

Acute Cholangitis Secondary to Biliary Ascariasis

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CASE REPORT

A 50-year-old female with diabetes mellitus (DM) type 2 presented with a one-day history of acute onset dull, achy epigastric pain associated with nausea and bilious vomiting. She had a history of such repeated attacks over the past five months for which she was being investigated.

On admission, her initial vital signs were within normal limits. Shortly after admission, however, the patient developed low-grade fevers (100.7°F) and sinus tachycardia. On investigation, hemoglobin was 10.2 g/dl and her WBC was 14.71 /L with mild eosinophilia. Liver function tests (LFTs) showed an elevated alkaline phosphatase (206 u/L) and mild transaminitis (AST 38 u/L, ALT 59 u/L). Total bilirubin, amylase, and lipase were unremarkable.

Review of ultrasonography and abdominal CT scan from a prior admission at an outside medical center showed mild intrahepatic biliary dilatation. Given these findings and symptoms of a presumed biliary etiology of her abdominal pain, she underwent Endoscopic Retrograde Cholangiopancreatography (ERCP) and biliary sphincterotomy two weeks prior to the current admission; sludge like material was reportedly removed.

During this admission, on a repeat CT scan of the abdomen, pneumobilia with a linear filling defect in

the common bile duct was noted (Figure 1). A repeat ERCP was performed and a large *Ascaris lumbricoides* worm was visualized in the second portion of the duodenum protruding from the common bile duct (CBD) and the major ampulla (Figure 2a). The worm was gently removed using a snare (Figure 2b); a hydratome was subsequently used to cannulate the CBD and a cholangiogram was performed. There were no filling defects seen once the worm was removed. A 9–12 mm balloon was used to sweep the CBD; no additional debris or stones were removed. The procedure was uneventful and the patient reported significant relief of her symptoms following the worm extraction. Her leukocytosis and abnormal liver tests returned to baseline as well. She was further treated with a three-day course of mebendazole and was discharged home in stable condition one day following the procedure.

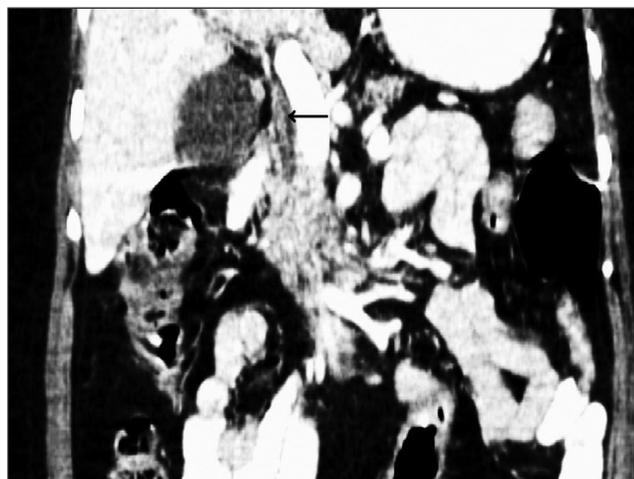


Figure 1. CT scan of the abdomen showing pneumobilia with a linear filling defect (Arrow) within the common bile duct.

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Figure 2A. Worm (*Ascaris lumbricoides*) seen partially coming out of the major ampulla on a side viewing endoscope.



Figure 2B. Extracted worm (*Ascaris lumbricoides*).

DISCUSSION

Ascariasis is the most frequent human helminthic diseases in developing countries where it poses a public health problem. With immigration and increased travel, however, this condition has become increasingly reported in non-endemic areas.¹ The *Ascaris* life cycle is marked by an early pulmonary and later intestinal phase. One of the most serious complications, which may accompany heavy intestinal infestation, is potential migration of the larvae from the jejunum to the biliary track through the sphincter of Oddi. At this stage, the worms can lay dormant or merely cause an asymptomatic infestation.² Thus, the spectrum of clinical manifestation can vary from an asymptomatic host to a severe obstructive pattern.

The symptomatology of Ascariasis reflects the site and extent of obstruction in the hepatobiliary system. The most common presenting symptom is pain, which is more constant than colic. Fever, jaundice, nausea and vomiting are less frequent manifestations.³ For example, in a retrospective study of 77 hospitalized patients with Ascariasis by Alam et al.,³ all but 2 patients presented with RUQ pain. The next most frequent manifestation was acute cholangitis occurring in

15.6% of the patients. Other presentations included obstructive jaundice (9.1%), acute pancreatitis (6.5%), choledocholithiasis (6.5%), acute cholecystitis (6.5%), and liver abscess (2.6%). In addition, the study reported; 51(66%) patients had living, 10(13%) had dead, and 16(21%) had both living and dead worms. Interestingly, only dead worms were associated with choledocholithiasis.

The diagnosis of Ascariasis may be suggested by history of recent travel to endemic areas. Laboratory findings include elevated WBC with eosinophilia and alterations of LFTs. On abdominal ultrasound, the primary imaging modality for biliary Ascariasis, an echogenic, non-shadowing, linear structure is usually seen in the bile ducts and/or gallbladder. There are specific sonographic features described for Ascariasis in CBD: ‘inner tube sign’- roundworm seen as a thick echogenic stripe with a central anechoic strip, which is the intestinal tract of the worm; ‘stripe sign’—roundworm seen as a non-shadowing stripe without inner tube; and ‘spaghetti sign’—overlapping longitudinal interfaces in the CBD due to coiled single worm or due to multiple worms.⁴

The algorithm for patients with a diagnosis of hepatobiliary ascariasis should start with conservative

management as the first line of treatment, as suggested by some authors.^{5,6} It consists of withholding oral feedings, administration of IV fluids, and anticholinergic and antihelminthic medications.⁷ Because of the lack of enterohepatic circulation of antihelminthics, there is no evident activity against worms when they are in the biliary tree and, thus, antihelminthics fail to kill the worms within the duct. The rationale for initial administration of antihelminthics is to paralyze the parasites within the intestinal lumen and not to act against the parasites in the biliary tree. Dead worms inside the ductal system often result in severe inflammatory reaction leading to stricture formation. In addition, the liberated ova act as a nidus for stone formation.⁸

Associated cholangitis is common in patients with biliary ascariasis.⁹ The parasite carries intestinal flora to the biliary tree, causing concomitant bacterial infection. Broad-spectrum IV antibiotics are indicated if signs of cholangitis are present. Medical treatment is successful in up to 80% of patients.^{5,6,9} Complete eradication of the worms should be achieved by oral administration of anti-helminthic medication. ERCP extraction has been reported successful in up to 90% of the patients with CBD ascariasis.¹⁰ Surgical interventions are often reserved for complicated presentations, such as hepatic abscess or severe pancreatitis.

In summary, we present a case of cholangitis secondary to *ascaris lumbricoides* managed successfully with early endoscopic intervention. Both primary care physicians and gastroenterologists need to be aware of

this important differential diagnosis, particularly when dealing with the immigrant population from areas endemic with ascariasis. High index of suspicion in appropriate population and early intervention with ERCP followed by medical therapy with anti-helminthic will reduce morbidity and future recurrence. ■

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