

## ***Strongyloidis stercoralis* mimicking malignancy: The Mistreated Disease**

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**Abstract:** Strongyloidiasis is a helminthic infection caused by *Strongyloidis stercoralis*. The most commonly affected population is the rural population residing in the tropical and sub-tropical climate. Strongyloidiasis may present clinically with typical features but often may be atypical in their presentation and pose a diagnostic challenge for the clinician. We here report a case of a 52 year old male patient admitted in Department of Medicine with a history of weight loss, dyspepsia and with a first degree family history of gastric malignancy.

### **I. Introduction**

According to the World Health Organization report, protozoan and helminthic infections are believed to affect 3.5 billion people worldwide, causing illness in 450 million.<sup>[1]</sup> Strongyloidiasis affects an estimated 30-100 million people worldwide.<sup>[2]</sup> This intestinal nematode is spottily distributed in tropical areas and other hot and humid regions and is particularly common in Southeast Asia, sub-Saharan Africa, and Brazil.<sup>[3]</sup>

### **II. Case Report**

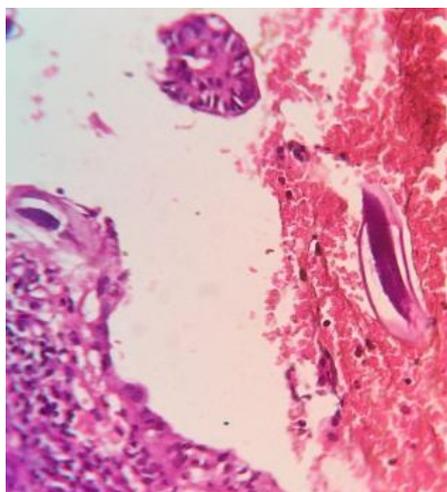
Fifty two year old male patient from village Naganapur, Odisha a farmer by profession presented to the Outdoor Patient Department of Medicine with a history of rapid weight loss, dyspepsia and mild epigastric pain relieved after food intake and a first degree family history of gastric malignancy. The patient was asked for admission in the institution for complete check-up to evaluate for peptic ulcer disease and gastric malignancy.

Routine blood tests were performed which were normal and an upper gastrointestinal endoscopy with biopsy was advised. The endoscopy revealed a non-healing ulcerative lesion in the second part of duodenum.

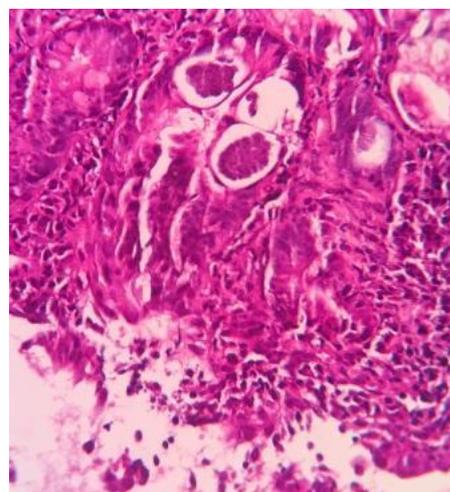
An endoscopic biopsy was taken from the duodenal ulcer and was fixed in 10% formalin and sent to the Department of Pathology to look for features of malignancy.

Grossly, multiple tiny bits of greyish white tissue was received and all were embedded in one block. Routine histopathological technique was followed for preparing the block and finally the prepared slides were subjected to H&E stain.

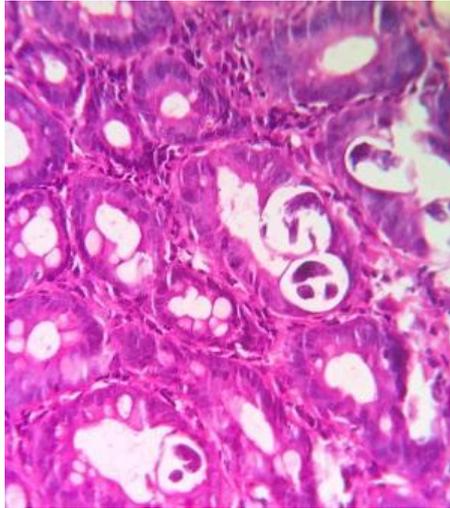
The stained histopathology slides revealed lymphomononuclear and neutrophil cell infiltrate in the lamina propria and erosion of the epithelium and adult parasite and eggs of *S.stercoralis* is seen in the slides. There were no atypical features in the corresponding section studied.



