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Taenia: An Uninvited Guest

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Patient: Female, 55
Final Diagnosis: Taeniasis
Symptoms: Abdominal pain • dyspepsia
Medication: Omeprazole • Dicyclomine • Herb
Clinical Procedure: Endoscopy
Specialty: Gastroenterology

Objective: Rare presentation
Background: *Taenia saginata* and *Taenia solium* species are worldwide in distribution, causing bovine and porcine cysticercosis, and taeniasis in humans having the greatest economic and medical importance.
Case Report: A 55-year-old woman living in a village around Rasht (northern Iran) was referred to our hospital with a history of chronic abdominal pain and recent dyspepsia and epigastric fullness. According to her clinical history, she was a candidate for an upper gastrointestinal endoscopy. A large tape worm was seen in the stomach. Our efforts at extracting it from the stomach were unsuccessful. The endoscope was withdrawn and therapy with niclosamide was initiated. At the next visit, her symptoms were alleviated and she was relieved from the chronic pain.
Conclusions: We believe that the retrograde migration of the tapeworm into the stomach may be due to low gastric acidity as a result of atrophic gastritis and chronic proton pump inhibitor use.

MeSH Keywords: Intestinal Diseases, Parasitic • *Taenia saginata* • Taeniasis

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Background

Taenia saginata and *Taenia solium* species are worldwide in distribution, causing bovine and porcine cysticercosis, and taeniasis in humans has the greatest economic and medical importance. In addition, *T. solium* eggs can infect humans, often giving rise to fatal neurocysticercosis [1]. Approximately 50 million people are infected with *Taenia saginata*, especially in Africa, the Middle East, and some parts of Europe [2]. Infection is found most often in rural areas of developing countries with poor hygiene and living in close contact with cattle or pigs eating raw or undercooked meat. This allows tapeworm infection cycle to be completed and continue [3]. Ingestion of raw or undercooked beef containing larval stage of parasite causes *T. saginata* infestation. The cysticercus is oval-shaped, approximately 8×5 mm, filled with fluid, and contains the invaginated scolex of the tapeworm [2]. In humans, after 3–4 months, the scolex attaches to the jejunal mucosa and develops into an adult tapeworm 4–10 meters in length after 3–4 months. When the larvae reach the stomach, proteolytic enzymes dissolve the capsule. Thereafter, the scolex attaches to host intestine, and gradually turns into an adult tapeworm. The majority of infected patients have only a single tapeworm but these worms can survive for up to 30 years [2].

Most patients are asymptomatic or have non-specific symptoms, such as abdominal discomfort, epigastric pain, nausea, vomiting, diarrhea, and weight loss, as well as perianal symptoms [2,4,5]. *Tenia saginata* is an also rare cause of ileus, pancreatitis, cholecystitis, cholangitis, and gall bladder perforation [6,7]. The diagnosis of *T. solium* or *T. saginata* is usually confirmed by finding eggs or proglottids in the feces. The eggs of the 2 species are identical by morphology; the eggs are round, have a double-walled membrane that is radially striated, and measure 30–40 micrometers. However, *T. saginata* have an acid-fast shell, while those of *T. solium* are not acid-fast. Effective drugs include praziquantel and niclosamide [2].

Although *T. saginata* is mostly seen in the small intestine, migration of this worm to the stomach is very rare [8,9]. We report a wandering tape-worm at the stomach of a rural woman who was in contact with livestock and livestock products.

Case Report

A 55-year-old woman living in a village around Rasht (northern Iran) was referred to our hospital with a history of chronic abdominal pain and recent dyspepsia and epigastric fullness. Her symptoms started 2 years before. She was repeatedly visited by her family doctor and others and also took analgesics, antispasmodic drugs, and proton pump inhibitors that achieved partial relief of her complaint. *Helicobacter pylori* infection

Figure 1. Tape worm was seen in the stomach.

