

Case Report

Living tape worms in the duodenal lumen: A rare case report

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Abstract:

Fascioliasis is an infection caused by a trematode of the liver, Fasciola hepatica, which affects sheep, goats and cattle. Humans become accidental hosts through drinking contaminated water or ingesting raw green vegetables that has been contaminated with encysted metacercariae, which is the infective form. Fascioliasis has a hepatic phase and a biliary phase, each displaying different clinical signs and symptoms. Common signs and symptoms of the hepatic phase are abdominal pain, fever, eosinophilia, and abnormal liver function tests. The biliary phase of the disease usually presents with intermittent right upper quadrant pain with or without cholangitis or cholestasis. However, it is very rare to find a living flukes in the common bile duct (CBD) and duodenal lumen as it usually lives in gall-bladder and smaller biliary tracts.

Here we report a case of human infestation of Fasciola hepatica, who presented with respiratory tract infection with abdominal pain & dyspeptic symptoms and eventually during evaluation, an upper gastro-intestinal endoscopy revealed several flat worms at the second part of the duodenum. The worms were sent to microbiology department for identification. The organisms were confirmed to be Fasciola hepatica. The patient was given tablet Nitazoxanide 500mg 12 hourly for 7 days. The symptoms reduced in intensity after two days of nitazoxanide. The patient was then discharged with an advice of a stool routine examination after one month of completion of nitazoxanide.

As fasciolosis is non endemic in our country, a high degree of suspicion is required to ensure early detection and management of such cases. Patients with abdominal pain, altered liver function tests & eosinophilia should always be evaluated for a suspected Fasciola hepatica infection and should be kept as a differential in these cases.

Key words: *Fasciola hepatica, Fascioliasis, Tape worm.*

Introduction

Fascioliasis is an infection caused by a trematode of the liver, Fasciola hepatica. Fasciola hepatica particularly affects sheep,

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**Both Professor Dr. Mohammad Shamsul Arfin and Dr. Khan Md. Nazmus Saqeb had equal contributions to the case report & both will be considered as first authors.*

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goats and cattle. The hepatic flukes are leaf-like, flat worms, measuring around 2-4 cm.¹ It occurs more frequently in some parts of Latin America, Eastern Europe, Far and Middle East (e.g., northern Iran) and can result in biliary tract obstruction, cholangitis, cholecystitis as well as pancreatitis and anemia²⁻⁴. Humans can become accidental hosts through drinking contaminated water or ingesting raw green vegetables that has been contaminated with encysted metacercariae, which is the infective form. The metacercariae penetrates the intestinal wall to enter the peritoneal cavity. It then usually passes through the liver capsule and hepatic tissues where, after it becomes an adult, finally invades the biliary tract⁵. However, it is very rare to find a living flukes in the common bile duct (CBD) and duodenal lumen as it usually lives in gall-bladder and smaller biliary tracts⁶. Here we report a case of human infestation of Fasciola hepatica, who presented with abdominal pain & dyspeptic symptoms and eventually during the process of evaluation multiple flukes (Fasciola hepatica) were discovered within the duodenal lumen.

Case history

A 53 year old hypertensive, diabetic, asthmatic male hailing from Barisal, with no significant family or travel history, was admitted to the pulmonology department with the features of respiratory tract infection. The respiratory illness was treated by a pulmonologist. During the course of hospital stay, the patient developed abdominal pain, dyspepsia and heartburn & was subsequently referred to the department of gastroenterology, where the patient was evaluated for the upper gastro-intestinal (GI) symptoms. The patient had a

history of cholecystectomy with no other significant past medical history. He had no history of similar disease at his workplace. On examination, the abdomen was tender over epigastrium and right upper quadrant. And apart from previous surgical scars there were no other remarkable abnormalities. The liver span was within normal limit.

