A Case of Curative Resection of Massive Small Bowel Gangrene at Gandaki Medical College Teaching Hospital, Pokhara, Nepal

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Abstract

Ascariasis is a helminthic infection of humans with worldwide distribution. It is estimated that more than 1.4 billion people are found infected with Ascaris lumbricordes, representing 25% of the world population. We report a case of small bowel volvulus in a 15 year old male child who presented with vague symptoms of vomiting, distension of abdomen, mild pain and constipation. It was diagnosed as a case of small bowel obstruction with the presence of a bunch of Ascaris mass lying in one of the bowel loop. Administration of albendazole therapy through nasogastric tube in initial stages helps in evacuation of worms via stool successfully. The condition of this patient did not give us space to try this regime, therefore the patient had to be submitted for emergency laparotomy, resection, anastomosis and eventually his recovery with great satisfaction. This case is unique in highlighting the efforts of surgical team for achieving success through massive surgical procedures, monitoring post operative critical course and the hospitalization period till his discharge from the surgical ward.

Key words: Small bowel volvulus, Ascaris lumbricoides, Laparotomy, Resection.

Introduction

Small bowel volvulus is a rare but life threatening emergency. The causes of small bowel volvulus may be classified as either primary or secondary. Primary small bowel volvulus occurs in an otherwise normal abdominal cavity, associated with diet, gut motility. The suggested mechanism underlying primary small bowel volvulus is that a bulky bolus of food enters the proximal jejunum, causing the loop to descend into the pelvis, which displaces empty small bowel loops upwards, initiating rotation of the mesentery and leading to volvulus. Secondary small bowel volvulus may be frequently associated with various predisposing conditions such as bands, adhesions, Meckel's diverticulum, internal hernia, Ascariasis, and pregnancy. The suggested mechanism of secondary small bowel volvulus involves obstruction of a small bowel loop at two fixed points by one of these predisposing conditions. As the loop fills with liquid, peristalsis causes it to twist around its mesentery.

Cases of small bowel volvulus secondary to Ascaris infestation have been reported earlier[1,2], but requiring a massive resection that has left remaining 32.5 cm jejunum loop in a 15 year old male child has never been reported earlier in the medical literature of Nepal. Imtiaz Wani[3] described an extensive review of intestinal ascariasis and its surgical history. This case is unique in highlighting the efforts of surgical team for achieving success through massive surgical procedures, monitoring post operative critical course and the hospitalization period till his discharge from the surgical ward.

Case Report

A 15 year old boy named Tul Bahadur Thapa, IPt no 20223 dated 20/04/2015 was admitted to Gandaki Medical College Teaching Hospital, Pokhara, Nepal, with the chief complaints of progressive vomiting, distension of abdomen, mild pain and not able to pass stool since the onset of the above complaints for the last 4 days. There were no identifying signs and symptoms suggestive of bowel gangrene. He underwent thorough investigations and was diagnosed as a case of small bowel obstruction with the presence of bunch of Ascaris mass lying in one of the bowel loop. He was managed on conservative line

for the first 24 hrs, so as to improve his general condition. The next day, he started showing the signs of peritonism. Surgery was planned and mid line exploratory laparotomy was conducted. It was observed that the significant length of small intestine (160 cm from the DJ up the IJ junction) was found to be distended with gases with dark colored bloody fluids, twisted, ischemic, and gangrenous (Fig 1). The mesentery was edematous. The entire portion of small bowel including the contained loop of Ascaris bundle mass was resected from DJ junction to IJ with a sleeve of adjoining inflamed cecal wall (Fig 2). The round worms were squeezed through distal ileal opening, measuring in length 20 - 35 cm in length and 4 - 6 mm in diameter. They are pale white oblique pink and are tapered at both ends (Fig 3). The defect in the cecum was repaired. As the 2/3 of the cecum, and the ascending colon were having fixation of retro-peritoneum, a side to side, antiperistaltic anastomosis with the right third of the transverse colon to the residual jejunum was performed. A cecostomy tube was taken out from a separate right iliac fossa opening with the safety purpose was inducted. Another drain was kept at the anastomotic site. The abdomen was closed.

