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Small bowel perforation peritonitis caused by Pork Tapeworm: A rare occurrence

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Abstract
Helminth infections are an important public health problem in tropical and underdeveloped countries. Infected individuals might remain asymptomatic for years as the adult worms do not cause any disturbance apart from vague abdominal discomfort , indigestion or alternating diarrhea and constipation. It is the larval stage that can cause serious trouble. Intestinal infection with Taenia solium occurs only in persons eating undercooked pork and so is related to food habits. It should be on the list of differential diagnosis of intestinal perforation in the intestinal tracts of the individuals with poor hygiene and inhabitants in the rural areas and also who have habit of eating undercooked pork. Past medical history and accurate parasitological tests can play a role for the early diagnosis of small bowel obstruction. Taenia solium remains an uncommon cause of small bowel perforation and peritonitis but an important one given the high mortality associated with it.

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I. Introduction

Helminth infections are an important public health problem in tropical and underdeveloped countries . The adult stage of Taenia Solium is one of the most common pathogenic cestode in human.[1] This tapeworm is transmitted by eating raw pork.[2] Infected individuals might remain asymptomatic for years as the adult worms do not cause any disturbance apart from vague abdominal discomfort , indigestion or alternating diarrhea and constipation. It is the larval stage that can cause serious trouble.[3]

Intestinal infection with Taenia solium occurs only in persons eating undercooked pork and so is related to food habits. Andaman and Nicobar Islands is a remote group of islands in India which is a habitat to different tribal populations. One among these aborigines is the Nicobari tribe who have a habit of eating undercooked pork.

Though, nonspecific symptoms, such as vague abdominal pain, nausea, vomiting, diarrhea, and weight loss, may be common in Taenia infestation ,this tapeworm can lead to serious surgical gastrointestinal system complications that are rarely reported in the medical literature [4,5,6,7]. Intestinal perforation is a quite rare complication in parasitic diseases [5]. Herein, we report a case of intestinal perforation caused due to Taenia solium infection.

II. Case Presentation

A 24 year old boy belonging to the Nicobari tribe presented to the emergency department in G.B.Pant hospital in Portblair with complaints of severe abdominal pain, vomiting and obstipation for 5 days. The abdominal pain had aggravated over the past 24 hours. He had multiple episodes of vomiting which contained mainly the food particles. He also had fever for the last couple of days. On examination, the patient was febrile. His pulse rate was 110 beats per minute (tachycardia). His blood pressure was recorded to be around 110/70 mm Hg in right arm supine position. His abdomen was distended. His abdominal examination revealed diffuse tenderness , guarding and board-like rigidity. All the features were suggestive of peritonitis. A plain erect radiograph of abdomen was asked for which showed free crescentic gas shadow under the right dome of diaphragm. (Figure1) indicating a perforated hollow viscus.

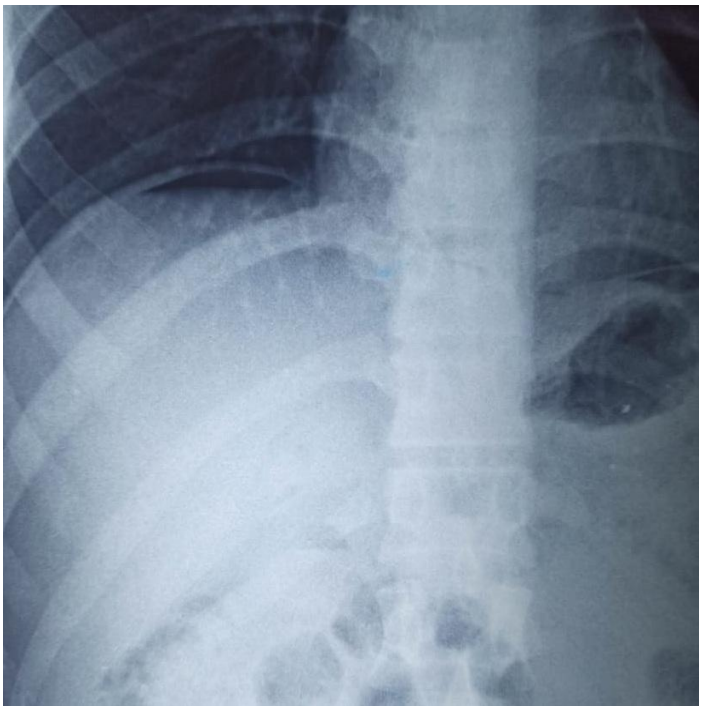

Figure1 Free gas shadow under right dome of diaphragm in plain radiograph of abdomen

