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Case Report

Hookworm Infection as a Rare Cause of Acute Pancreatitis

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Abstract: The aim of this case report is to alert physicians to the possibility that hookworm disease can lead to acute pancreatitis. Method: We report a case of hookworm infestation associated with acute pancreatitis and food intolerance. Result: The patient presented on the emergency department complaining of anorexia, asthenia, nausea, vomiting, epigastric pain and fever. Blood test showed a amylase of 512U/L and a lipase of 1902, normal levels of hepatic aminotransferases, bilirubin and alkaline phosphatase and a slight elevation of the Creactive protein. An ultrasound showed no cholelithiasis, thickening of vesicular wall or dilation of the common bile duct and the computed tomography (CT) showed a normal pancreas with no evidence of cholecystitis or peripancreatic fluid. An upper digestive endoscopy was done because of food intolerance and revealed gastric stasis and duodenal mucosa congestive, friable, with loss of the usual pleating with biopsies revealing the presence of *Ancylostoma duodenale*. The patient was treated with albendazole and remains asymptomatic in a 3-year follow-up. Conclusion: Hookworm infestation is usually asymptomatic. Ampulla of Vater-migrating hookworms resulting in acute pancreatitis is a very rare event.

Keywords: Hookworm Infestation, *Ancylostoma Duodenale*, Acute Pancreatitis, Food Intolerance

1. Introduction

Hookworm infections are a common disease in tropical and subtropicals areas [1]. Its prevalence is higher in sub-Saharan Africa, followed by Asia, Latin America, and the Caribbean.

There are two major hookworm species causing human infection: Ancylostoma duodenale (in Mediterranean countries, Iran, India, Pakistan, and the Far East) and Necator americanus (in North and South America, Central Africa, Indonesia, islands of the South Pacific, and parts of India) [2].

In humans, the infection only occurs when the larvae actively penetrate the skin, conjunctiva and mucosa, or passively, orally. From the skin, the larvae migrate to the heart via hematogenous or lymphatic circulation, reaching the lungs through the pulmonary arteries. Hence, they move through the tracheobronchial tree by serpentine movements, secretions and cilia and reach the trachea, larynx and pharynx. Then, they are swallowed and reach the small intestine, its final habitat, attaching the buccal capsule to the duodenal mucosa [3].

Hookworm infestation is usually asymptomatic and anemia is the major clinical finding of infection [3] being proportional to the number of adult worms in the gut [4]. Other symptoms are usually dermatological (erythema, itching), respiratory (cough, low fever, hoarsening, dyspnea) and digestive (abdominal pain, nausea, vomiting, diarrhea, asthenia, anorexia) depending on larvae location [3].

Acute pancreatitis as a result of the hookworm migration into the ampulla of Vater is a very rare complication [5].

Hypoproteinemia may also occurs as a result of both major blood loss and worms´ ingestion of serum proteins, which can be presents as weight-loss, anasarca, and edema [6].

In patients with high enough iron intake, enteropathy may occur independent of anemia [7].

The diagnosis includes a meticulous clinical history, physical and stool examination.

The treatment is symptom-based. Iron replacement alone can restore hemoglobin levels in individuals with hookworm infection. Nevertheless, anthelminthic therapy is a key-treatment to avoid recurrent anemia.

Anthelminthic treatment of hookworm infection consists of albendazole (400 mg once on empty stomach). Mebendazole is an acceptable alternative therapy [8, 9].

Although anthelmintic drugs are available and widely used, they do not prevent reinfection. Thus, other control strategies aimed at improving water quality, sanitation and hygiene are needed [10].

2. Case Report

A 56-years old male, with history of polyneuropathy associated-type 2 diabetes, anemia and depression. Usual medication included an antidepressant, oral iron, statin, insulin and proton pump inhibitor. He presented on the emergency department complaining of anorexia, asthenia, nausea, vomiting and epigastric pain for one week and one-day-lasting fever.

Objectively, it was reported 39°C of auricular temperature, 121/88mmHg of arterial blood pressure, tachycardia of 120bpm, eupnea with no oxygenotherapy and pain on the right upper quadrant and epigastric region.

Blood test showed anemia (hemoglobin 12.1g/dL – N: 13-17.7), hyponatremia (121mmol/L – N: 136-146), hiperamylasemia (512U/L – N: 28-100) and lipasemia (1902 – N: 22-67), normal levels of hepatic aminotransferases, bilirubin and alkaline phosphatase and a slight elevation of the C - reactive protein (24mg/L – N: <5).

The patient initially received fluid therapy and an ultrasound was made with no changes as cholelithiasis, thickening of vesicular wall or dilation of the common bile duct.

A computed tomography (CT) was performed showing a normal pancreas with no evidence of cholecystitis or peripancreatic fluid.