Fig 1: Twisted, distended, necrotic, small bowel loops

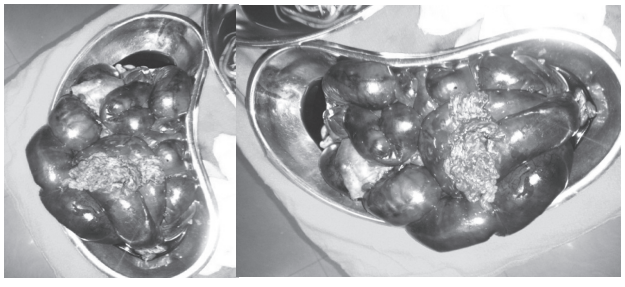


Fig 2: Excised gangrenous bowel loops with mesentery

Fig 3: A bunch of *Ascaris lumbricoides* in the tray

During post operative phase a central venous line was started for infusing IV solutions. During the next 48 hrs, patient developed massive edema all over the body that responded to the supplementation of a bottle of serum followed by TPN solution (Soya bean solution). His recovery period was monitored on hour to hour basis, as per body requirements of electrolytes, IV fluids, vitamins and a bottle of whole blood. The patient developed intermittent fever pattern on 4^{th} - 5^{th} day. During 6^{th} - 8^{th} post operative period, patient showed the signs of wound infection at the main incision site. It was duly tackled in the usual manner after checking the culture and sensitivity test, and this ended up with secondary suturing. The patient was discharged fit and healthy after 3 weeks stay in surgery ward.

On examination

Toxic looking child, GCS: 15/15 vital stable

Chest / CVS/ CNS: NAD.

P/A: Scaphoid abdomen with generalized tenderness all over.

Bowel sounds absent. No rigidity / guarding.

Blood investigatioins

CBC: 18000/cmm, N 78%, L 12%, E 32%, Na 144meq/L, K 4.2meq/L, Hb 12.2 gm/dL.

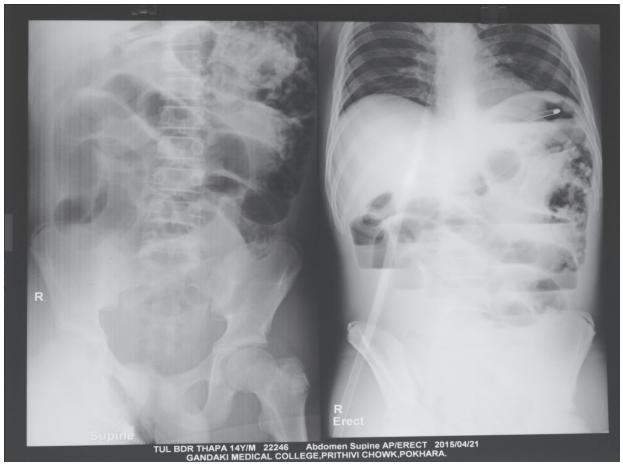
Urine

R/E: WNL/ CXR: NAD /AXR: F/S/O small bowel obstruction.

Abdominal radiography

Demonstrate gaseous dilatation of multiple bowel loops with air filled transverse shadows of fluids labels. "Whirl

pool" affect i.e. large collection may be detectable on plain field of abdomen[11]. The mass of worms contrasts against the gas in bowel.

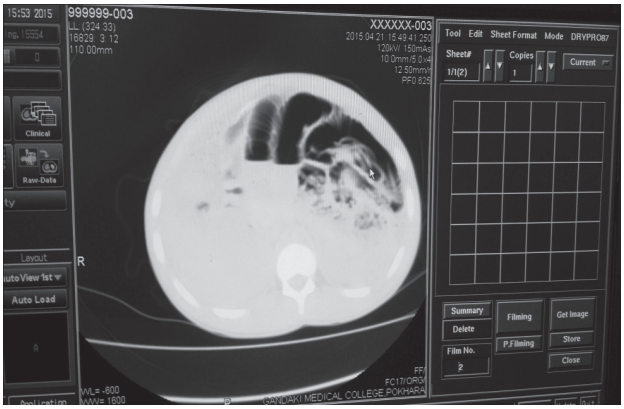


USG abdomen and pelvis

Multiple loops of massively dilated nonperistaltic small bowel. A bolus of curvilinear pairs of ecogenic lines with hyp-echoic central portion at one of these loops, suggestive of collections of worms.

