Gastric infection by Strongyloides stercoralis: A case report

Strongyloides stercoralisin neden olduğu mide enfeksiyonu: Bir olgu sunumu

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Strongyloides stercoralis is an intestinal nematode with a complex life cycle that involves colonizing and reproducing in the upper small intestinal mucosa. In a healthy host, the parasite usually does not cause any symptoms. We report a gastric infection case of S. stercoralis. A 72-year-old Turkish man was admitted to the Department of General Surgery with complaints of epigastric pain, nausea and vomiting for five days. Upper gastrointestinal endoscopy evidenced a diffuse infiltrate in the stomach, causing decreased distensibility. Microscopically, superficial chronic inflammation with hyperplastic reactive changes and damaged surface was observed. Histopathological examination of the gastric mucosa showed numerous cross-sections of adult worms, eggs and rhabditiform larvae of S. stercoralis developing in the gastric crypts.

Key words: Strongyloides stercoralis, stomach, infection

Strongyloides stercoralis üst ince bağırsak mukozasında üreyen ve kolonize olan, kompleks yaşam siklusuna sahip bir bağırsak parazitidir. Sağlıklı konakçılarda, parazit genellikle herhangi bir semptom vermez. Biz mide enfeksiyonuna neden olan bir S. stercoralis vakası sunuyoruz. 72 yaşındaki bir Türk erkeği, yaklaşık 5 gündür mide ağrısı, bulantı ve kusma şikayeti ile genel cerrahi bölümüne tetkik ve tedavi amaçlı yatırıldı. Üst gastrointestinal endoskopisinde mide gerginliğinin azalmasına neden olan infiltrasyon paterni izlendi. Mikroskobik olarak mide mukozasında yüzey epitel zedelenmesi ile hiperplastik reaktif değişiklik gösteren yüzeyel kronik inflamasyon görüldü. Histopatolojik incelemesinde gastrik kriptlerde S. stercoralis'e ait bol sayıda yumurta ve solucan yapıları izlendi.

Anahtar kelimeler: Strongyloides stercoralis, mide, enfeksiyon

INTRODUCTION

Strongyloides stercoralis is an intestinal nematode in humans, and is estimated to affect tens of millions of people worldwide. This parasite is endemic in tropical or temperate and subtropical climates (1). Human infections begin with the penetration of the skin by filariform larvae, which migrate hematogenously to the lungs. Larvae then ascend the airway, are swallowed, and mature in the gut. The adult form preferentially localizes in the intestine mucosal wall, producing eggs that develop rapidly into the rhabditiform larvae observed in the stool specimens (2, 3, 5). Although *S. stercoralis* may infect many organs in hyperinfection, the involvement of the stomach is relatively rare (4). In this study, we report a patient with involvement of gastric mucosa by *S. stercoralis,* and we review the related literatures.

CASE REPORT

A 72-year-old Turkish man, living in Antakya, presented to the Department of General Surgery with a history of epigastric pain, nausea and vomiting for five days. His medical history revealed that he had asthma bronchiole. On admission, a physical examination revealed tenderness and diminished bowel sounds in the abdomen. Standing direct abdominal X- ray revealed extensive nonspecific air-fluid level. Ultrasound examination of the abdomen showed dilated intestinal segment. Chest X-ray was normal. The patient was hospitalized with the suspicion of sub-ileus. Nasogastric decompression was performed and the patient was started on parenteral fluid treatment.

Vital signs were as follows: blood pressure 100/60 mmHg, pulse rate 66/min, respiratory rate 19/min and body temperature 36°C. Laboratory evaluation revealed hematocrit 40%, hemoglobin 14.1/dl, leukocyte count 15,700/μL with 10.9% eosinophils and total protein 5.8 g/dl.

