

Short Report

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Enterohemorrhagic shiga- like toxin producer Escherichia Coli Ileitis: The first capsule endoscopy report in adults**Silvia Cocca^{1*}; Michele Campigotto²; Maria Sole Simonini³; Cristina Gozzi³; Giuseppe Grande¹; Santi Mangiafico¹; Helga Bertani¹; Rita Conigliaro¹**¹Gastroenterology and Endoscopy Department, Baggiovara Civil Hospital, Modena University Hospital Polyclinic, Italy.²Gastroenterology Department, Clinical-University of Medical, Surgical and Health Sciences, University of Trieste, Italy.³Internal Medicine and Gastroenterology Department, Baggiovara Civil Hospital, Modena University Hospital, Italy.***Corresponding Author: Silvia Cocca**Gastroenterology and Endoscopy Department,
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Abstract

Shiga-like toxin (Stx) producing Escherichia Coli (STEC) is the most common type of enterohemorrhagic Escherichia Coli (EHEC) and is responsible for outbreaks of acute diarrhoea every year and potential life-threatening events such as hemolytic huremic syndrome. These conditions are usually the result of a severe colitis, with extensively and well described endoscopic features. To date no cases of acute haemorrhagic ileitis due to STEC infection have been reported in adults and there are only few case reports in children. Our report describes a medium/terminal ileal inflammation due to STEC infection in a 44-year-old patient who was transferred in the intensive care department. Describing this different location of E.coli infection is important to promptly recognize the disease and to make an appropriate differential diagnosis as severe complications can occur also in otherwise healthy people or in other family members. Moreover, a well-founded suspicion can be of help for alerting microbiologists and pathologists to perform the right diagnostic tests and hygienists to accurately monitor for potential sources of infection.

Keywords: enterohemorrhagic escherichia coli; shiga-like toxins; ileitis; capsule endoscopy; acute diarrhoea.

Introduction

Shiga-like toxin producing Escherichia Coli (STEC) is the most common type of enterohemorrhagic Escherichia Coli (EHEC) [1]. Shiga toxins 1 and 2 (Stx1 and 2), also known as Shiga-like Toxins or verocytotoxins, can be produced by specific strains of E. coli defined by serotyping of specific surface antigens [1,2]. The most common serotype of STEC in Western Countries is O157:H7 and STEC infections cause 2.8 million acute illnesses a year on a global scale [3]. Multiple outbreaks have been recorded

since 1982, the vast majority through ingestion of contaminated foods in particular undercooked ground beef, unpasteurized dairy products and leafy green vegetables. Contaminated water ingestion and direct animal or interpersonal contact can also be a direct source of infection [1,4,5]. This infection can be responsible for a wide range of scenarios, ranging from asymptomatic carriage to severe conditions. The most common clinical manifestations are watery diarrhoea and abdominal pain, which usually occur after an incubation period of 3-4 days. In the majority of cases blood in faeces occurs 2-3 days

after and lasts from 2 to 5 days [1,2]. Hospitalization is required in 23% to 47% of patients when they develop acute diarrhea as result of a severe colitis which carries many similarities to the pseudomembranous one caused by *Clostridium Difficile* infection. Perforation or death can eventually occur and are the most severe complications together with hemolytic uremic syndrome (HUS) [1,6].

The characteristic colonoscopic findings in most patients with hemorrhagic STEC colitis have been extensively described, although the authors do not completely agree with each other: in a retrospective study, Shigeno et al. found lesions usually extend over a wide area from the sigmoid colon to the cecum, whereas the rectum and terminal ileum were always normal [7]. Rosen et al. described the mucosal abnormalities progress in severity from rectum to cecum, instead [8]. The most common endoscopic features are a diffuse edematous, erythematous and fragile mucosa, with disappearance of vascular patterns, longitudinal ulcer-like lesions and spontaneous bleeding. The mechanism by which these lesions develop may suggest a circulatory disturbance due to vascular endothelial cells damaged by Verotoxin. To date no cases of acute haemorrhagic ileitis due to STEC infection have been reported in the adult population, and only sporadic case reports described this condition in children [9,10].

