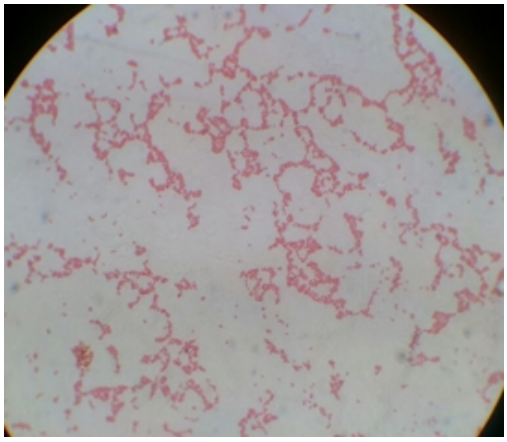

Figure 1: Gram staining of isolate

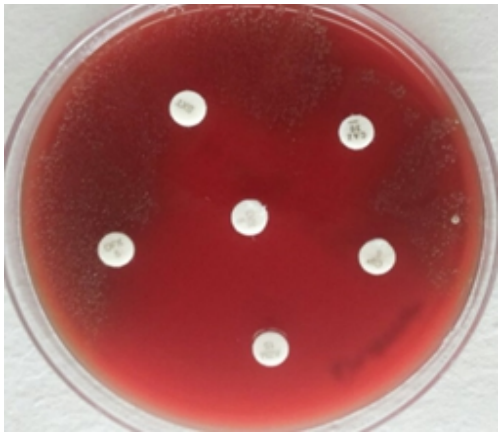

Figure 2: Antimicrobial Susceptibility testing on blood agar

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