Annals of Clinical Case Reports

Case Report
Published: 02 Apr, 2019

An Uncommon Cause of Acute Abdomen in Underprivileged Communities

Mahomva Farai[1], Muchuweti D[1], Mungani H[2] and Muguti EG[1]*

[1]Department of Surgery, University of Zimbabwe, Zimbabwe

[2]Department of Surgery, Harare Central Hospital, Zimbabwe

Abstract

Oftentimes general surgeons working in poorly resourced communities carry out emergency abdominal surgery in patients with acute abdomen with no definitive preoperative diagnosis. The definitive diagnosis is made at laparotomy. Perforated small bowel obstruction secondary to heavy Infestation with *Ascaris lumbricoides* brings a number of intraoperative challenges requiring correct intraoperative surgical management decisions. We present a case of a 17 year-old patient who was admitted with a diagnosis of small bowel obstruction that at laparotomy was found to have perforated gangrenous small bowel volvulus with heavy worm load visible through the bowel wall. Because of fecal peritoneal contamination and hemodynamic instability she underwent a two staged procedure with good outcome.

Keywords: ***Ascarias lumbricoides*; Ascariasis; Infestation; Volvulus; Obstruction; Gangrenous**

Introduction

Approximately 1.5 billion or 25% of people around the world are infected with *Ascaris lumbricoides* mainly in tropical and subtropical regions [1,2]. Prevalence of *Ascaris lumbricoides* is related to poverty, poor fecal sanitation and poor hygiene. Most individuals infected with *Ascaris lumbricoides* are asymptomatic and medical treatment is the mainstay of management of infestations. Surgical complications are common in patient with a high worm load and include mechanical small bowel obstruction, gastrointestinal haemorrhage, gastrointestinal perforation, obstructive jaundice, pancreatitis, and appendicitis [2-4]. Intestinal obstruction is the most common complication and commonly occurs near the ileal-caecal valve as result of a bolus of worm obstructing the bowel lumen [3,5,6].

Definitive preoperative diagnosis is easy to make in well-resourced centers through the use of plain x-rays, Sonography and Computed Tomography scans. Plain radiographs of abdomen show radiolucent areas, cigar bundle appearance, "whirlpool" sign, pneumoperitoneum in a case of perforation and multiple air fluid levels in case of heavy worm infestation [7-9]. Ultrasound findings suggestive of ascariasis include the following:-

a) A thick echogenic strip with a central anechoic tube.

b) Multiple long, linear, parallel echogenic strips without acoustic shadowing in longitudinal (railway track) and transverse (bull's eye) views [9-11].

Challenging operative findings include perforation with fecal contamination, gangrenous bowel and heavy worm infestation. These were the challenges we encountered in a hemodynamically unstable 17 year old female patient we successfully managed.

Case Presentation

We admitted a previously well 17 year female patient referred from a peripheral district hospital with a five day history of colicky abdominal pain, abdominal distention, and absolute constipation and vomiting. She was referred with a diagnosis of intestinal obstruction.

The referring doctor from the district hospital had commenced the patient on IV fluids (Ringer's Lactate 1 L 8 hourly), intravenous antibiotics (Ceftriaxone 1 gm daily and Metronidazole 500 mg, 8 hourly), put the patient on oxygen per face mask, had inserted a transurethral catheter and a nasogastric tube for free drainage. There was approximately 200 ml of feculent material in her nasogastric drainage bag.

OPEN ACCESS

Correspondence:
Muchuweti D, Department of Surgery, College of Health Sciences, University of Zimbabwe, Zimbabwe, E-mail: drdmuchuweti@gmail.com

Received Date: *07 Mar 2019*
Accepted Date: *28 Mar 2019*
Published Date: *02 Apr 2019*

Citation:
Farai M, Muchuweti D, Mungani H, Muguti EG. An Uncommon Cause of Acute Abdomen in Underprivileged Communities. Ann Clin Case Rep. 2019; 4: 1635.