Upper gastrointestinal endoscopy evidenced a diffuse infiltrate in the stomach, causing decreased

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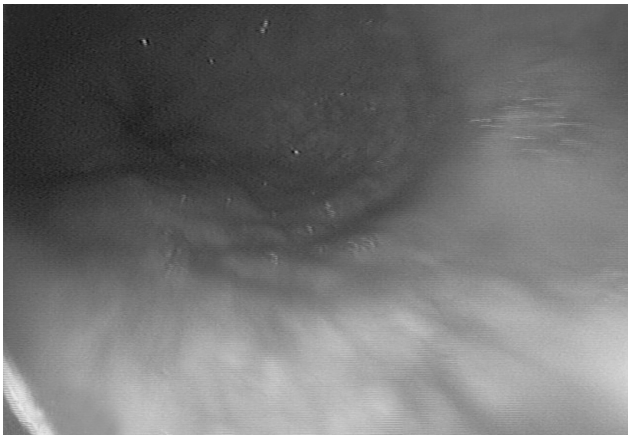

Figure 1. Endoscopic findings evidenced a diffuse infiltrate in the stomach, causing decreased distensibility.

distensibility (Figure 1). The gastric mucosa was friable and showed a whitish mottled surface. The duodenum had normal mucosal surface. Fiberoptic biopsy from the corpus and antral gastric region was obtained, and the formalin-fixed specimens showed three fragments of gray-white tissue, measuring 2x2x1 mm.

The histological examination of biopsies taken from the corpus and antral region mostly consisted of superficial chronic inflammation with hyperplastic reactive changes and damaged surface. Eosinophils were found in the lamina propria. The adult form of *S. stercoralis* appeared to be freed from gastric mucosal tissue during histologic processing. Furthermore, histopathological examination of the gastric mucosa showed numerous cross-sections of adult worms, eggs and rhabditiform larvae developing in the gastric crypts (Figure 2). A subsequent stool examination confirmed the histologic findings (Figure 3).

The patient was treated orally with 200 mg of mebendazole per day for two weeks. In clinical follow-up, symptoms improved significantly within 48 hours. Another endoscopy performed 14 days after the beginning of treatment showed persistence of decreased stomach distensibility. Gastric and duodenal biopsies showed absence of *S. stercoralis.* At the end of the two weeks, stool specimens were negative for *S. stercoralis.*

DISCUSSION

Strongyloidiasis is a worldwide parasitic infection affecting approximately 75 million people, most densely distributed in areas characterized by high temperature and humidity and poor hygienic conditions (6). Infection occurs after skin penetration by filariform larvae in soil, or by larvae on fomites, and in food, water or feces. Human-to- human spread has been reported after anal sexual contact (7). Asymptomatic gastrointestinal infection can persist for years. Risk factors for severe infection include use of corticosteroids, old age, malignancy, and acquired immunodeficiency syndrome. Lesser risk factors include achlorhydria, use of H2- blockers, gastrointestinal disorders, and malnutrition (8, 9). Significant male dominance was reported (10). Our case was male and elderly and his receipt of antacid therapy was a probable risk factor. He had been a heavy drinker for many years.

The parasitic females of *S. stercoralis* usually live buried in the crypts of the human proximal small intestine, producing eggs that develop rapidly into rhabditoid larvae in the mucosa. Extraintestinal infection can involve the lung, liver, spleen, pan-

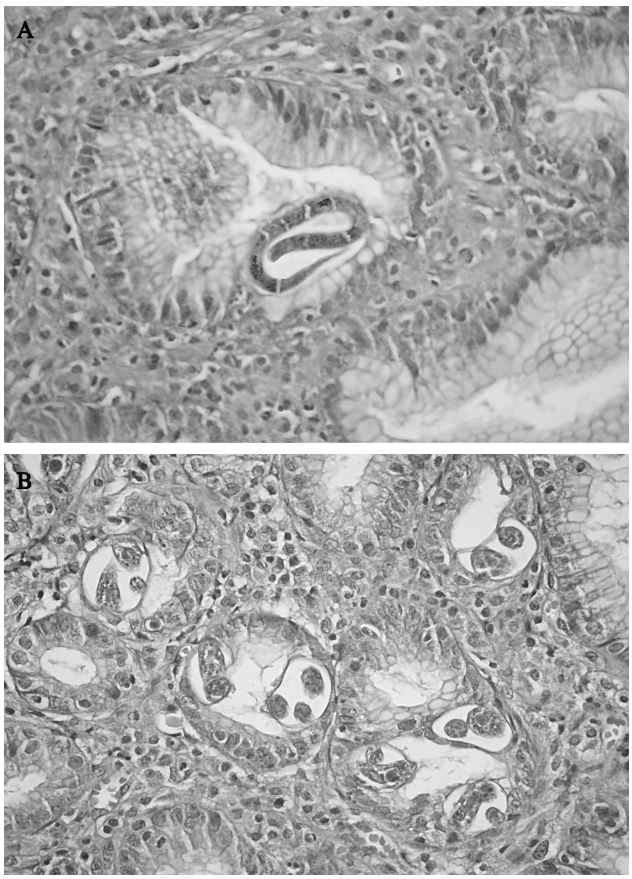

Figure 2. Histologic aspects of gastric strongyloidiasis: **(A)** Section of parasite adult worm in gastric biopsy is observed (hematoxylin-eosin, original magnification x 400). **(B)** Gastric biopsies revealed inflammatory infiltrates and foveolar hyperplasia associated with the presence of developing eggs and larvae (hematoxylin-eosin, original magnification x200).

