



An unusual finding: Biliary ascariasis in a pregnant patient managed conservatively—a case report

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Introduction and importance: Biliary ascariasis, caused by *Ascaris lumbricoides*, is a rare condition, especially in non-endemic areas. However, it can present with complications such as biliary obstruction, requiring prompt diagnosis and management. This case report highlights the incidental detection and successful management of biliary ascariasis in a pregnant patient.

Case presentation: A 26-year-old primigravida woman at 24 weeks gestation presented with mild icterus, anorexia, and gastrointestinal symptoms. Laboratory tests showed elevated bilirubin levels and peripheral eosinophilia. Abdominal ultrasound revealed the presence of roundworms in the gallbladder and common bile duct. The patient was managed conservatively with an anti-helminthic agent, resulting in the passing of a dead worm and the resolution of symptoms.

Clinical discussion: Biliary ascariasis is a rare condition in non-endemic areas but should be considered in pregnant patients presenting with biliary symptoms. Prompt diagnosis is crucial, and imaging modalities such as abdominal ultrasound play a vital role. Conservative management with appropriate anti-helminthic therapy can effectively resolve symptoms and eliminate the infection.

Conclusion: This case report emphasizes the importance of considering biliary ascariasis in pregnant patients with biliary symptoms. Timely diagnosis, utilizing imaging modalities, and initiating conservative management with anti-helminthic therapy can lead to successful treatment outcomes. Increased awareness and understanding of this condition can aid clinicians in providing optimal care to similar patients.

Keywords: ascariasis, biliary ascariasis, helminthic infection, pregnancy, case report

Introduction

Ascariasis, caused by *Ascaris lumbricoides*, is the most common helminthic infection worldwide, affecting 25–30% of the world's population^[1]. The disease occurs when humans eat contaminated food and water, which hatch into larvae that invade various parts of the body^[2]. Most patients are asymptomatic, but complications like biliary obstruction, biliary colic, acute cholangitis, acute cholecystitis, and acute pancreatitis can occur^[3]. Biliary ascariasis is rare in non-endemic areas and has a female predominance with a 3:1 female-to-male ratio^[4]. Diagnosis is confirmed through stool sampling, radiographic imaging, sonography, and

HIGHLIGHTS

- The incidental detection of biliary ascariasis in a pregnant patient during a routine prenatal check-up.
- The patient's symptoms, laboratory findings, and imaging studies supported the diagnosis of biliary ascariasis.
- Conservative management with an anti-helminthic agent led to successful treatment and resolution of symptoms, emphasizing the importance of early diagnosis and appropriate intervention in pregnant patients with biliary ascariasis.

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minimally invasive diagnostic tests^[5]. Most cases resolve after conservative treatment with an oral anthelmintic, but surgery may be required if treatment fails to eradicate the infection^[3]. Hereby, we report a case of biliary ascariasis in 24 weeks pregnant female detected incidentally while performing transabdominal ultrasonography (USG) in the second-trimester anomaly scan later managed conservatively. The work has been reported in line with the CARE guidelines 2013^[6].

Case presentation

A 26-year-old primigravida lady at 24 weeks gestation came for her first prenatal health check-up. She had a non-eventful pregnancy course except for anorexia, and occasional episodes of nausea and dyspepsia. She gives no history of any chronic illness or drug intake other than iron and calcium. Her blood pressure was 130/80 mmHg, the temperature was 98° Fahrenheit,

Table 1		
Laboratory result of the patient		
Investigation	Result	Reference range
Haemoglobin	11	11.5–15 mg/dl
Leucocyte count	8700	4000–11 000
Platelet count	4 lakh/cumm	1.5–4.5 lakh/cumm
Eosinophil	8	1–6%
Bilirubin total	3	0.4–1 mg/dl
Bilirubin direct	2	0–0.4 mg/dl
ALT	50	5–37 U/l
AST	51	5–37 U/l
ALP	35	0–41 U/l
Total protein	6.5	6.6–8.7 g/dl
Albumin	4	3.8–5.1 g/dl
Amylase	80	60–180 U/l
Lipase	60	0–160 U/l

*ALP indicates alkaline phosphatase; ALT, alanine transaminase; AST, aspartate transaminase.

respiratory rate was 16 breaths/min and pulse was 80 bpm. Physical examination revealed mild icterus. Skin findings were normal. Abdominal examination revealed a 24-week-sized, non-tender abdomen; liver and spleen were not palpable. Laboratory tests revealed mildly increased total and direct bilirubin, mildly elevated aminotransferases, elevated absolute eosinophil count, and normal total serum bile acid levels. The metabolic panel and other serum biochemistries were within the normal range (Table 1). Abdominal USG revealed curvilinear echogenicity of roundworm in the gallbladder and common bile duct with mild dilatation of the common bile duct (Fig. 1A and B). The liver revealed homogeneous echotexture with little fatty deposits. Features of ascites were absent. Foetal findings were normal. Based on the findings mentioned biliary ascariasis was diagnosed. The condition was discussed with the patient, and based on her preference, she was kept on conservative management. She was treated with a single dose of albendazole 400 mg. Anti-spasmodic and proton pump inhibitor and cefixime 200 mg twice daily for 5 days were advised and discharged with an advice to follow-up after 2 weeks. On a follow-up visit 2 weeks later, the patient gave a history of a dead worm passed in the stool, which she didn't

bring to the centre. Hence repeat dosing was not done. A repeat USG revealed no worm in the gallbladder and common bile duct (Fig. 2A and B).