Decision to operate and perform an exploratory laparotomy was made. Patient was taken supine on operation table. Under general anaesthesia, midline laparotomy incison was made and abdomen was opened in layers. There was around 1.5 litres of dark yellowish bile tinged contamination fluid in the peritoneum. On exploring the gut from duodenojejunal flexure to ileocecal junction, there was a large perforation of size 1*1 cm found in the ileum, 40cm proximal to the ileocecal junction.(Figure2)

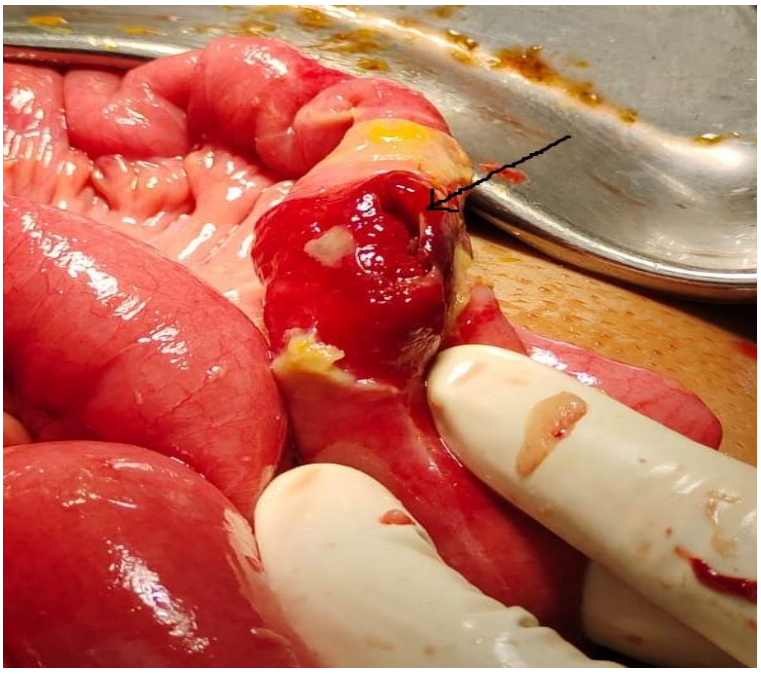

Figure 2 Perforation in the ileum, 40cm proximal to the ileocecal junction. (Black arrow)

Distal bowel loops were collapsed. Multiple live tapeworms were seen protruding out from the ileal perforation site into the peritoneum. (Figure3)

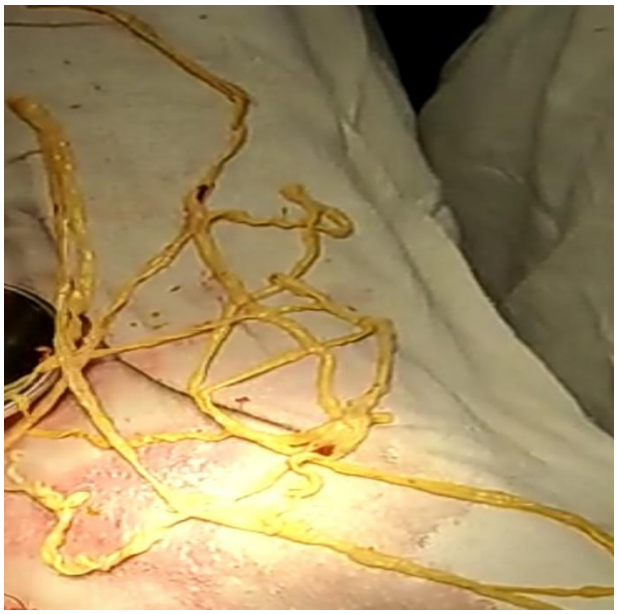

Figure 3 Bunch of tapeworms that were isolated from the small bowel.