ISSN: 2474-1655

Figure 1: Gangrenous terminal ileum (blue arrows showing worms in the bowel lumen).

On examination she was ill looking, in respiratory distress, dehydrated, and lethargic. Her level of conscious was 15/15. She was tachypnoeic with a respiratory rate of 32 breaths per minute with an oxygen saturation of 80% on oxygen per face mask. She had a high pulse rate of 120 beats per minute and was pyrexial with a temperature of 38.1° C. Her blood pressure was 112/70 mmHg.

Her abdominal examination demonstrated a grossly distended abdomen, splinting the mechanics of respiration. She did not have any surgical scars or hernias. On palpation she had generalized and rebound tenderness. Bowel sounds were absent on auscultation and her rectum was empty on digital rectal examination. Other systems were normal on examination. A clinical diagnosis of intestinal obstruction with ischemic bowel was made. The X-rays done showed multiple air fluid levels and distended loops of small bowel. No free air was noted on the X-rays. Her Full Blood Count (FBC) showed an elevated white cell count 13.6 × 10^9 and a low hemoglobin of 9.3 g/dl. Platelet count was normal, 294 × 10^3. Her sodium and Potassium were normal, 134 mmol/l and 4.6 mmol/l respectively. Urea was elevated, 17.0 mmol/l. So was Creatinine, 294 mmol/l. Two units of blood were cross-matched in preparation for a laparotomy.

Fluid resuscitation was continued and the anaesthetic team was notified. The patient was taken to theatre for a laparotomy. The abdomen was entered via mid-line longitudinal incision. A terminal ileal gangrenous small bowel volvulus was noted. There was a perforation at the centre of the volvulus with fecal contamination of the peritoneal cavity. Viable worms could be seen through the wall of viable and gangrenous bowel as shown in (Figure 1).

Intraoperatively the patient became hemodynamically unstable and required inotropic support. Because of hemodynamic instability and gross peritoneal fecal soiling, resection of 80 cm of gangrenous small bowel was done followed by fashioning of an end ileostomy. Piperazine was instilled via the ileostomy end. Peritoneal lavage was done using 3 liter of warm saline and the abdomen was closed in two layers with 0 PDS continuous suture for the sheath and 2-0 nylon interrupted sutures on the skin. Patient was admitted into the Intensive Care Unit (ICU) for cardiopulmonary support.

Patient' Progress

The patient continued to improve whilst in ICU and on day three was transferred to High Dependence Unit (HDU). Piperazine was continued via the nasogastric tube and when the stoma began to function lots of dead worms were passed through the stoma. By day 5 the patient was feeding. The high ileostomy output brought a number of challenges which included nutrition and fluid and electrolytes challenges. Frequent nutritional assessment and rehabilitation allowed us to overcome this challenge. Superficial surgical site infection set on day 7 and this necessitated removal of skin sutures to allow free drainage. Antibiotics were given based on microbiology, culture and sensitivity. She was discharged home well on day 16 post operation. She had uneventful closure of colostomy at 10 weeks after the initial operation.

Discussion

Approximately 1.5 billion or 25% of people around the world are infected with *Ascaris lumbricoides* mainly in tropical and subtropical regions [1,2]. The highest prevalence of ascaris occurs in tropical countries where warm, wet climates provide environmental conditions that favour year-round transmission of infection [2]. Prevalence of *Ascaris lumbricoides* is related to poverty, poor faecal sanitation and poor hygiene. Ascariasis is common in young children between the age of 2 and 10 years under [4]. Our patient came from rural Zimbabwe where there are great challenges with regard to clean water supply and proper sanitation. Our case presented at an older age. It is possible that she may have been infected at a younger age and was asymptomatic most of the time up until this acute surgical presentation.

