

CASE REPORT

Biliary ascariasis leading to choledocholithiasis, cholangitis, hepatic abscesses and gram negative septicemia

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ABSTRACT

Ascariasis is one of the commonest parasitic infections in Asia. In most cases it is asymptomatic, however, rarely it may present with acute abdominal symptoms. We present a case of a South Asian male, who presented with acute obstructive ascending cholangitis due to invasion of the biliary tree by *Ascaris lumbricoides*, resulting in choledocholithiasis, gram negative septicemia and multiple hepatic abscesses. Biliary invasion by the worms was diagnosed on endoscopic retrograde cholangiopancreatography (ERCP). Common bile duct (CBD) was stented while hepatic abscesses were treated conservatively with antibiotics. The patient did not require surgical intervention.

Key words: Ascariasis; *Ascaris lumbricoides*; Cholangitis; Choledocholithiasis; Liver abscess; Pancreatitis

Citation: Said A, Muhammad A, Maysoon M, Masood UR, Amer AJ. Biliary ascariasis leading to choledocholithiasis, cholangitis, hepatic abscesses and gram negative septicemia. *Anaesth Pain & Intensive Care* 2012; 16(2): 186-88

INTRODUCTION

A. lumbricoides, the roundworm, is the most common parasite that infects the human gastrointestinal tract.¹ There are several ways in which intestinal ascariasis can manifest; however, the most serious presentation is biliary ascariasis, which can result in life threatening complications including cholangitis, choledocholithiasis, liver abscesses and pancreatitis. Abdominal ultrasonography (US) has been shown to have a high diagnostic accuracy as a non-invasive procedure,² but some cases need more sophisticated diagnostic techniques including magnetic resonance cholangiopancreatography (MRCP). ERCP, on the other hand, is a useful diagnostic as well as a therapeutic tool. Complicated cases require intervention such as endoscopic extraction of the worms and/or surgery.

CASE REPORT

A 39 years old male from Bangladesh presented to

a local hospital with 10 days history of high grade fever and right upper quadrant pain, associated with nausea and vomiting. He was diagnosed to be in septic shock and admitted to the intensive care unit (ICU). Initial work-up showed elevated liver enzymes with a picture of obstruction, and leukocytosis. *Escherichia Coli* grew on initial blood cultures. Ultrasound of abdomen revealed dilated CBD, diffusely enlarged liver and ascites. Computed tomography (CT) scan of the abdomen done 2 days later revealed multiple liver abscesses and choledocholithiasis [Figure 1]. He was then transferred to our hospital for further management. He was admitted to our high dependency unit (HDU) where ERCP revealed dilated CBD and intra-hepatic ducts, a giant roundworm and multiple stones in the CBD [Figure 1]. Sphincterotomy & balloon dilatation of the papilla were done and a stent was placed in CBD and the worm was extracted.

This patient was then treated with broad spectrum antibiotics and intravenous fluids. In addition, one dose of oral albendazole 400 mg was administered.



Figure 1: CT scan showing dilated CBD and intra-hepatic ducts, a giant roundworm (white arrow)



Figure 2: A giant roundworm and multiple stones in the CBD on ERCP (white arrow)

ERCP was then repeated twice; the first done one week after the initial study revealed another large worm [Figure 2] which was extracted and CBD was cleared of the eggs and sludge. The second, done 2 weeks later, revealed only impacted eggs and sludge, which was cleared. The patient continued to recover, the liver function tests normalized and he was referred to surgery for possible cholecystectomy. However, cholecystectomy was not considered necessary and he was discharged after another 10 days.

DISCUSSION

Ascaris lumbricoides, the roundworm, is the most common parasite that infects the human gastrointestinal

tract. Over one billion people are infected with this large nematode worldwide.¹ It is widely distributed in tropical and subtropical regions where there is insufficient sanitation, hygiene and education regarding these parasites.³ With immigration and increased travel, however, this condition has become increasingly reported in non-endemic areas. Although United Arab Emirates (UAE) has an unfavorable weather environment and other prevailing socio-cultural factors for parasites survival and transmission, the high expatriate population with a major labor force from South Asia makes such parasitic infestations a fairly common problem in UAE.

Humans are infected by eating food contaminated with mature ova. *Ascaris* larvae hatch in the duodenum, migrate through the lungs, ascend the bronchial tree, are swallowed and then mature in the small intestine.⁴ The adult worms normally inhabit the intestinal lumen, mostly the jejunum, and do not cause symptoms unless aggregated into masses. They reach the duodenum either under pressure of excessive worm load in the jejunum or due to excessive mobility initiated by infection of the intestine by a variety of viruses, bacteria, or other types of intestinal parasites. The worms have a great propensity to explore small openings. When in the duodenum they may enter the ampullary orifice and advance into the bile and hepatic ducts, ultimately causing hepato-biliary ascariasis.⁵ Hepatobiliary ascariasis is more common in females and after cholelithiasis, is the second most common cause of acute biliary symptoms worldwide.⁶

