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Case Report

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Unusual form of strongyloidiasis with gastric involvements: A case report

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ABSTRACT

Rationale: *Strongyloides stercoralis* (*S. stercoralis*) is an intestinal nematode with a complicated life cycle that can involve the gastrointestinal system. Infected patients are generally asymptomatic; but if symptomatic, the symptoms will include skin rash, respiratory and gastrointestinal symptoms like abdominal pain, diarrhea, nausea and vomiting.

Patient concerns: A 77-year old man presented with edema of the lower extremities and insignificant tenderness in the epigastric region.

Diagnosis: The histopathology of gastric tissue showed severe inflammation and multiple ulcers in the cardia, antrum and proximal duodenum. A large number of rhabditiform larvae of *S. stercoralis* along with tissue hyperemia and infiltration of lymphoplasma cells, eosinophils, and neutrophils were found.

Intervention: Treatment with albendazole.

Outcome: Despite the albendazole treatment, the patient's condition deteriorated and eventually died because of a sepsis-like syndrome.

Lesson: Physicians should remain alert to the urgency due to threadworm, especially among the elderly people and immunosuppressed cases; and should ensure accurate diagnosis, suitable treatment and careful follow-up of these cases.

1. Introduction

Strongyloides stercoalis (*S. stercoralis*) is an intestinal nematode with worldwide distribution, which affects millions every year[1,2]. Its manifestations range from asymptomatic colonization to dissemination of life-threatening infection, varing with predisposing conditions and immune status of the patient[3]. The main infecting form of this parasite is filariform larve that lives in soil and is able to penetrate the intact skin of the human. Thus, this helminth can enter the circulation and get to the pulmonary alveolus through the hematogenous route after penetrating the skin. And it also can reach the pharynx and then be swallowed[4]. In the gastrointestinal (GI) system, it matures and becomes localized in the mucosa of the proximal part of the small bowel; therefore it oviposits and prompts hatch into rhabditiform larvae in the intestine and will be excreted in the feces[5]. One of the unique characteristics of this parasite is the ability to resume its life cycle through penetrating the mucus of the colon or perianal skin, without entering the environment (autoinfection).

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Infected patients are usually asymptomatic but if symptomatic, the symptoms include skin rash, respiratory and GI symptoms like abdominal pain, nausea and vomiting or diarrhea that reflects this parasite life cycle. *S. stercoalis* can cause gastric and intestinal ulcers in immunocompromised patients[6-8]. The mentioned presentation is rare in immunocompetent patients. Diagnosis of this infection is based upon the recognition of rhabditiform larvae in the fecal specimen. But it can also be detected incidentally in biopsy specimens, although in these situations, the disseminated infection is suspected because the number of larvae found in specimens is few in normal conditions. Herein, we reported an unusual occurrence of invasive *S. stercoralis* of the gastric mucosa that contributed to severe symptomatic illness requiring hospitalization.

2. Case report

A 77 years old farmer, who suffered chronic kidney disease 1 year ago, presented nausea, vomiting, and upper GI syndrome since 2 months ago. The patient was unable to eat, which got worse for 1 month and was accompanied by epigastric pain without radiation or without relationship with position and food consumption. The vomiting occurred 1-2 times per day in the last month, and it was non-bloody and non-biliary. He lost weight of 10 kg, and was in weakness and malaise recently. Besides, the patient had diabetes mellitus and coronary artery disease. Two months ago, he visited hospital because of the initiation of symptoms but was diagnosed as peptic ulcer disease. He regularly took dexamethasone without any advice or prescription because of chronic arthralgia for many years.

The patient's vital signs were stable on admission as follows: Blood pressure: 110/70 mm Hg, pulse rate: 85, respiratory rates: 20, temperature: 37 ℃. Physical examination showed that conjunctiva was pale, a 2 plus edema was seen in the lower extremities and insignificant tenderness in epigaster. Other findings in the physical examination were normal. Laboratory data were as follows: white blood cell: 7 500/μL (range 4 000/μL-10 000/μL), hemoglobin: 8.8 g/dL (range 12 g/dL-18 g/dL), platelets: 200 000/mm^3 (range 150 000/mm^3-400 000/mm^3), creatinine: 2 mg/dL (range 0.8 mg/dL -1.3 mg/dL), Na: 137 mmol/L (range 135 mmol/L-145 mmol/L), K: 4 mmol/L (range 3.5 mmol/L-5 mmol/L), aspartate aminotransferase: 37 U/L (range 5 U/L-30 U/L), alanine aminotransferase: 40 U/L (range 5 U/L-30 U/L), alkaline phosphatase: 574 U/L (range 50 U/L-100 U/L), gamma glutamyl transferase: 183 U/L (range 6 U/L-50 U/L), bilirubin: 1.2 μmol/L (range 0 μmol/L-6 μmol/L). Abdominal sonography showed abundant sludge in the gallbladder. Due to the inconsistency of the clinical symptoms and laboratory data, he underwent upper GI endoscopy on the 3rd day of admission. The gastric tissue specimen was sent for histopathological exam that was indicative of severe inflammation and multiple ulcers in cardia, antrum and proximal duodenum, so the biopsy was taken for ulcers and the patient was treated with proton-pump inhibitors infusion (Figure 1).