The worms were carefully removed and a thorough peritoneal lavage was given. At 40 cm from the ileocecal junction, resection of the diseased segment of ileum and end -to-end anastomoses of both the bowel ends was performed. Drain was kept in pelvis behind the urinary bladder to drain any post operative intra-abdominal collection. The patient had an uneventful post operative recovery. Ryles tube which was inserted preoperatively was removed on the second post-operative day. Patient was allowed to take liquids on the fourth post operative day and semisolid diet from the sixth post operative day. Patient was soon discharged from hospital and was kept on regular follow up. He was advised to take Praziquantel 400mg thrice a day and to repeat the dose after 2 weeks. 4 months after the surgery, his repeat stool examination tested negative for taenia eggs.

The worms isolated from the gut were sent for microbiological examination, where the parasite was confirmed as Taenia Solium ,from ,studying the morphology and eggs. (Figure4)

Figure 4 Single adult worm which was isolated from the patient .

III. Discussion

To the best of our knowledge, this is the first report of intestinal perforation due to Taenia solium from Andaman and Nicobar Islands. To date, bowel perforation due to a variety of helminth infections such as ascariasis, angiostrongyliasis, enterobiasis, trichuriasis, schistosomiasis, and strongyloidiasis have been reported

worldwide [8,9,10,11,12]. Among helminth infections, ascariasis is frequently responsible for intestinal obstacles than taeniasis, for the reason that ascariasis can lead to the intestinal obstruction, appendicitis, pancreatitis, biliary lesions, and peritonitis in children [2].

The adult pork tapeworm lives in the human intestine, usually in the jejunum, where it lies in several folds in the lumen. Usually, only a single worm is present, but rarely several worms may be seen, upto 25 or more. The adult worm is usually 2 to 3 metres long. The scolex is roughly quadrate about 1 mm in diameter ,with 4 large cup-like suckers and a conspicuous rounded rostellum, armed with a double row of alternating round and small dagger-shaped hooks, 20 to 50 in number. The neck is short and half as thick as the head.

The eggs remain infective in the soil for several weeks. They can infect pigs as well as humans. When the eggs are ingested by pigs or humans, the embryos are released in the duodenum or jejunum. The oncospheres penetrate the intestinal wall, enter the mesenteric venules or lymphatics and are carried in the systemic circulation to different parts of the body. They are filtered out principally in the muscles where they develop into the larval stage, cysticercus cellulosae in about 60 to 70 days. Cysticercus cellulosae can develop in humans or pigs. In humans it is a dead end and the larvae die without further development. When pork containing cysticercus cellulosae is consumed inadequately cooked, the larvae are digested out of the meat in the stomach and duodenum. The head becomes attached to the jejunal mucosa. In 5-12 weeks it develops into a mature worm and can grow in the human intestine for 25 years or more.[3]

Taenia infection usually is diagnosed by identifying eggs or proglottids in the stool and cellophane-tape swab to detect eggs as early as about three months after infection. Eosinophilia and elevation of serum IgE may be present. Serological tests are not routinely performed. PCR based methods, provide definite diagnosis and species discrimination [2,4,5].

IV. Conclusion

In conclusion, bowel infection with Taenia remains an important public health problem in many countries, especially in tropical and sub-tropical countries. The majority of the patients are asymptomatic and do not have serious signs or symptoms. Subsequently, it should be on the list of differential diagnosis of intestinal perforation in the intestinal tracts of the individuals with poor hygiene and inhabitants in the rural areas and also who have habit of eating uncooked meat. Past medical history and accurate parasitological tests can play a role for the early diagnosis of small bowel obstruction. Taenia solium remains an uncommon cause of small bowel perforation and peritonitis but an important one given the high mortality associated with it.

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