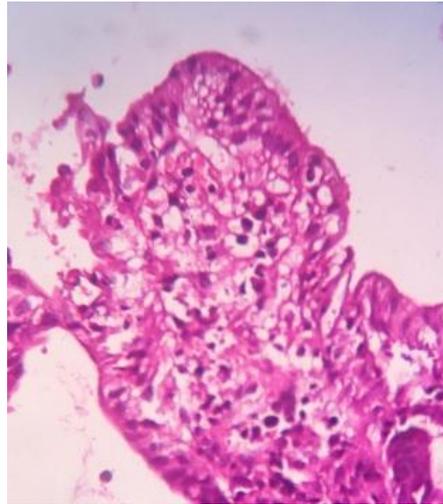
**Figure 1: Adult *S.stercoralis***



**Figure 2: Eggs of *S.stercoralis***



**Figure 3: Eggs of S.stercoralis**



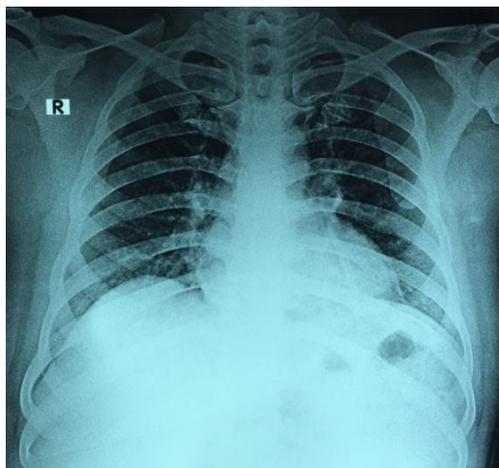
**Figure 4: Lymphocytic infiltration**

A stool examination of the patient was asked for from the Department of Microbiology which showed the adult *S.stercoralis* parasite. Thus,a definitive diagnosis of Grade III Duodenitis (as per classification suggested by Whitehead) with superadded *S.stercoralis* infection was made.



**Figure 5:S.stercoralis in stool**

In the follow up, chest x-ray was advised to the patient to rule out infestation of the lung which turned out to be normal.



**Figure 6: Chest X-ray PA view**

The patient was treated with Albendazole 400 mg daily for 3 days. There was no recurrence of symptoms on follow up.

### III. Discussion

The word Helminth is derived from the greek word “helmins” meaning worms. Since the first publication of “This Wormy World”-a landmark paper by Norman Rudolf Stoll in 1947 which raised awareness of the intolerable burden of intestinal nematode infections, since then several global efforts have been made to address the problem of human parasitism by helminths.<sup>[4]</sup>

The prevalence of Strongyloidiasis in India is within 1.22%.<sup>[5,6]</sup> The rarity makes it easily neglected by the clinicians.

Strongyloides was first found by Louis Normand in 1876 in the faeces of French soldiers with diarrhoea who were returning from Indo-china. Stiles and Hassal in 1902 worked out the lifecycle and pathogenesis of the parasite.<sup>[7]</sup>

The life cycle of Strongyloides starts from free-living adults which lays eggs in soil. They develop in rhabditiform larvae either by direct or indirect development and finally the filariform larvae (infective stage) enter humans from the soil. The larvae migrate to the lungs via lymphatics or hematogenous route. Then they ascend to the pharynx from where they are swallowed and enter the intestinal tract. The females burrow their way into the intestinal mucous membranes and start laying eggs that embryonate and hatch into the rhabditiform larva. These larvae may metamorphose within lumen to filariform larvae and cause autoinfection by penetrating gut epithelium or perianal skin.<sup>[8]</sup> The infection may persist for 40 years without producing symptoms, and infections long acquired may resurface if the individuals become immunodeficient.<sup>[9]</sup> Hyperinfection syndrome is characterized by massive larvae invasion of lungs with respiratory distress, or any other organs including central nervous system, heart and liver. This is life threatening and fatal if untreated.<sup>[8]</sup>