Investigations of the patient revealed leukocytosis & eosinophilia along with a raised serum IgE (1447.3iu/ml). Ultrasound of whole abdomen was unremarkable except for the grade 1 fatty infiltration of the liver. SGPT, SGOT were within normal limit, whereas alkaline phosphatase (ALP) was mildly raised. The patient underwent an upper GI endoscopy for the evaluation of upper GI symptoms, which revealed several flat worms (figure 1) attached to the circular folds of the second part of the duodenum along with antral erosive gastritis. The worms were then extracted out with the help of biopsy forceps and were sent to the microbiology department for proper identification of the species of the worms.

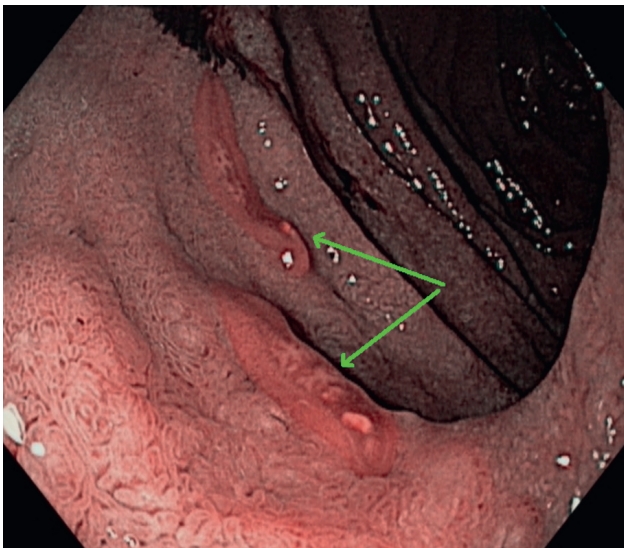


Figure 1: Live *Fasciola hepatica* in duodenal lumen (Green arrows)

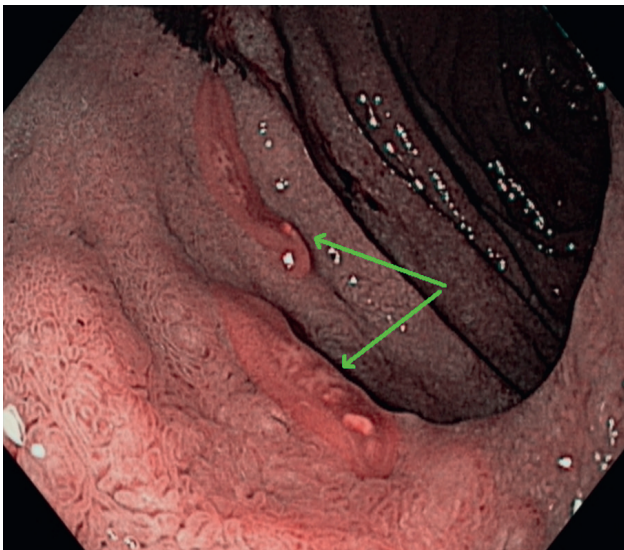


Figure 2: Microscopic image of *Fasciola hepatica*

The organisms were confirmed to be *Fasciola hepatica* (figure 2) by the department of microbiology. A CT scan of whole abdomen with contrast was done to exclude the hepatic phase of the disease and the report was normal.

The patient was given tablet Nitazoxanide 500mg 12 hourly for 7 days along with his respiratory antibiotics, antihypertensives, antidiabetics, proton-pump inhibitors (PPIs) and bronchodilators. The symptoms reduced in intensity after two days of nitazoxanide. The patient was then discharged with an advice of a stool RE after one month of completion of nitazoxanide.

Discussion

The highest human prevalence has been reported in the Bolivian Altiplano, where more than 60% of the population is infected. Next to that, infection is occurring in temperate countries like Peru, Iran, Portugal, Egypt and France with near similar high rates⁷. No study has been done in our country to calculate the prevalence of human infection of *Fasciola hepatica* among Bangladeshi residents. In humans, the infection begins with the ingestion of watercress or contaminated water containing encysted larva. The larva excyst in the stomach, penetrate the duodenal wall, escape into the peritoneal cavity, and then pass through the liver capsule to enter the biliary tree¹.

