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Case Report

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Perforated gangrenous Meckel's diverticulum due to round worm bolus presenting as acute abdomen

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ABSTRACT

Meckel's diverticulum is the most common congenital malformations of the gastrointestinal tract and is usually asymptomatic. However, in patients with the intestinal ascariasis, Meckel's diverticulum may pursue a silent course or may be complicated by diverticulitis, gangrene, and perforation. Perforation due to impacted round worm bolus is a rare complication. This report presents a rare complication of Meckel's diverticulum due to impacted round worm bolus.

KEY WORDS: *Ascaris lumbrocoides*, gangrene, Meckel's diverticulum, perforation

INTRODUCTION

Gastrointestinal (GI) tract infestation with *Ascaris lumbricoides* is a worldwide phenomenon involving up to 25% of the world's population, mostly in the third world countries due to poor hygienic and low socioeconomic conditions [1]. A variety of surgical complications in an abdomen caused by A. *lumbrocoides* have been reported and are usually most common in children. Wandering nature of A. *lumbrocoides* after migration from their usual habitat of a small intestine is the most common reason for surgical complications in the abdomen. Intestinal obstruction, biliary ascariasis, pancreatic ascariasis, hepatic abscess, gallbladder ascariasis, hepatolithiasis, appendicitis, and Meckel's diverticulitis are complications associated with the abdominal ascariasis [2]. Ascariasis can directly complicate a Meckel's diverticulum or could be complicated secondarily due to involvement of the segment of ileum on which it is located. The risk of complications increases when associated with a narrow-based Meckel's and a high burden of intestinal roundworms.

CASE REPORT

A 6-year-old boy was presented to the Surgical Outpatient Department of Government Medical College Srinagar, India, with a history of abdominal pain, vomiting, and abdominal distension. On clinical examination, the patient was pale, toxemic, and febrile (101°F). Abdomen was distended, tender to touch having generalized rebound tenderness with absent bowel sounds. Investigation revealed anemia (hemoglobin of 8 g/dl), leukocytosis (18000 × 10^9/L), and an eosinophilia of 15%. The serum urea and electrolytes were within normal limits. Plain X-ray abdomen revealed multiple air fluid levels with free gas under the diaphragm. Ultrasonography of the abdomen showed dilated small bowel loops with multiple worms and free fluid in the peritoneal cavity. The patient was resuscitated with intravenous fluids and blood transfusion was given. Exploratory laparotomy revealed about 1 L of seropurulent fluid with a few round worms in the peritoneal cavity. On close examination, an impacted worm bolus was found in Meckel's diverticulum perforating its tip [Figure 1]. Gangrenous changes involving diverticulum were also seen. No adhesions were found. The diverticulum along with a segment of adjoining bowel was resected and end-to-end anastomosis done. Peritoneal lavage was given and drain kept. Abdomen was closed in layers. The patient had an uneventful post-operative period and was discharged on 9th day.

DISCUSSION

Meckel's diverticulum is the most frequent congenital anomaly of the GI tract, occurring in 2% of the population. It is located on the antimesenteric border of the ileum and in 90% of the cases at 60 cm from the ileocoecal valve. Most cases remain

Figure 1: Worm bolus impacted in perforated gangrenous Meckel's diverticulum

asymptomatic throughout life. Inflammation of the diverticulum is one of the common complications occurring in 24% of the cases [2]. Various foreign bodies including round worms, tape worms, toothpick, food residues, fishbone, and gallstones have been responsible for inflammation or even sometimes may lead to perforation of Meckel's diverticulum [3,4]. In our environment, ascariasis is a common problem especially in children. Normally, the adult worms inhabit the intestinal lumen, mostly the jejunum without causing any symptoms. However, when aggregated into masses, the worms may produce intestinal obstruction, volvulus or intussusceptions, and cause many other complications [5]. *A. lumbrocoides* has a great propensity to explore small openings. Similar migration into a Meckel's diverticulum could cause inflammation as in our patient. In parasite endemic areas like ours, this possibility should be considered when evaluating children with abdominal pain. Perforation of Meckel's diverticulum is rarely seen implied by the roundworms [6], but a long Meckel's diverticulum with a narrow base predisposes to intraluminal obstruction causing inflammation, necrosis, and perforation akin to acute appendicitis. The obstruction is usually caused by interlocking of multiple small sized roundworms in a long narrow-based diverticulum. Worm bolus induced obstruction can occasionally lead to the gangrene and perforation of ileum and Meckel's diverticulum secondary to pressure necrosis leading to peritonitis [7]. It should be stressed that worm itself directly cannot lead to perforation of normal Meckel's diverticulum. Bowel necrosis and perforation are a consequence of vascular compromise due to the pressure of impacted worms [8]. In general, the management of intestinal ascariasis may involve conservative treatment or the surgical intervention in the patients who do not respond to the conservative management. Plain X-ray abdomen and the ultrasonography abdomen are routinely used radiological investigations used for diagnosis. Conservative treatment includes application of intravenous fluids for hydration, antibiotics, and use of enemas. Anthelmintics are given when patients are asymptomatic. Surgical interventions used in the ascaridial intestinal obstruction are enterotomy, milking, resection anastomosis, and diverticulectomy or resection of Meckel's diverticulum [9,10].

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