

Jejunal Stricture From Strongyloides Stercoralis Leading to Small Bowel Obstruction

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Abstract: Strongyloidiasis is an infectious parasitic disease caused by the intestinal nematode *Strongyloides stercoralis*, also called as cochin-china diarrhea. It is mostly asymptomatic but if it presents, then is usually seen with vague gastrointestinal complaints. Proximal Small bowel obstruction is a poorly clinically recognized and reported complication. We hereby present a case of partial small bowel obstruction from *S. Stercoralis*.

A 38 year old man from West-Bengal presented with 5 months history of post prandial nausea, abdominal bloating and bilious vomiting along with significant weight loss. His plain X-ray abdomen, barium meal follow through and triple CECT scan were consistent with partial proximal bowel obstruction. He presented to different hospitals and was treated for his symptoms, but a definite diagnosis could not be made. We performed exploratory laprotomy and resection anastomosis and histopathological examination of the proximal jejunum revealed a dead intra mural nematode with intense inflammation. Post operative period were unremarkable. He was followed up after 3 and 6 months.

We conclude that, since *S. Stercoralis* is an uncommon etiology for proximal bowel obstruction, high index of suspicion should be exercised in patients presenting as above and recent travel to areas endemic for *S. Stercoralis*.

I. Introduction

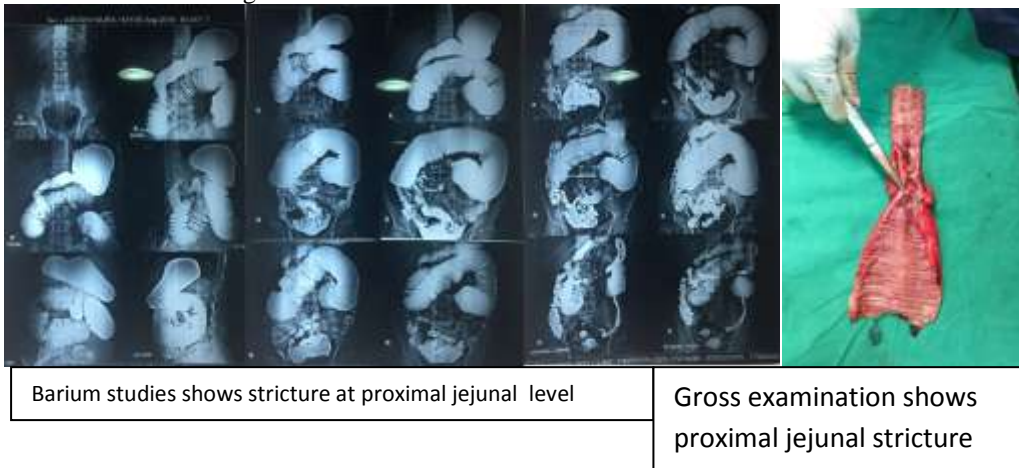
Strongyloidiasis is an infectious parasitic disease caused by the intestinal nematode *Strongyloides stercoralis*. This infection is prevalent worldwide except in the Antarctica and with predominance in the warm and humid climates of tropical and sub-tropical regions of the world. Human infection with *S stercoralis* was first discovered in French soldiers returning from Indochina borders and is called as **cochin-china** diarrhea. It has been noted that dogs, cats and other mammals may act as reservoirs of *S stercoralis*. *Strongyloides fulleborni*, *S myopotami* and *S procynosis* are the only other species of *Strongyloides* among the 52 identified ones that causes infections usually in chimpanzees and baboon and other animals and may accidentally infect humans (zoonotic Strongyloidiasis) [2,3]. The exact prevalence rates of strongyloidiasis is not known by it is estimated that about 100 million people might be affected throughout the world [4]. It has been observed that strongyloidiasis is more commonly seen among the rural population and in people living in poverty. The predisposing factors for infection with *S. stercoralis* include walking bare footed in soil contaminated with human faeces and sewage water.

II. Case report

A 38 year old Bangladeshi man who emigrated 4 years ago presented to our outpatient department with gradual abdominal bloating after meals for the last 1 month, with complaints of progressively worsening nausea and vomiting after meals for over one month. He had a bowel movement every 2 days despite a history of chronic constipation for 1 years. There was complete loss of appetite from last 15 days and lost approximately 10 kg. There was no more relevant past medical, family or surgical histories. He was farmer by occupation and work in the field bare feet.

On abdominal examination no lump was visible, upper abdomen distended after taking food and relieved after vomiting. Bowel sound was present in all quadrant, on per rectal examination unremarkable finding. On barium follow through study, there was stricture in jejunum with proximal jejunum loop and duodenum distended with changes of chronic inflammation around the stricture and barium passed through the narrow part of jejunum. On CT scan, sub acute intestinal obstruction due to stricture in proximal jejunal part. Lab investigation was within normal limits including normal eosinophil counts. Operative finding were jejunal loop was adherent to anterior abdominal wall with a band, there was adhesion between ileum, stricture part and transverse colon. Jejunal resection anastomosis done, On gross examination stricture present in the proximal jejunum leads proximal dilatation of bowel and distal bowel were collapsed.