The symptomatology of hepatobiliary 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.⁷ In a retrospective study of 77 hospitalized patients with ascariasis by Alam et al.,⁴ all but two patients presented with right upper quadrant 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%).⁴

Abdominal ultrasound is the imaging modality of choice for hepatobiliary ascariasis where findings have been described as tubular, echogenic, non-shadowing structures, sometimes with a thin, longitudinal, central sonolucent line. Movement of worms can also be seen. Other favorable imaging modalities include MRI and MRCP. Axial images in T2 weighted sequence shows a dot hypointense signal in CBD around which the

bile signals are hyperintense. MR cholangiography shows intraductal worms as linear hypointense filling defects.⁸

ERCP is a very useful investigational modality not only because of its major therapeutic potential but also because it permits direct visualization of the worms in the duodenum and across the papilla and helps in radiographic demonstration of the worms in the biliary tract. The worms in the ducts appear as smooth, linear filling defects with tapering ends.¹

Various therapeutic modalities can be applied in the management of hepatobiliary ascariasis, including conservative approach, endoscopic extraction and surgical intervention. Conservative approach is recommended for uncomplicated cases, in which anthelmintic medications are administered in addition to antibiotics, antispasmodics and keeping the patient nil by mouth in an attempt to decrease the intestinal load of worms to facilitate the migration of worms from the biliary tree back to intestines. Majority of the patients with uncomplicated biliary ascariasis will respond to conservative management.⁸

Intervention is required in a small proportion of patients under the following circumstances⁹:

1. Those critically ill with pyogenic cholangitis or unresolving cholecystitis.
2. Worms fail to leave the biliary tree within four weeks as by that time they are presumed to be dead and need extraction.
3. Worms coexistent with stones.
4. Associated liver abscesses.

REFERENCES

1. Rana S, Bhasin D, Nanda M, Singh K. Parasitic Infestations of the Biliary Tract. *Current Gastroenterology Reports* 2007; 9:156-164
2. Mukhopadhyay M. Biliary Ascariasis in the Indian Subcontinent: a study of 42 cases. *Saudi Journal of Gastroenterology* 2009, 15: 121-124
3. Khan A, Bhasin S, Bhajat R, Chrungoo R. An Unusual Presentation of Biliary Ascariasis. *JK Science Journal of Medical Education and Research* 2007; 9: 35-36
4. Alam S, Mostafa G, Ahmad N, Khan M. Presentation and Endoscopic Management of Biliary Ascariasis. *Southeast Asian J Trop Med Public Health* 2007; 38: 631-635
5. Shah O, Zargar S, Robbani I. Biliary Ascariasis: A Review. *World J. Surgery* 2006; 30: 1500-1506
6. Hussain S, Islam A, Ahmad S, Mohsen A, Khanam F. Biliary Ascariasis: An Experience of 47 Cases. *Bangladesh Medical*

Our case had septic shock secondary to pyogenic cholangitis, coexistent stones and liver abscesses, hence, he required active intervention.

In some cases, sphincterotomy is required, as in our case, especially if concomitant stones are present in the bile duct. However, sphincterotomy is best avoided because it appears to predispose to recurrent infestation by facilitating passage of worms via the ampulla of Vater.⁵ Surgical intervention is required in some cases, if endoscopic extraction fails. Laparoscopic extraction of the worms and stones has been done successfully.¹⁰

In case of liver abscess, although, the newer antimicrobials have improved the outcome, surgery remains the standard treatment. This is more so in cases with multiple abscesses and biliary tree obstruction.¹¹ However, our patient did not require surgical intervention in spite of the presence of multiple liver abscesses and obstruction and was successfully managed with intravenous antibiotics.

CONCLUSION

In conclusion, due to a large South Asian expatriate population in the Middle East, ascariasis as a cause of acute ascending cholangitis should always be kept in mind. Timely imaging, ERCP, antimicrobial and anthelmintic therapy will result in an excellent outcome for the affected patient.

Sources of support or funding: None

Conflicts of interest: None declared

7. College Journal 2010; 15: 59-62
7. Satapathy S, Shifteh A, Kadam J, Friedman B, Cerulli M, Yang S. A Case Report: Acute Cholangitis Secondary to Biliary Ascariasis. *Practical Gastroenterology* 2011; 35: 44-46
8. Khan AS, Bhowmik B, Hakim HAN, Islam MA. Outcome of Conservative Management in Biliary Ascariasis - A Study of 98 Cases. *J Dhaka Med Coll.* 2010; 19: 25-28
9. Alam S, Mostafa G, Rahman S, Kabir SA, Rashid HO, Khan M. Comparative Study on Presentation of Biliary Ascariasis with Dead and Living Worms. *The Saudi Journal of Gastroenterology* 2010; 16: 203-206.
10. Yoshihara S, Toyoki Y, Takahashi O, Sasaki M. Laparoscopic Treatment for Biliary Ascariasis. *Surgical Laparoscopy, Endoscopy & Percutaneous Techniques* 2000; 10: 103-105.
11. Javid G, Wani N, Gulzar GM, et al. Ascariis-Induced Liver Abscess. *World J. Surgery* 1999; 23: 1191-1194.