In our case the patient presented with mild abdominal pain, history of weight loss and a first degree family history of gastric malignancy forcing the clinician to rule out malignancy since gastric carcinoma remains the second most common cancer in the world. Most patients are over 50 years of age, but cases in younger individuals and even children are on record.<sup>[10]</sup> The familial relative risk is approximately three-fold, which is larger than that observed for most other adult forms of solid cancer, with the exception of ovarian cancer. In India, Korea and Turkey, much higher relative risks have been reported.<sup>[11]</sup> According to Ruy et al., strongyloidiasis symptoms are vague and nonspecific and include anorexia, nausea, vomiting, weight loss, abdominal pain, flatulence and diarrhea. Less frequently, malabsorption syndromes, paralytic ileus, intestinal obstruction and gastrointestinal bleeding, may occur.<sup>[12]</sup> The most common cutaneous manifestation is urticarial rash involving the buttocks and the wrist and larva currens (“running larva”).<sup>[3]</sup>

Thus in day to day practice it should be remembered that a patient with a history as such as in our case and coming from a low socioeconomic status and with improper sanitary conditions it becomes absolutely necessary to look for helminthic infection.

A peripheral blood may show eosinophilia and stool may show ova or adult parasites. An enzyme-linked immunosorbent assay for serum antibodies to antigens of Strongyloides is a sensitive method for diagnosing uncomplicated infections. The filariform larvae should also be sought in broncho-alveolar lavage, duodenal aspirate and sputum; potential sites for larval migration.<sup>[3]</sup> In endoscopic biopsies the larvae are found in the duodenum and the first part of the jejunum and it is considered to be an opportunistic agent when found in the gastric mucosa.<sup>[13]</sup>

The chest radiograph will be normal in the majority of patients infected with Strongyloides, but those with clinical signs and symptoms of pulmonary strongyloidiasis will usually show abnormal findings on chest radiography or CT scanning. These findings at different stages of the disease have been well documented by Woodring, Halfhill and Reed (1994). During the stage of larval migration from the capillary bed into the alveoli, especially in cases of autoinfection, a foreign body reaction, pneumonitis, and hemorrhage can occur within the lungs. Fine miliary nodulation or diffuse interstitial reticulation will be seen on chest x-rays or CT scans at this stage. As the infection intensifies, there may be bronchopneumonia with scattered, ill-defined, soft alveolar, segmental or even lobar opacities similar to those seen in Löffler's syndrome or eosinophilic pneumonitis.<sup>[14]</sup>

The helminths have plagued humans since before the era of our earliest recorded history. The eggs of intestinal helminths can be found in the mummified feces of humans dating back thousands of years, and we can recognize many of the characteristic clinical features of helminth infections from the ancient writings of Hippocrates, Egyptian medical papyri, and the Bible.<sup>[15]</sup>

Prevention is better than cure thus to prevent *S.stercoralis* infection sanitation standards must be improved and bare foot walking should be discouraged.

The treatment for Strongyloidiasis is Ivermectin 200 mg/kg daily for 2 days which is superior to Albendazole therapy.<sup>[3]</sup>

#### **IV. Conclusion**

Since Strongyloides infections simulate peptic-ulcer disease and gastric malignancy they must be brought into differential diagnosis in patients who present clinically with such signs and symptoms. A thorough history taking still remains one of the gold standard in helping to point out the diagnosis along with the epidemiology-rural population, farmer, low socio-economic conditions.

Strongyloidiasis is rarely encountered in daily practice as it is often overlooked thus patients presenting with abdominal symptoms as in our case must be evaluated for helminthic infections by a direct examination of stool. The method is simple to perform, quick, and inexpensive, facilitating direct visualization of parasitic ova and cyst morphology.

Our study will help the treating doctors to recall the greatly neglected helminthic infections and create an awareness in preventing these treatable but fatal diseases, which still remain a major cause of malnutrition in developing countries such as India.

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