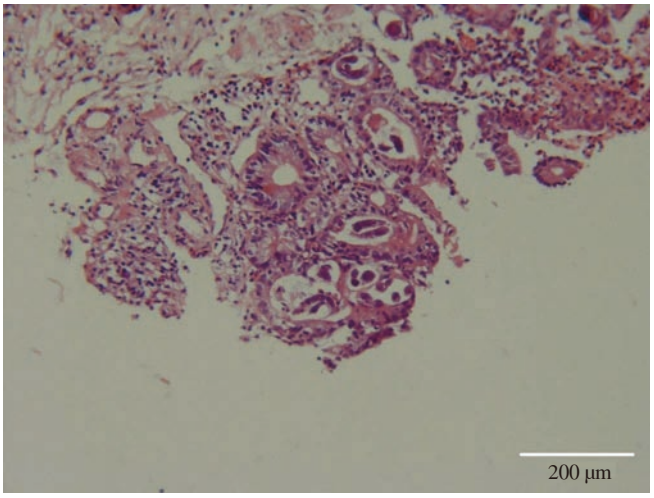

Figure 1. Histologic aspects of gastric strongyloidiasis. Section of parasite adult worm in gastric biopsy is observed, and gastric biopsies revealed severe inflammation (×400).

On the 7th day of admission, the examination showed a large number of rhabditiform larvae of *S. stercoralis* along with tissue hyperemia and infiltration of lymphoplasma cells, eosinophils, and neutrophils. Therefore, the patient was treated with albendazole (400 mg bid) for 7 d. Despite this therapy, the nausea and vomiting still persisted. The general condition got worse and tachypnea was developed which was diagnosed as sepsis in the context of the hyper infection syndrome, so intravenous antibiotic was given. However, after 2 d, he died with these clinical symptoms.

3. Discussion

Upper GI ulcers in patients with *S. stercoralis* infection is rare and usually occurs in immunosuppressed patients, such as patients who are with old age, or have HIV infection, chemotherapy for cancers, anti-TNF-α therapy, comorbidities like renal and pulmonary disease, long-term and high-dose corticosteroid therapy, diabetes, and hyper infection syndrome[9,10]. Th2 cells, eosinophils and gastric acid provide a protective barrier in the stomach under the normal conditions, and the protection will be reduced if any parasite infection occurs in these areas[11]. The patient in our report presented dominant GI symptoms and absence of peripheral eosinophilia; therefore, at the first sight, these symptoms didn't cast suspicion on parasitic infection. But it should be mentioned that the absence of peripheral eosinophilia does not exclude helminthic infestations because eosinophils were observed in the histological examination of the patient's specimen. Due to lack of definite cause after an initial evaluation of laboratory and sonographic findings, upper GI endoscopy was done to obtain specimens for pathological examination, in which ulcers, erosions, and *Strongyloides* larvae were detected to confirmed the diagnosis. Despite albendazole treatment, the patient's condition deteriorated and he eventually died because of sepsis-like syndromes.

As we know, penetrating the intestinal and entering the bloodstream

by parasites can cause dissemination of Gram-negative bacteria through the circulation and result in Gram-negative sepsis syndrome. On the other hand, even in the setting of *S. stercoralis* hyper infection, the involvement of stomach and intestine is not common. It should be noted that larvae was observed in the biopsy specimen of the GI tract, and the information about use of antacids by patients is very necessary. Therefore, it appears that we should always consider the possibility of the hyper infection syndrome and the consequent Gram-negative sepsis, and the patient should be treated for both of these complications. The ivermectin should be chosen to treat hyper infection with this nematode, but albendazole was applied at the beginning because of resource limitation of the hospital[12]. On the other hand, this infection was probably complicated with Gram-negative sepsis considering the deteriorated status of the patient, so the broad spectrum antibiotics was used. It was better to start the antibiotics treatment as soon as the larvae was detected from stomach biopsy. The health care system should remain alert to the urgency posed by threadworm, especially in the elderly people and immunosuppressed cases, and should ensure accurate diagnosis, proper therapy and careless follow-up of patients.

Conflict of interest statement

The authors report no conflict of interest.

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