The study highlights diagnostic challenges in biliary ascariasis due to nonspecific clinical presentation, potential misdiagnosis, a rarity in non-endemic areas, and accurate imaging interpretation.

Discussion

Ascariasis is a prevalent helminthic infection worldwide, particularly in low-income and tropical countries^[1]. Consuming contaminated food and water with worm ova can cause health issues, including larvae entering the jejunum, liver, and lungs. Egg ingestion leads to early-phase infection, with transient respiratory symptoms and eosinophilic pneumonitis, and late-phase symptoms like abdominal pain, anorexia, nausea, vomiting, and diarrhoea^[7]. Biliary ascariasis causes bile duct obstruction, leading to colic, acute cholangitis, and cholelithiasis. Most patients are asymptomatic, but this patient had mild icteric symptoms, anorexia, nausea, and dyspepsia. The disease is predominantly female, with the highest incidence in the mid-thirties^[4]. The risk of biliary ascariasis increases during pregnancy due to the high levels of progesterone and oestrogen hormones that influence the Oddi sphincter. These hormones facilitate the migration of worms into biliary ducts and lead to poor draining of the gallbladder through the second and third trimesters of pregnancy^[7]. Our work describes a 26-years old primigravid lady at 24 weeks period of gestation with non-eventful history. USG is a sensitive, specific, safe, and noninvasive method for diagnosing biliary ascariasis in pregnant women. This condition is characterized by a long, coiled echogenic structure without posterior shadowing, an echogenic strip with a central anechoic line, and a gallbladder with a septate appearance caused by an echogenic structure^[4]. Imaging in our case showed curvilinear echogenicity of roundworm in the gallbladder and common bile duct with mild dilatation of the common bile duct. Other methods of imaging include endoscopic retrograde cholangiopancreatography, abdominal magnetic resonance cholangiopancreatography, and magnetic resonance imaging

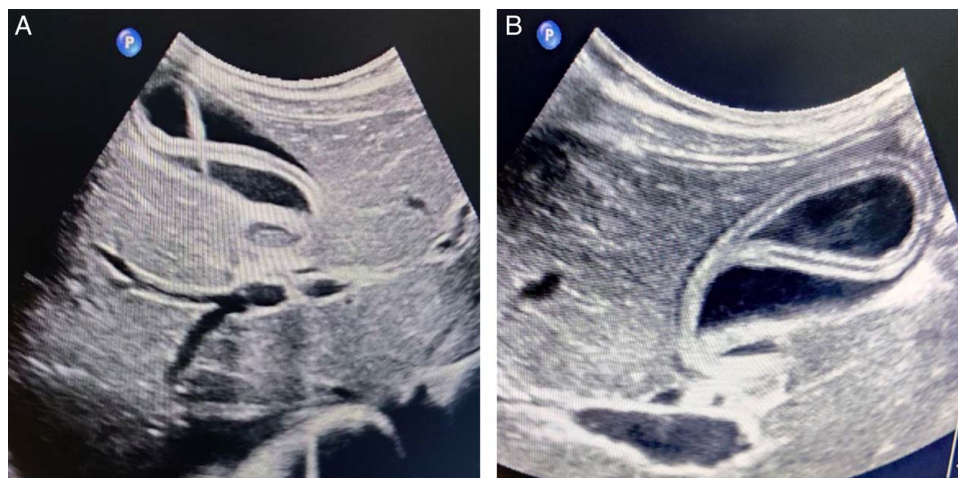


Figure 1. (A) Grey scale ultrasound image showing the curvilinear echogenic structure in the lumen of the gallbladder. (B) Grey scale ultrasound image showing the curvilinear echogenic structure in the lumen of the gallbladder with a small part of it in the common bile duct (black arrow).

