Perforated Bowel from Ascariasis: Incidental Finding in an Adolescent with a Penetrating Abdominal Injury

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ABSTRACT

A 15year old boy presented to the accident and emergency unit with acute abdomen following penetrating abdominal injury. Emergency exploratory laparatomy revealed penetrating injury to the jejunum, ascaris worm within the peritoneum and ascaris worm milked out of a perforation near the jejuno-duodonal junction. The resected bowel sent to the Pathology laboratory also revealed another worm within the lumen.

Keywords: Ascariasis, Bowel perforation, Acute Abdomen

Introduction

Ascariasis is a common helminthic infection especially in children from low socio economic setting.[3, 5] It may result in intestinal obstruction, intussusception and volvulus all of which are causes of acute abdomen necessitating medical intervention.[3] Acute abdomen is a medical emergency and a leading cause of exploratory laparatomy in developing countries. Penetrating abdominal injury from a variety of incidental and accidental causes are quite common and the attendant morbidity and mortality is high due to late presentation and overwhelming infection.[1, 4]

We report a 15year old adolescent who presented with penetrating abdominal injury to the accident and emergency unit of our hospital following domestic accident and an incidental finding of perforated bowel due to Ascariasis.

Case Presentation

A 15year old adolescent boy presented with acute abdomen to the accident and emergency unit of our hospital following a penetrating abdominal injury from domestic scruffle 3hours prior to presentation. On arrival portion of his intestine was seen extruding through a wound in the anterior abdominal wall in the right lower quadrant (lumbar region). He was prepared for emergency exploratory laparotomy. His pack cell volume (PCV) was 37%; Temperature was 36.5°C, urea and electrolytes were within normal limits. The exploration revealed penetrating injury to the upper part of the jejunum and a 1cm perforation near the duodeno-jejunal junction. A worm was milked out of the perforation and another was found within the peritoneal cavity. He had intestinal resection and anastomosis,

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and was placed on ceftriazone, metronidazole and mebendazole 400mg single dose. The worms were sent to microbiology laboratory for identification and the resected bowel to the Pathology Laboratory for analysis. The resected bowel measured 59 cm in length and weighed 270g. Grossly two perforations were seen 25cm and 45 cm from the duodeno-jejunal junction. Cut section through the lumen revealed a worm measuring 36cm in length (Fig. 1). Tissue histology showed perforated bowel with transmural infiltration by polymorphs, eosinophils and plasma cells (Fig 2). The worms were identified as ascaris lumbricoides. He had