In the light of the findings described, the diagnosis of idiopathic acute pancreatitis was established. Blood tests showed normal pancreatic enzymes on the 4th day after admission. Meanwhile, the patient maintained abdominal upper quadrants complaints and revealed food intolerance lasting for the next six days. An upper digestive endoscopy was done and revealed gastric stasis and duodenal mucosa congestive, friable, with loss of the usual pleating (Figure 1).

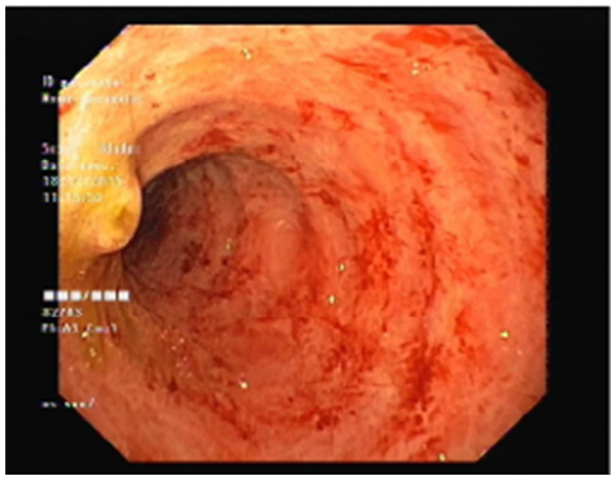

Figure 1. *Upper endoscopy showing duodenal mucosa congestive, friable, with loss of the usual pleating.*

Biopsies were made and histology revealed the presence of parasites with morphologic features suggestive of *Ancylostoma duodenale* (Figures 2-3).

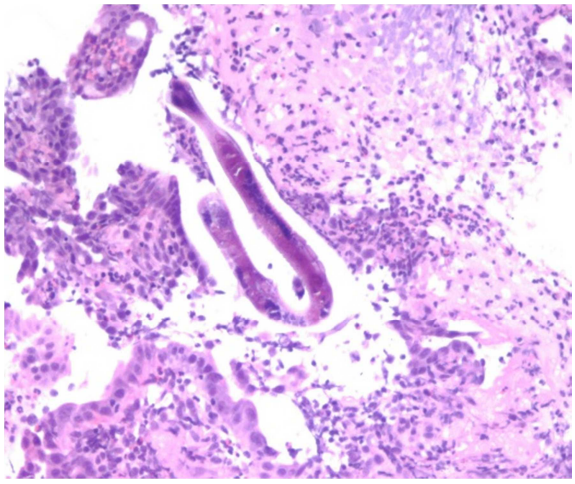

Figure 2. *Parasites with morphologic features of Ancylostoma duodenale.*

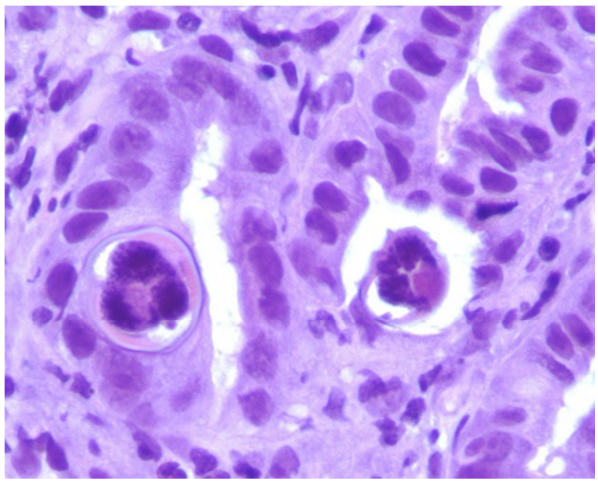

Figure 3. *Parasites with morphologic features of Ancylostoma duodenale.*

A stool examination was made showing negative results. The patient was treated with a single dose of albendazole

400mg, resulting in a positive clinical evolution. Other family members received the same treatment.

After discharge, the stool examination was negative for parasites and an upper digestive endoscopy was repeated 3 months later which revealed just a slight congestive duodenal mucosa (Figure 4).

Figure 4. *A slight congestive duodenal mucosa with normal pleating.*

Biopsies were repeated and resulted in parasite-free samples. The patient regain his usual weight and kept asymptomatic since then.

3. Discussion

Worldwide, hookworm infection affects about 472 million people. Despite of an asymptomatic majority, approximately 10% experience anemia [11, 12].

Acute pancreatitis is a rare complication resulting from the larvae migration into the ampulla of Vater [5].

The patient described just had a slight anemia mostly due to his previous oral iron intake and a probable early infection.

The stool examination was negative which might be justified due to an early infection in which the female hookworm had not started to ovulate (it might take up to 3-5 weeks to the adults became sexually mature and females start to produce eggs) [6].

4. Conclusion

Acute pancreatitis from hookworm migrating to the ampula of Vater is a very rare cause. The diagnosis is difficult and usually made by exclusion. The treatment is simple but doesn't prevent reinfection, so other sanitary measures need to be improved and the other family members treated.

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