Case report

A 44 years-old man came to the Emergency Department complaining about episodes of melena and profound asthenia. He also had a 48-hours episode of high fever (up to 39°C), vomiting and watery normocromic diarrhoea with spontaneous resolution almost seven days before. No allergies and drug medication intake were reported. No raw fish or unwashed vegetables were assumed the days before. Physical examination and vital signs were unaltered. Blood exams showed severe anaemia and slightly increased C-Reactive Protein. Stool samples for cultural examination were collected and PPI therapy was immediately started together with intravenous rehydration. Upper endoscopy was negative and during colonic examination the patient had a hypovolemic shock which required intensive Care Unit transfer. An urgent abdominal angio-CT scan showed a thickened wall of a medium-terminal ileum segment with

no active source of bleeding. Finally, antibiotic therapy with Azithromycin was started due to stool positivity at Polymerase Chain Reaction (PCR) for Enterohemorrhagic Shiga-Like toxin produced by O157 *Escherichia Coli*. After a significant clinical improvement, capsule endoscopy was performed and showed the presence in the mid/terminal ileum of edematous mucosa with loss of vascular pattern, erosions and circumferential ulcers. These inflamed segments, approximately 10-20 cm long, were not actively bleeding and were separated by regular mucosa (Figure 1,2). An ileo-colonoscopy with biopsies was performed and confirmed the presence of inflamed and ulcerated ileal mucosa while histology showed a mild chronic aspecific inflammation in the lamina propria. After two months, during which the patient improved significantly and all blood tests were back to normal, another CE examination was performed two months later and no abnormal findings were found.

Discussion

Haemorrhagic colitis due to O157 infection has been increasingly recognized as one of the most clinical relevant enteric infections in Western countries [3]. In the literature there are many case series and reports which describe only colonic endoscopic features of the disease. To our knowledge ileal inflammation in adults due to STEC has never been described, especially by capsule endoscopy. Therefore, this case extends the spectrum of disease manifestations of shiga-like toxin producing *E. coli*. Our Capsule Endoscopy report for the first time suggests that STEC infection presentation in the small bowel is possible even in the absence of colonic involvement, with lesions recalling the extensively described colonic ones. This different site of inflammation, however, imposes an accurate differential diagnosis with other aetiologies of acute ileitis in adults, such as, Inflammatory Bowel Diseases, enteric infections (*Clostridium Difficile*, *Salmonella*, *Yersinia*, *Tuberculosis*, *Cytomegalovirus*, *Histoplasmosis* or *Actinomycosis*), ischemia, neoplasms, medication-induced (moreover NSAIDs) ileitis or eosinophilic enteritis [11]. To this list we must now add verotoxic *E.coli* ileitis. Our report also remarks the potential severity of this infection, even in otherwise healthy people, with a life-threatening onset despite the involvement of short bowel segments.

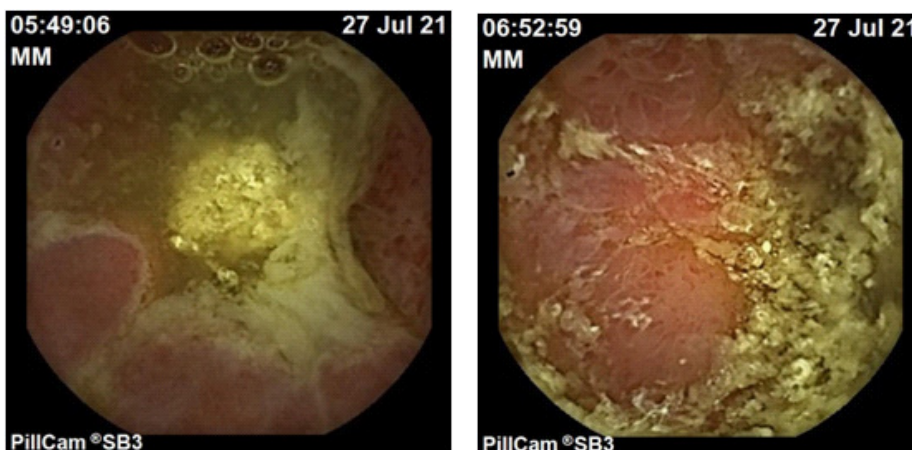


Figure 1&2: Capsule endoscopy appearance of Entero-haemorrhagic *E. Coli* ileitis.

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