On histological examination of the proximal jejunum revealed a dead intra mural nematode with intense inflammation. Stool examination and duodenal aspiration show normal study. Post operative period patient recovered well and no post op complication, Discharged after 10 days of hospital stay, on follow up Inj ivermectin and tab albendazole given.



Barium studies shows stricture at proximal jejunal level

Gross examination shows proximal jejunal stricture



Ct scan shows jejunal stricture and multiple endoscopy duodenal aspiration done showed no evidence of ova of nematode on wet mount.

Histopathology shows dead intra mural nematode with intense inflammation.

III. Discussion

Strongyloidiasis is a common parasitic infection of the intestine, which is caused by *S. Stercoralis*, a nematode prevalent in Southeast Asia and tropical sub-Saharan countries [1-3]. The parasite has a complex life cycle, which consists of two predominant larval forms– rhabditiform, a free-living, and filariform, which is the infective form [4]. The filariform larvae enter the skin and travel to the lungs either hematogenously or through the lymphatic system. The larvae proceed up the bronchial airways, are swallowed into the gastrointestinal tract and make their way to the duodenum and proximal jejunum. They settle in the intestinal mucosa and mature into adult females. Through asexual reproduction, the adult females lay eggs, which hatch and give rise to the rhabditiform larvae. These larvae may auto-infect the host by penetrating the intestinal mucosa or perianal skin, or they are freely excreted in feces [5,6]. The parasite thrives in the host and replicates for decades. Sometimes the larvae may travel to other organs outside the pulmonary and GI systems, which results in a disseminated infection and may lead to sepsis, if gram negative bacteria are translocated. This process is associated with a high mortality rate. Immune deficiency, hematologic infection, HTLV-1 infection, renal failure and transplant, steroid use and chronic alcoholism are predisposing factors for disseminated infection [1].

S. Stercoralis infection is normally asymptomatic, but may manifest with symptoms of nausea, vomiting, anorexia, weight loss, abdominal discomfort, flatulence and diarrhea [1,7-11]. Unusual presentation includes intestinal obstruction and GI bleed [12-14]. Loeffler syndrome is descriptive for pulmonary symptoms like cough and wheezing. Heavy infestation of lungs may lead to dyspnea, pleuritic pain and hemoptysis [12,13,15]. Larva currens (“racing larva”) is an itchy, cutaneous condition caused by infections with *Strongyloides stercoralis*. It is caused by the intradermal migration of *Strongyloides* [14,16,17] Intestinal obstruction is an extremely rare complication of Strongyloidiasis, with only few cases reported in the medical literature up to 2016 [1,12,18]. Eosinophilia is an inconsistent finding, present in up to 35% in acute phases. Eosinopenia and increased IgE levels have been associated with poor prognosis [14,24]. A high index of suspicion is essential for correct diagnosis of *S. Stercoralis* related jejunal obstruction. Travel history plays an

important role. Diagnosis is confirmed with larvae detected in stool or duodenal aspirate/biopsy taken via EGD[15-17]. White duodenal villi are a common endoscopic feature [25,26] though not significant in our case. Despite high sensitivity and specificity of the ELISA test, immunodiagnostic tests have certain limitations such as false negative results in immunocompromised hosts, presence of antibodies for prolonged periods even after treatment, and false positive results from cross reaction with other parasitic infections like Ascariasis [3,24]. Imaging studies are also very nonspecific.

A unique radiographic feature of Strongyloidiasis is the reflux of oral contrast into the biliary trees, possibly due to an incompetent sphincter of Oddi [27]. In case of disseminated infection, the parasite can be detected in other specimens such as sputum, cerebro- spinal fluid and urine [21]. Stool studies have low sensitivity as the shedding of larvae in stools is only intermittently. Several specimens might be needed on consecutive days. ELISA tests have shown very good results [28]. Medical treatment is indicated even in the absence of symptoms to avoid further complications and hyperinfection syndrome. The drug of choice is Ivermectin 200 mcg/kg/day for atleast 2 days, usually prolonged in disseminated or hyperinfection syndrome [28- 30]. Combination therapy with Albendazole has shown very good results. Rectal administration has also been suggested where oral is not tolerated.

IV. Results and Conclusions

Proximal partial small bowel obstruction is an unusual complication of *S. Stercoralis* infection. The large spectrum of clinical manifestation and lack of classical clinical syndrome (abdominal pain, bloating, heartburn, intermittent episodes of diarrhea and constipation) makes the final diagnosis of Strongyloidiasis difficult. Apart from high index of suspicion, it would be useful to get the basic stool studies, cultures and serological tests to evaluate for Strongyloides infection, if the cause for small bowel obstruction is not clear. In our case if we would have send the stool studies and antigen tests for given parasite on prior admissions, the diagnosis could have been made earlier. On the other hand a biopsy of gastric and proximal small bowel by esophagogastroduodenoscopy proves very beneficial in such cases. We conclude that, in patients who have been suffering from recurrent symptoms of bowel obstruction it is prudent to rule out parasitic infections and work up should begin with stool and serological studies as soon as common causes are ruled out.

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