The majority of *Ascaris lumbricoides* infestations are asymptomatic. Clinical disease is restricted to patients with high worm load [4]. Symptoms are related to larval migration stage or to the adult worm intestinal stage. Pathophysiological mechanisms resulting in disease include direct tissue damage, the immunological response of the host to infection with the eggs [12], larvae and adult worms, obstruction of an orifice or the lumen of gastrointestinal tract by adult worms and nutritional sequelae of infection [13].

Definitive preoperative diagnosis is not always easy in underprivileged communities with poor heath funding. Laboratory and imaging investigations are very limited or unavailable in these communities. This leaves the attending surgeon to have a high index of suspicion of acute abdomen secondary to ascariasis. This results in delay in diagnosis and increase in morbidity as was the case with our patient. More often surgeons carry out emergency abdominal surgery and only make the definitive diagnosis at laparotomy, as in our case. When available imaging studies can accurately diagnose intestinal ascariasis [7,8-11]. It is particularly important to identify worms on plain X-rays as this can avoid unnecessary laparotomy for partial obstruction thorough timely administration of medical treatment. The indication for surgery in our patient was justified by the clear signs of peritonitis which was consistent with the gangrenous perforated bowel found at laparotomy.

The challenges encountered at operation were finding heavy worm load within the bowel lumen, gangrenous small bowel volvulus with perforation and fecal contamination in a haemodynamically unstable patient. Correct surgical decisions needed to be made, the surgical options available were resection of gangrenous bowel, milking of worms followed by bowel anastomosis or resection of bowel and fashioning an ileostomy and giving the patient anti- helmintics in the postoperative period [3]. Milking of *Ascaris lumbricoides* from the bowel lumen has the potential advantage of reducing the worm load and thereby reducing the likelihood of anastomotic disruption [3,8,10]. Milking of worms is a time consuming procedure which

may be contraindicated in haemodynamically unstable patients [3]. Intraoperatively anthelmintic drugs can be instilled in the bowel lumen, as in our case via resected bowel ends. These drugs include Piperazine citrate, pyrantel pamoate, albendazole, and Mebendazole. This ensures death of worms and no further effect to the anastomosis. Ascaria does not have teeth and stay in the intestinal lumen [8,14]. It can still penetrate normal or pathologic bowel [8,14]. In simple perforations worms can still be milked via the perforation followed by instillation of Piperazine or any other antihelminthic drug followed by simple closure of the perforation and continuation of anti-helminthic drugs in the post-operative period. Bowel resection was mandatory in our patient as the loops of small bowel involved in the volvulus were gangrenous. Piperazine was instilled via the resected bowel ends followed by ileostomy fashioning. No milking of worms was done because of hemodynamic instability in our patient [15-23].

Post-operative recovery can be stormy in patients with faecal contamination and an ileostomy. Major challenges encountered during management of our patient include nutritional challenges, due to increased ileostomy output, fluid and electrolyte challenges as well as septic complications. Good outcome hinged on frequent nutritional assessment and aggressive nutritional rehabilitation, evaluation and correction of fluid and electrolytes imbalances and treatment of septic complications based on microbiology, culture and sensitivity. The successful outcome in our patient was because we followed these core principles.

Conclusion

Ascaris lumbricoides infestation has protean clinical manifestations, one of which is acute abdomen. A high index of suspicion is mandatory to clinicians working in developing or underprivileged communities. Where imaging is available the diagnosis can made preoperatively and some patients with partial obstruction can be spared surgery. For successful outcome, patients presenting with acute abdomen needs early, correct patient specific surgical procedures, intraoperative and postoperative de-worming and supportive care.

