Right Hemicolectomy for Intestinal Obstruction Due to *Yersinia pseudotuberculosis*: A Histopathological Surprise

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Abstract A 56-year-old man was diagnosed to be having enteric fever elsewhere and put on antibiotics. Despite therapy over 3 months, this patient had recurrent bouts of fever with chills, tiredness, and lower abdominal pain, distension, and vomiting with which he was admitted to our hospital. CT abdomen and pelvis showed significant wall thickening in the cecum and terminal ileum, with marked luminal narrowing and marked dilatation of proximal small bowel loops. Clinically a diagnosis of intestinal obstruction was made and the patient underwent exploratory laparotomy and right hemicolectomy. Histopathological examination showed necrotizing enteritis with necrotizing mesenteric lymphadenitis consistent with *Yersinia pseudotuberculosis*. We report a rare and possibly the first case of intestinal obstruction due to *Yersinia* infection, requiring right hemicolectomy.

Keywords *Yersinia pseudotuberculosis* · Intestinal obstruction

Case Report

A 56-year-old male patient, known diabetic on treatment, was diagnosed to be having enteric fever elsewhere and put on antibiotics. Despite therapy over 3 months, he continued to have recurrent bouts of fever with chills, tiredness, and lower abdominal pain, associated with loose stools and vomiting, with which he was admitted to our hospital. Clinical examination was suggestive of intestinal obstruction. CT abdomen and pelvis showed significant wall thickening in the cecum and

terminal ileum with marked dilatation of proximal small bowel loops. A few mesenteric lymph nodes and mild ascites were also noted in the right lower quadrant (Fig. 1). Colonoscopy was not done as the patient was in intestinal obstruction. CT findings suggested small bowel obstruction possibly due to Koch's/neoplasm in the ileocecal junction. The patient underwent exploratory laparotomy which revealed the following:

1. Terminal ileum and cecal wall thickening and luminal narrowing with multiple congested mesenteric lymph nodes
2. Small bowel dilatation proximal to obstruction with features of enteritis

Ileocolic resection with end-to-end anastomosis was done. Postoperatively the patient made an uneventful recovery.

On gross examination of the specimen, which showed dilated, edematous small intestine with multiple ulcers (Fig. 2) and circumferential ulceration of the ileocecal valve with thick exudate and edema, causing narrowing (Fig. 3), most likely diagnosis of ileocecal malignancy versus ileocecal tuberculosis was made. Multiple enlarged mesenteric lymph nodes were also seen. Histopathological examination showed multiple deep ulcers due to necrosis of the mucosa and submucosa (Fig. 4) involving the ileum and ileocecal valve, transmural inflammation with occasional ill-defined granulomas, and necrotizing mesenteric lymphadenitis. ZN stain was negative for acid-fast bacilli. These features of necrotizing enteritis with mesenteric lymphadenitis were suggestive of *Yersinia pseudotuberculosis* infection. Differential diagnoses of Wegener's granulomatosis and necrotizing enteritis due to clostridial infection were also considered based on histology, but were ruled out, as clinical features did not support the same. Confirmatory serological tests could not be done as the diagnosis had not been considered prior to surgery.

The patient was followed up regularly and was symptom free for the past 8 months.

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Fig. 1 CT showing ileocecal thickening with proximal small bowel dilatation

Discussion

Yersinia species are gram-negative coccobacilli which are facultative anaerobes [1]. Three species of *Yersinia*—*Y. pestis* (the causative agent of human plague), *Y. enterocolitica*, and *Y. pseudotuberculosis*—produce human illness. *Y. enterocolitica* causes the infection referred to as yersiniosis. Contaminated food and water serve as the major routes of transmission of infection to humans for both of these agents.

Y. pseudotuberculosis is a rare cause of disease in humans, the most common manifestation being mesenteric lymphadenitis accompanied by abdominal pain and fever. The various signs and symptoms associated with *Y. pseudotuberculosis* include fever, rash, abdominal symptoms, mesenteric adenitis, terminal ileitis, diarrhea, erythema nodosum, and sterile pleural effusion. A septicemic form of *Y. pseudotuberculosis* infection has been reported only rarely in patients with underlying disorders such as diabetes, hepatic cirrhosis, or iron overload [2, 3]. Although gastrointestinal involvement is common, intestinal obstruction is extremely rare and no literature review is available to date. The laboratory diagnosis of *Y. pseudotuberculosis* infection is a matter of confirming the presence of the organism using serological tests, culture

Fig. 3 Gross showing ileocecal valve region (cut open) with ulcers

studies, polymerase chain reaction (PCR), and histological examination.

Y. pseudotuberculosis infection is often self-limited. However, more toxic presentations, including septic syndromes, severe dehydration, etc., may warrant hospitalization. General supportive care of such patients is needed. In most cases, *Y. pseudotuberculosis* infections do not require therapy with antimicrobials. However, in younger or immunosuppressed patients who are critically ill, beta-lactam antibiotic therapy may be prudent. Antibiotic therapy (initially intravenous) is warranted to treat the septic form of *Y. pseudotuberculosis* infection. Initial empiric therapy should include an aminopenicillin (e.g., ampicillin with or without a beta-lactamase inhibitor) [2, 4] and, ideally, an aminoglycoside. Exploratory laparotomy may be warranted in patients with complications such as severe abdominal pain, including acute abdominal presentations, peritoneal findings, or, uncommonly, intussusception. However, this intervention is not common [4]. Here, we report a rare and possibly the first case of intestinal obstruction due to *Yersinia* infection, requiring right hemicolectomy.

Conclusion

Y. pseudotuberculosis infection is an unusual cause of human disease whose diagnosis may be missed or delayed because of its variable presentation. Although gastrointestinal involvement

Fig. 2 Gross showing multiple ileal ulcers

Fig. 4 Mucosal necrosis with vasculitis

is common, intestinal obstruction is extremely rare and has to be kept in mind as one of the possible etiologies along with tuberculosis and malignancy, as demonstrated by this case.

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