**A Rare Intruder of the Biliary Tract - Gallbladder Ascariasis**

**Abstract**

Gallbladder ascariasis is a rare yet significant condition caused by the migration of *Ascaris lumbricoides* into the biliary system. This case report describes a 54-year-old male presenting with persistent upper abdominal pain and perianal itching. Imaging studies, including ultrasonography and MRCP, confirmed the presence of gallbladder ascariasis. Despite initial medical management with Albendazole, symptoms persisted, necessitating laparoscopic cholecystectomy. Postoperative findings revealed fragments of *Ascaris lumbricoides* within the gallbladder. The patient experienced complete resolution of symptoms following surgery and continued anthelmintic therapy. This report underscores the importance of considering gallbladder ascariasis in endemic regions when evaluating unexplained abdominal pain. Early diagnosis through imaging and appropriate management, including surgical intervention, when necessary, can prevent severe complications.

**Keywords**

Gallbladder ascariasis, *Ascaris lumbricoides*, ultrasonography, laparoscopic cholecystectomy, anthelmintic therapy.

**Introduction**

Ascariasis is a common helminthic infection caused by *Ascaris lumbricoides* [1]. It is a significant health issue, particularly in tropical and subtropical regions. While the parasite usually resides asymptomatically in the jejunum, its migration into the biliary tract can lead to several complications. Gallbladder ascariasis constitutes only around 2% of biliary ascariasis cases [2]. Understanding the management of gallbladder ascariasis is crucial due to its potential to cause severe complications if not treated promptly, including biliary colic, cholecystitis, and obstructive jaundice [3].

Despite its clinical significance, there is limited research on the optimal management strategies for gallbladder ascariasis. Our report aims to address this gap by providing insights into the surgical and non-surgical management of gallbladder ascariasis. We found that early surgical intervention combined with appropriate medical therapy results in better outcomes for male patients with gallbladder ascariasis.

**Case Report**

A 54-year-old male presented to the outpatient department of surgery with complaints of persistent dull upper abdominal pain for one month and perianal itching for ten days. There were no associated symptoms such as fever, jaundice, or passage of worms in vomitus or stools. Abdominal examination revealed mild tenderness in the right hypochondrium with no pallor or icterus.

Laboratory investigations showed eosinophilia 682 cells per microliter and alkaline phosphatase levels of 288 IU/L. Stool for larva was negative. Ultrasonography of the abdomen was suggestive of a distended gallbladder with an elongated mobile echogenic structure within the gallbladder lumen, with internal echoes suggestive of a parasitic infestation most likely ascariasis. The thickness of the gallbladder wall was normal (Figure 1). Magnetic Resonance Cholangiopancreatography was performed which revealed a curvilinear, tubular, hypointense structure within the gallbladder with a maximum thickness of 4 mm, suggestive of gallbladder ascariasis (Figure 2). Colonoscopy was also performed to rule out presence of worm within the intestine which was normal study.

The patient was started empirically on Albendazole 400 mg twice a daily for one week; however, the pain persisted, and the patient was taken up for laparoscopic cholecystectomy (Figure 3). Examination of the extracted gallbladder showed fragments of *Ascaris lumbricoides* worms and bile (Figure 4). Complete resolution of symptoms was noted on follow-up every weekly for two weeks.

**Discussion**

Ascariasis is one of the major diseases prevalent in tropical and subtropical countries [4]. It is transmitted through the ingestion of infective larvae. The parasite primarily resides in the jejunum but can migrate to various organs, including the liver, heart, lungs, and biliary system. Gallbladder ascariasis remains a rare problem due to the anatomical barriers posed by the narrow and tortuous structure of the cystic duct [5]. Chronic abdominal pain without other typical symptoms underscores the importance of considering gallbladder ascariasis in endemic regions. The clinical symptoms of gallbladder ascariasis are nonspecific, often presenting as vague abdominal pain, fever, or vomiting.

Ultrasonography is the most sensitive diagnostic investigation due to its accessibility and ability to visualize live worms in real time. It plays a critical role in diagnosis, showing characteristic findings such as curvilinear tubular structures with a "triple sign" or the "belly dance" movement of worms on ultrasound [6].

The established treatments for biliary ascariasis include anthelmintic drug therapy, endoscopic extraction, and surgical removal [7]. Anthelmintic drug therapy is typically administered before or just after surgical intervention.

Although conservative management is an option, it is ineffective in cases where the worm is dead, or there are concomitant stones or strictures that impede the worm's return to the duodenum. In such cases, surgical intervention via laparoscopic cholecystectomy is recommended, particularly in cases of recurrent symptoms, inflammation, or the presence of a dead worm, to prevent complications such as abscess formation and biliary strictures [8]. Endoscopic procedures are especially effective in managing ascariasis in the bile duct [9]. However, they are ineffective in managing gallbladder ascariasis.

**Conclusion**

Gallbladder ascariasis, though rare, should be included in the differential diagnosis for patients presenting with unexplained upper abdominal pain, particularly in endemic areas. Ultrasonography is invaluable for diagnosis. While conservative therapy may be attempted, cholecystectomy remains the definitive treatment for symptomatic cases, followed by deworming therapy.

**References**

1. Bethony J, Brooker S, Albonico M, Geiger SM, Loukas A, Diemert D, et al. Soil-transmitted helminth infections: ascariasis, trichuriasis, and hookworm. Lancet. 2006

May 6;367(9521):1521-32

1. Khuroo MS, Zargar SA, Mahajan R. Hepatobiliary and pancreatic ascariasis in India. The Lancet. 1990 Jun 23;335(8704):1503-6.
2. Sultan Khuroo M, Ali Zargar S, Nabi Yattoo G, Yousuf Dar M, Javid G, Ahmad Khan B, Iqbal Boda M, Mahajan R. Sonographic findings in gallbladder ascariasis. Journal of clinical ultrasound. 1992 Nov;20(9):587-91.
3. Holland C, Sepidarkish M, Deslyper G, Abdollahi A, Valizadeh S, Mollalo A, Mahjour S, Ghodsian S, Ardekani A, Behniafar H, Gasser RB. Global prevalence of Ascaris infection in humans (2010–2021): a systematic review and meta-analysis. Infectious Diseases of Poverty. 2022 Nov 18;11(1):113.
4. Bouree P, Barthod F, Chagnon S. Ascaris in gallbladder: report of a case and review. Journal of the Egyptian Society of Parasitology. 2005 Aug 1;35(2):491-6.
5. Imtiaz WA. Gallbladder ascariasis. Turk J Gastroenterol. 2011;22(2):178-82.
6. Yoshihara S, Toyoki Y, Takahashi O, Sasaki M. Laparoscopic treatment for biliary ascariasis. Surgical Laparoscopy Endoscopy & Percutaneous techniques. 2000 Apr 1;10(2):103-5.
7. Sandouk F, Haffar S, Zada MM, Graham DY, Anand BS. Pancreatic-biliary ascariasis: experience of 300 cases. American Journal of Gastroenterology (Springer Nature). 1997 Dec 1;92(12).
8. Wang X, Lv YL, Cui SN, Zhu CH, Li Y, Pan YZ. Endoscopic management of biliary ascariasis: a case report. World Journal of Clinical Cases. 2021 Jul 16;9(20):5695.