References

1. Hotez PJ. Pediatric geohelminth infections: trichuriasis, ascariasis, and hookworm infections. Elsevier. 2000;11(4):236-44.
2. Andrade AM, Perez Y, Lopez C, Collazos SS, Andrade AM, Ramirez GO, et al. Intestinal obstruction in a 3-year-old girl by Ascaris lumbricoides infestation: case report and review of the literature. Medicine (Baltimore). 2015;94(16):e655.
3. Ramareddy RS, Alladi A, Siddapa OS, Deepti V, Akthar T, Mamata B. Surgical complications of Ascaris lumbricoides in children. J Indian Assoc Pediatr Surg. 2012;17(3):116-9.
4. Khuroo MS. Ascariasis. Gastroenterol Clin North Am. 1996;25(3):553-77.
5. Yetim I, Ozkan OV, Semerci E, Abanoz R. Rare cause of intestinal obstruction, Ascaris lumbricoides infestation: two case reports. Cases J. 2009;2:7970.
6. Nag HH, Ji R. Ascariasis presenting as acute abdomen- A case report. Indian J Surg. 2013;75(Suppl1):128-30.
7. McAlister WH, Kronemer KA. Emergency gastrointestinal radiology of the newborn. Radiol Clin North Am. 1996;34(4):819-44.
8. Esposito C, Settimi A, De Marco M, De Fazio C, Giurin I, Savanelli A, et al. Surgical complications of ascariasis in children. J Pediatric Surg Spec. 2008;2(3):8-12.
9. Mir IA, Wani NA, Mahajan A, Patnaik R. Radio-imaging in ascariasis. JK Science. 2002;4(3):158-60.
10. Mishra PK, Agrawal A, Joshi M, Sanghvi B, Shah H, Parelkar SV. Intestinal obstruction in children due to Ascariasis: A tertiary health centre experience. Afr J Paediatr Surg. 2008;5(2):65-70.
11. Sharma UK, Rauniyar RK, Bhatta N. Roundworm infestation presenting as acute abdomen in four cases-Sonographic diagnosis. Kathmandu Univ Med J. 2005;3(1):87-90.
12. Seltzer E. Ascariasis. In: Tropical Infectious Diseases: Principles, Pathogens and Practice. 1st ed. Guerrant, RL, Waker R, Weller, PF, editors. Philadelphia: Churchill Livingstone, UK; 1999. p. 553.
13. Tietze PE, Tietze PH. The roundworm, Ascaris lumbricoides. Prim Care. 1991;18(1):25-41.
14. Refeidi A. Live Ascaris lumbricoides in the peritoneal cavity. Ann Saudi Med. 2007;27(2):118-21.
15. Wiersma R, Hadley GP. Small bowel volvulus complicating intestinal ascariasis in children. Br J Surg. 1988;75(1):86-7.
16. Mahomed N, Docrat Z, Mkhonza L, Keating L. Overlooking the abdominal X-ray-the peril of ascariasis. clinical images. South African J Surg. 2012;50(1):22.
17. Ellman BA, Wynne JM, Freeman A. Intestinal ascariasis: new plain film features. AJR Am J Roentgenol. 1980;135(1):37-42.
18. Khan EA, Khalid A, Hashmi I, Jan IA. Gastrointestinal obstruction due to ascariasis-Management issues. Inf Dis J Pakistan. 2008;17:72-4.
19. Paul M. The movements of the adult Ascaris lumbricoides. Br J Surg. 1972;59(6):437-42.
20. Villamizar E, Mendez M, Bonilla E, Varon H, de Ontra S. Ascaris lumbricoides infestation as a cause of intestinal obstruction in children: experience with 87 cases. J Pediatr Surg. 1996;31(1):201-4.
21. Gupta S, Kumar S, Satapathy A, Ray U, Chatterjee S, Choudhury TK. Ascaris lumbricoides: an unusual aetiology of gastric perforation. J Surg Case Rep. 2012;2012(11):rjs008.
22. Baker ML, Williams RN, Nightingale JM. Causes and management of a high-output stoma. Colorectal Dis. 2011;13(2):191-7.
23. Diouf C, Kane A, Ndoye NA, Ndour O, Faye-Fall, Fall M, et al. Volvulus du grêle sur paquet d'ascaris: à propos d'un cas. Pan Afr Med J. 2016;24:208.