creas, thyroid, kidney, brain and meninges in hyperinfections (4); however, cases of gastric involvement have been reported relatively rarely. While the stomach is not an ideal site for *S. stercoralis,* reduced gastric acid secretion might favor infection and invasion of the stomach. It has been suggested that the organisms reach the stomach of a patient via consequent sputum swallowing or retrograde migration from the proximal small intestine (11).

The laboratory diagnosis of *Strongyloides* is usually made by the finding of rhabditoid larvae in the fecal specimens; however, a routine stool examination may fail to find larvae, when the intestinal worm burden is very low and the output of larvae is minimal. It also needs to be remembered that worms may not be found in a cursory examination of a small quantity of feces (12, 15). Nevertheless, in our case, many larvae were found in the first routine stool examination. To improve chances of finding parasites, repeated examinations of stool specimens should be done.

Eosinophilia is common in *strongyloidiasis,* ranging from about 25 to 35% in acute cases and 6 to 8% in chronic cases (13). However, it has been previously reported that eosinophil counts in *strongyloidiasis* tend to be lower in some immunosuppressive conditions, such as corticosteroid administration (14), and its absence in patients indicated a poor prognosis.

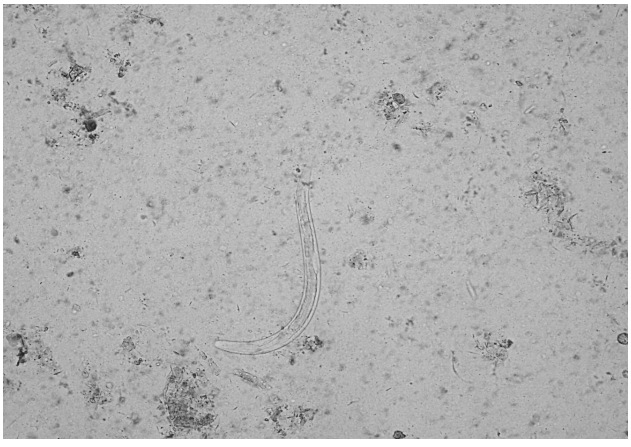

Figure 3. Photomicrograph of stool smear showing typical rhabditiform larval form (hematoxylin-eosin, original magnification x400).

Thiabendazole has been the drug of choice for the treatment of *strongyloidiasis,* despite the associated gastrointestinal side effects and high relapse rate (15). However, recent studies have reported ivermectin as the best drug for the treatment of uncomplicated *S. stercoralis* infections (16). It is well tolerated and has a higher cure rate than thiabendazole. Other drugs, such as mebendazole and albendazole, have had variable therapeutic efficacy (5, 17).

The intestinal *Strongyloides* is of a great medical importance, since the filariform larvae can be disseminated by internal autoinfection in the host whose immune status is compromised by various kinds of interventions (18). Therefore, it has been recommended that efforts to restore the altered immuno-physiological status of the patients should be set out simultaneously or prior to anthelmintic therapy.

Although the severity of infections influences the extent of the clinical disorder, main gastrointestinal symptoms of *strongyloidiasis* include diarrhea, abdominal discomfort, nausea and anorexia (19). In our patient, the microscopic findings included gastritis and a large number of parasites in the gastric pyloric region. Adult female worms inhabited the crypt of the stomach where eggs were deposited and larvae hatched. They might have caused abdominal pain and diarrhea in the present patient. Unless heavily infected, the clinical symptoms and signs reported in *strongyloidiasis* are generally not so severe and frequently include nonspecific characteristics. For this reason, the infection is easily overlooked by the patient and even physicians. Although these are nonspecific symptoms in *strongyloidiasis,* the possibility of gastric involvement should be carefully considered by physicians.

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