Figure 2. Fragmented proglottids of tape worm in the stomach.

was previously treated by a triple-therapy regimen (amoxicillin, clarithromycin and omeprazole) in another center. She was a housekeeper but helped her husband in farming. Her past medical history was unremarkable. She used some different drugs such as dicyclomine and herbal remedies for alleviating her abdominal pain. She was referred to our hospital due to chronic relapsing abdominal pain for further investigations. She was worried about gastrointestinal cancer. According to her clinical history she was a candidate for an upper gastrointestinal endoscopy. A large tape worm was seen in the stomach (Figure 1). Our efforts for extracting it were unsuccessful and lead to fragmentation of proglottids (Figure 2). It quickly returned to its original position in the intestine. The endoscope was withdrawn and therapy with niclosamide was initiated (Video 1).

Discussion

Taenia saginata (so called beef or cattle tapeworm) is a large tapeworm that can cause an infection called taeniasis. Humans

Video 1. *Taenia saginata* in stomach.

are the only definitive hosts of this parasite. Taeniasis occurs worldwide and is common in the Middle East, Africa, Eastern Europe, and Latin America. The disease is often asymptomatic but some non-specific symptoms may be present. Migrating proglottids can cause appendicitis, bile duct inflammation, and unpleasant surprise when seen in stool. Migration of a worm into the upper gastrointestinal tract is rare, and after entering the upper esophagus it may be dangerous. After activation in the upper gastrointestinal tract, the cysticercus attaches to the wall of the small intestine by means of scolices and becomes a mature tapeworm. Owing to this attachment, *Taenia* would not be expected to migrate in the gastrointestinal tract. However, there have been occasional case reports of finding this helminth in the mouth [10] and nasal expulsion of this worm along with a nasogastric tube [11], as well as finding this worm in the pancreatobiliary system [6,7,12]. In addition to the tight binding of the parasite to the intestinal villi, upward migration of the worm could be mainly inhibited because of the high gastric acidity [9]. In this patient, atrophic gastritis caused by chronic *H. pylori* infection and long-term administration of proton pump inhibitors could be the most important reasons for upward movement of this worm. Successful endoscopic removal of a *Taenia* was reported previously in the medical literature but we were unsuccessful in pulling it out due to its great length [9]. Another endoscopic treatment is available in some areas. In this kind of endoscopic treatment, a drug is injected into the small intestine and causes all nearby tapeworms to detach and come out. This drug can detach a tapeworm from the intestines.

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Treatment is traditionally done with praziquantel. It has excellent efficacy and is well tolerated. It causes paralysis of the worm via effect on membrane calcium channels. An alternative treatment for Taeniasis and other tapeworms is niclosamide. Niclosamide comes in 500 mg tablets that need to be chewed. The recommended dose is 4 tablets in a single dose (2 g) for adults. Niclosamide was initiated. At the next visit, her symptoms were alleviated and she was relieved from this chronic pain. After 3 months, her stool became egg-negative.

Our case highlights the need for large-scale imaging-based surveys to identify the factors associated with epilepsy, including neurocysticercosis. Health education, mass anthelmintic therapy, and other preventive measures are required to control this disease. The most effective way to prevent teniasis is to cook food thoroughly. This means cooking meat to a temperature above 140°F for 5 minutes or more, measuring the meat temperature with a cooking thermometer. After cooking meat, allow it to stand for 3 minutes before cutting it. This can help destroy any parasites that may be present in the meat.

Conclusions

We did not perform gastric acid output analysis on our patient but as the pathologist report showed gastric atrophy, we speculated that hypoacidity accompanied by gastric atrophy could be a cause of taenia immigration into the stomach. This could be proven by acid output analysis, but we could not perform gastric acidity measurement in our country. We believe that the migration of the tapeworm was caused by decreased gastric acidity. Hypochlorhydria, in turn, was caused by chronic atrophic gastritis, chronic proton pump inhibitors use, and increasing age. All of these factors could be important causes of retrograde migration of a tapeworm into the stomach, as in our patient. We emphasize the need to cook raw beef properly, especially for older people and patients who are prescribed proton pump inhibitors and other acid-lowering drugs. As this infestation may be asymptomatic, to prevent the upward immigration of this worm, these groups of patients should be diagnosed and treated soon.

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