CT scan

CT scan substantiated the findings of USG, interpreted as small bowel mechanical obstruction by Ascaris with associated bowl ischemia.



Discussion

Ascaris lumbricordes is a largest intestinal nematode infection of humans worldwide. Approximately one fourth of the world population[3], with highest incidence in tropical and subtropical regions[9], 1.4 billion people are found infected with *Ascaris lumbricordes*, representing 25% of the world population. The majority of people living in Asia 73%10. The most common complication of Ascariasis is mechanical bowel obstruction caused by large number of worms as found in this case. A bunch of large worms when get collected in the dependent portion of the small bowel can be a potential cause for volvulus formation. The toxins produce lytic effect[12] on the musculature of the bowel wall causing paralytic paralysis and depresses the motility of the bowel loop. The presence of worms in the bowel leads to direct tissue damage, obstruction, and hypersensitivity. It has a thrombogenic effect on the blood vessels causing congestion, necrosis and gangrene. The toxic effects of the dead worms has been observed in other solid organs of the body[2,3,4,5] and rare cardiac complications[5,6] have been reported by some workers. It has also been reported that it can lead to serious complications i.e. perforation, volvulus, and strangulation[13].

The patient presented with vague symptoms[3]. This confuses the observer to arrive at an earlier decision to operate this case. There was no previous history of passing worms via mouth/rectum in this particular case. On radiography, curvilinear soft tissue, curd like density of the dead worms has been a significant diagnostic finding. This has been the universal radiographic finding in USG, oblique CT scan[3-6]. Universal curvilinear shadow has been detected in this case also.

Administration of albendazole therapy through nasogastric tube in initial stages helps in evacuation of worms via stool successfully. The condition of this patient did not give us space to try this regime, Therefore the

patient had to be submitted for emergency laparotomy, resection, anastomosis and eventually his recovery with great satisfaction, and discharged after 3 weeks stay in the surgical ward.

Conclusion

Ascaris causing small bowel obstruction have been reported earlier[7,8] in the rural population of Nepal valley. The massive small bowel volvulus gangrene to this extent is a unique presentation. The absence of the short bowel syndrome after a massive resection is a significant achievement. Perhaps due to antiperistaltic procedure adopted by us so that the food and fluid contents are allowed to stay for a longer period in the jejunum loop to obtain more exposure with jejunal mucosa. It also leads passage towards the ceco-ascending colon which worked as a reservoir initially. The partly digested food has a delayed passage towards the left sided colon to solidify. This ultimately helped in restricting the frequency of stools to 3 per day during the post operative days. The patient was provided with a rich diet in protein, vitamins, fruit juice milk etc. The photograph of the child taken at the time of discharge is the testimony of his wellness (Fig 4).

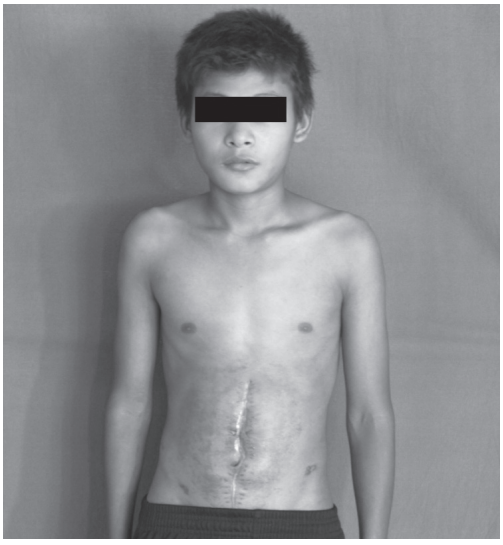


Fig 4: Photograph of the patient Tul Bahadur at the time of discharge

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Conflict of interests: None declared.

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