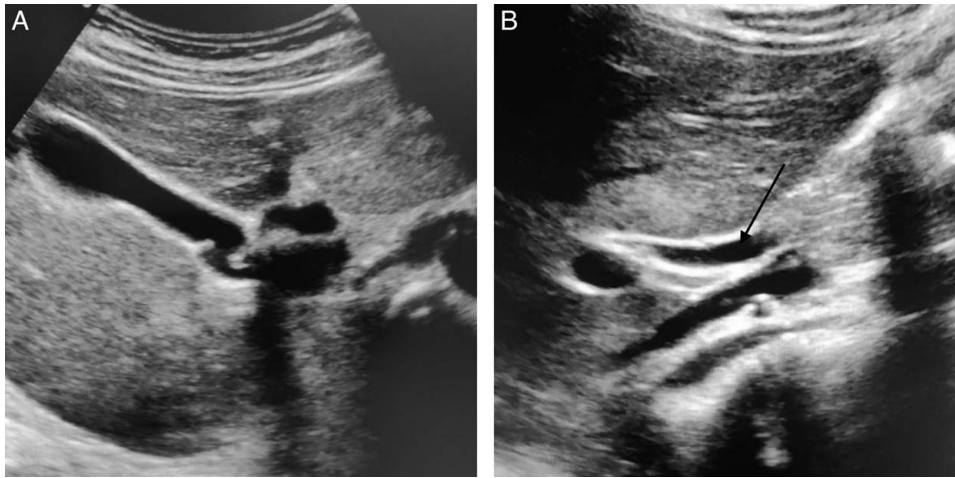


Figure 2. (A) Grey scale ultrasound of the same patient on follow-up examination showing no tubular echogenic content in gallbladder. (B) Grey scale ultrasound image of the same patient on follow-up examination showing no echogenic content in common bile duct (black arrow).

(MRI)^[5]. Diagnosis is confirmed by stool examination for ova or adult worms. But, in the absence of isolation of the microorganism, typical imaging findings can be helpful^[4]. Other laboratory findings include leukocytosis, elevated liver enzymes, elevated C-reactive protein, eosinophilia, elevated serum bilirubin, elevated erythrocyte sedimentation rate, raised amylase and lipase, etc^[5]. However, in our study the lab investigations showed mildly increased total and direct bilirubin, mildly elevated aminotransferases, elevated absolute eosinophil count, and normal total serum bile acid levels. The ultrasound is available, sensitive, specific, safe, and noninvasive for the diagnosis of biliary ascariasis in pregnant women^[8]. Anthelmintic treatment is recommended for all patients with ascariasis, even those with asymptomatic infection^[3]. To manage helminthic symptoms, conservative therapy with anti-helminthic agents, fluid resuscitation, antibiotics, and antispasmodics is recommended. In 68–80% of cases, symptoms resolve within days. Anthelmintics, such as albendazole, mebendazole, and pyrantel pamoate, are crucial to prevent worm death and debris accumulation in the biliary tree. Anthelmintics of choice include albendazole 400 mg, mebendazole 500 mg, or mebendazole 100 mg twice daily for three days^[9]. A meta-analysis by Conterno and colleagues in 2020 showed that the cure rate of ascariasis by single-dose Albendazole and multiple-dose Albendazole was 93.2% and 94.3%, respectively. Albendazole has been concluded to have high efficacy and high safety profile for children and adults with ascariasis, making it a viable option for patients^[10]. Ascariasis resolves completely within days of treatment, and the laboratory and imaging studies return to normal with conservative management after 4 weeks. Endoscopic and open surgical techniques are used if conservative therapy fails^[9]. In our case, after the start of treatment, the patient gave a history of dead worms passed in the stool in a 2-week follow-up and a normal finding on repeat sonography. Mebendazole and Albendazole are contraindicated in the first trimester of pregnancy due to teratogenic risk but can be provided in the second trimester as public health prevention strategy^[11]. In this case, the patient was treated with albendazole along with anti-spasmodic, and they may have experienced significant improvements in their symptoms, such as the resolution

of icterus, anorexia, nausea, and dyspepsia, after starting the anti-helminthic therapy. The passing of the dead worm in the stool provided a sense of validation and reassurance that the treatment was effective in eliminating the infection.

This study's strengths lie in its unique case presentation of biliary ascariasis in a pregnant patient and its comprehensive clinical discussion, enhancing understanding of the condition in pregnancy. The successful conservative management outcome with an anti-helminthic agent highlights the importance of timely diagnosis and appropriate treatment strategies. However, limitations include the single-case nature of the study, lack of a comparison group, and limited follow-up duration, necessitating further research for a broader understanding of biliary ascariasis in pregnancy.

Conclusion

Biliary ascariasis is rare in non-endemic areas but should be considered in the differential diagnosis of pregnant patients with biliary symptoms. Conservative management with anti-helminthic agents is effective, resolving symptoms and eliminating the infection. Prioritizing maternal and foetal safety is crucial for successful management. Prompt diagnosis and appropriate treatment are essential for successful management.

Ethical approval

None.

Consent

Written informed consent was obtained from the patient for publication of this case report and the accompanying images. A copy of the written consent is available for review by the Editor-in-chief of this journal on request.

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Author contribution

S.K.: conceptualization, as mentor and reviewer for this case report and for data interpretation. R.O.: contributed in conceptualization and reviewer. A.B.: contributed in performing literature review and editing. S.B.: contributed in performing literature review and editing. A.G.: contributed in writing the paper and reviewer for this case. R.L.: contributed in writing the paper. All authors have read and approved the manuscript.

Conflicts of interest disclosure

The authors declare that they have no conflicts of interest.

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Data sharing is not applicable to this article.

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