When an individual accidentally ingests the metacercariae on cyst-laden vegetables or in contaminated water, the excysted metacercaria, having survived from gastric acid and enzymes, penetrates the duodenal wall and invades the liver through peritoneum and Glisson's capsule. After 5-6 weeks, the fluke immigrates to one of the liver's bile ducts where it achieves sexual maturity. Thereafter, cross fertilization occurs in the bile ducts of the host and after about 12 weeks from first penetration to the host, encapsulated embryos are released into the bile capillaries from where they reach the intestine and are transported with feces. The embryos may survive for a few months in wet feces but without any development, which only takes place when the capsules come in contact with water. In optimum temperature (30 °C) the encapsulated embryo differentiates into miracidium larva within eight days.

Inside specific intermediate snail's bodies, which lucky miracidium larvae reach, and after various changes, the sporocyst larva develops and then cercaria, which leaves the snail to surrounding water. Afterwards, it settles down on plant leaves where it turns to encysted cercaria called metacercaria. This young fluke may live for a year at low temperature and for two or three weeks at 25 °C. Metacercaria grows up into adult fluke only inside its definitive host⁸.

Fascioliasis has a hepatic phase and a biliary phase, each displaying different clinical signs and symptoms. The acute stage of fascioliasis (hepatic phase) begins with the slow migration of *Fasciola hepatica* through the liver parenchyma; the mature flukes digest and consume hepatocytes, dig tunnels and caves, and reside in the liver for months^{1,9,10}. The hepatic phase is characterized by fever with chills, upper abdominal pain, hepatomegaly, mild hepatitis, weight loss and prominent eosinophilia^{9,11,12}.

In the biliary phase of the disease, patients often present with biliary colic, epigastric pain, jaundice and abdominal tenderness due to the obstruction of the bile ducts by adult worms and the resultant inflammatory response. In this stage, the main laboratory findings are cholestasis including predominantly elevated serum ALP, GGT and total bilirubin¹³⁻¹⁵. Adult flukes in the extrahepatic bile ducts are visualized as a filling defect on cholangiogram^{1,11,13,14}.

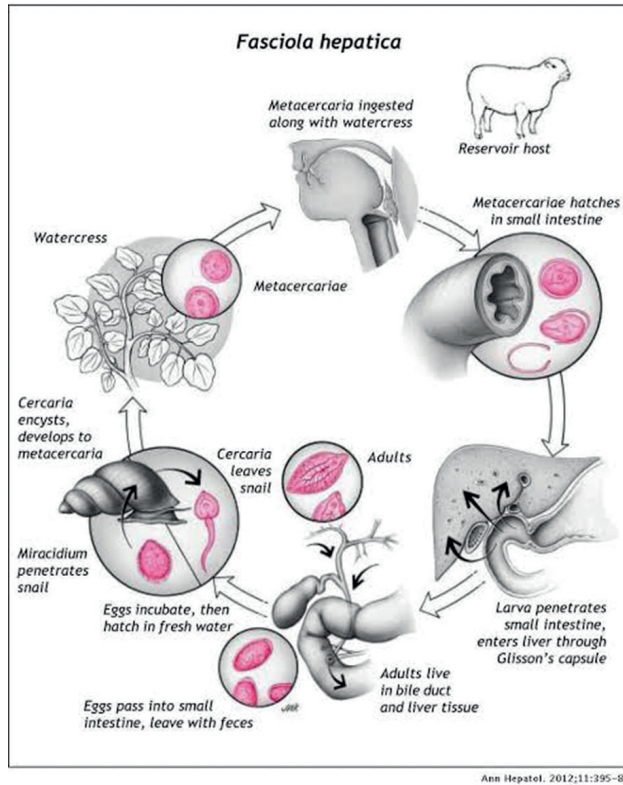


Figure 3: Life cycle of *Fasciola hepatica* (Ann Hepatol. 2012;11:395-8)

In non-endemic areas, diagnosis of fascioliasis can be difficult and usually is delayed because the disease is not often encountered and the symptoms may be confused with other hepatic or biliary disorders. Diagnosis of fascioliasis may be delayed because of the wide spectrum of the differential diagnosis and the low incidence of *Fasciola hepatica* infection¹⁶.