Fig 1: Ascaris worm within bowel lumen. Arrow heads show perforation

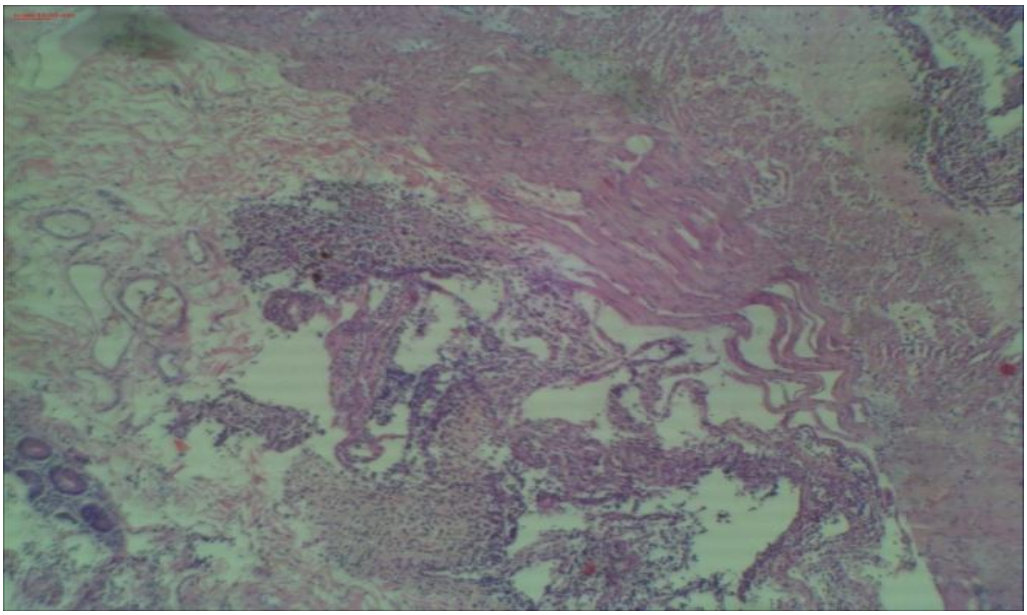

Fig 2: Perforated bowel with transmural Inflammation. H&E, mag x40

an uneventful post operative period and was discharged for follow up to the surgical outpatient clinic.

Discussion

Ascariasis is an intestinal helminthic infection affecting approximately 1.4 billion people world wide.[1,2] Human infection is from ingestion of worm ova contaminated food and water. It has annual incidence of 1 000 000 and fatality from new cases is 60 000.[2-4] The majority of the cases are seen in South America, Africa and Asia with rates of 8%,12% and 73% respectively.[6] High incidence rates are associated with poor living condition, improper sewage and soilage disposal.[5] Ascariasis is most common in children between 2 to 10 years of age, though all age may be affected.

The peak age incidence is between 5-15 years, while its prevalence decreases from age of 15 years and above.[2,] Massive infestation in young children may lead to complications such as small intestinal obstruction, volvulus and intussusception. Intestinal obstruction has been estimated to occur in 2 per 1000 Ascaris-infected children per year.[1,2,3-8.] Obstructions of the appendiceal lumen, bile duct and pancreatic duct have also been reported. Other sequelea of ascariasis are peritonitis from attendant viscus perforation as seen in this case as well as lung and liver abscesses.

In addition, some of the mechanical complications are related to the life cycle of the worm. When the eggs are ingested in contaminated food and water, gastric secretion by the host causes the eggs to hatch in the small intestine. They then penetrate the intestinal mucosa and are transported haematogenously to the lungs causing varying pulmonary manifestations. The worms grow within the alveoli and travel up the airways, to the epiglottis to be swallowed again. The average length of the adult worm is 35cm with a life span of 6 month to 1year. The secretions from the worms as well as toxic decomposition products of disintegrating worms also appear to be capable of provoking a severe and sometimes necrotizing inflammatory reaction in the bowel or bile ducts as well as systemic and pulmonary hypersensitive reactions thus the proposed possible mechanism for the bowel perforation.

The clinical manifestation of ascariasis depends on the parasite load. Some patients may be asymptomatic as in the index case while other may present with malnutrition, chronic abdominal colics, nausea, vomiting and passage of the worms per rectum and sometimes through the mouth.[2,3,5.] Other uncommon complications are pancreatitis, appendicitis, cholecystitis, liver abscess, cardiac tamponade and airway obstruction.[1, 3-5,8-10] Diagnosis can be achieved with conventional abdominal radiographs showing curvilinear soft-tissue-density cords. If bowel obstruction is present, the typical pattern of air-filled, dilated loops of small bowel with multiple air-fluid levels can be seen on an upright radiograph. Ultra Sound scan will depict the adult worm as a hypo echoic tubular structure with well-defined echogenic walls. During real-time evaluation, the worms can be seen making curling movements. Although CT is not the modality of choice for diagnosis of ascariasis, the worms can usually be visualized within the bowel lumen as soft-tissue windowing. Grossly, the adult worm can be identified by its tapered ends and a mouth surrounded by three lips. The tail of the male is curved with small rod-like projections (spicules).

Treatment with oral administration of a single 400-mg dose of albendazole is usually successful. However, in the presence of bowel obstruction and peritonitis, surgery and antibiotic therapy is usually indicated. Bowel resection with creation of an end-to-end anastomosis is necessary only when bowel perforation and or necrosis is identified as in this patient. Otherwise, the worms can simply be milked into the colon, from where they will be passed out with faeces. Primary anastomosis

after resection of a bowel segment with worm bolus is generally acceptable, as seen in this patient, though extensive mucosal damage within the intestine may cause long term complications. The early diagnosis of helminthiasis and improvement of sanitary condition will reduce the attendant high mortality and morbidity of the infestation.

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