Diagnosis of *Fasciola hepatica* infection has traditionally relied on detecting the presence of eggs in fecal samples, but this method is unreliable and complex^{1,17}. Computerized tomographic (CT) findings in patients with hepatic phase and ultrasonographic findings in patients with biliary phase are used for the diagnosis of fascioliasis^{11,18}. The parasites appear as bright echogenic structures with no acoustic shadow on ultrasono and as hypo-intense curvilinear lesions on T2 weighted MRCP images. Confirmation of the diagnosis is necessary and should be based on serological findings and parasitic tests¹⁹.

The specificity of the indirect hemagglutination test (IHA) using purified adult *Fasciola hepatica* antigen F1 is 96.9% for

serological diagnosis of *Fasciola hepatica* infection¹⁹. Diagnosis is confirmed only by demonstrating live parasites or eggs in the bile or feces^{1,12,18}. The disease cannot be ruled out by a negative stool examination^{12,16,18}. Diagnosis in patients with biliary phase fascioliasis was confirmed by extraction of live *Fasciola hepatica* from bile ducts. We suggest that stool examination for eggs is not a reliable method and that both serological testing and extraction of live parasites from bile ducts are very reliable methods for the diagnosis of fascioliasis.

Several drugs recommended for the treatment of *Fasciola hepatica* infection, among them Triclabendazole and bithionol are the most effective agents for the treatment of fascioliasis¹². Nitazoxanide has also been shown to be effective and can also be used for the eradication of *Fasciola hepatica*²⁰. Triclabendazole is the drug of choice for its effectiveness against both adult and immature worms^{9,10,21}. Its anti-parasitic effect is derived from the inhibition by an active sulfoxide metabolite of the synthesis of the tegumental ultra-structure of *Fasciola hepatica*²². Triclabendazole at a dose of 10 mg/kg body weight (single or split postprandial dose) reportedly is effective in about 80% - 90% of patients and is well tolerated. The most common drug-related side-effects are nausea, vomiting and abdominal pain²³. Triclabendazole is not available in our country, so nitazoxanide was used for treatment in our case.

Our patient presented with nonspecific abdominal pain and dyspepsia. No other abnormalities were detected apart from a tender epigastrium and mild tenderness over the right subcostal area. Investigations of the patient revealed leukocytosis & eosinophilia along with a raised serum IgE (1447.3iu/ml). Ultrasound of whole abdomen was unremarkable except for the grade 1 fatty infiltration of the liver. SGPT, SGOT were within normal limit, whereas ALP was mildly raised. The patient underwent an upper GI endoscopy for the evaluation of upper GI symptoms, which revealed several flat worms attached to the circular folds of the second part of the duodenum along with antral erosive gastritis. The worms were then extracted out with the help of biopsy forceps and were sent to the microbiology department for proper identification of the species of the worms. The organisms were confirmed to be *Fasciola hepatica* by the department of microbiology. A CT scan of whole abdomen with contrast was done to exclude the hepatic phase of the disease and the report was normal. The patient was given tablet Nitazoxanide 500mg 12 hourly for 7 days along with other medications. The symptoms reduced in intensity after two days of nitazoxanide. The patient was then discharged with an advice of a stool RE after one month of completion of nitazoxanide.

Another case in our country was reported by Das BC et al in 2015²⁴. They reported a case of Fascioliasis, which presented with recurrent cholangitis in a female in Hepato-Biliary-Pancreatic Surgery Division of the Department of Surgery of Bangabandhu Sheikh Mujib Medical University. But no other author has reported any case of living *Fasciola hepatica* in duodenal lumen till now in our country.

Conclusion

As fasciolosis is non endemic in our country a high degree of suspicion is required to ensure early detection and management of such cases. Patients with altered LFT, abdominal pain, eosinophilia should be evaluated for a suspected *Fasciola hepatica* infection and should always be kept as a differential in these cases.

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