A rare case of ascariasis in the gallbladder, choledochus and pancreatic duct

Safra kesesi, koledok ve pankreatik kanalda yerleşmiş nadir bir askaris olgusu

Korcan Aysun GÖNEN[1], Rafet METE[2]

Departments of, [1]Radiology, [2]Gastroenterology, State Hospital, Tekirdağ

Due to the anatomical characteristics of the biliary tract, Ascaris lumbricoides rarely settles in the gallbladder, which makes biliary ascariasis a rare clinical condition. Ultrasonography plays a significant and practical role in the diagnosis and follow-up of suspected cases of biliary ascariasis. The 15-year-old case presented herein had been complaining of abdominal pain and dyspepsia for three months, and the clinical and laboratory findings for the patient indicated acute abdomen. Abdominal ultrasonography showed worms consistent with Ascaris inside a normal-sized gallbladder, dilated choledochus and the pancreatic duct. We started antiparasitic treatment in the patient, with cholangitis and pancreatitis diagnoses. Post-treatment follow-up ultrasonography showed a normal gallbladder, choledochus and pancreatic duct.

Key words: Hepatobiliary ascariasis, pancreatitis, cholangitis, ultrasonography

Safra yollarının anatomik özellikleri nedeniyle askaris lumbrikoides safra kesesine nadiren yerleşir. Bu nedenle biliyer askariyazis ender görülen bir klinik durumdur. Şüpheli olgularda ultrasonografi bilier askariazisin tanı ve takibinde önemli ve pratik bir rol oynamaktadır. Onbeş yaşındaki olgumuzun üç aydır devam eden karın ağrısı ve dispeptik şikayetleri mevcuttu. Hastanın klinik ve laboratuar bulguları akut batın ile uyumluydu. Yapılan batın ultrasonografisinde, normal boyutlardaki safra kesesi ile dilate koledok ve pankreatik kanal içinde askarisi düşündüren kurtçuklar görüldü. Kolanjit ve pankreatit tanısıyla hastamıza antiparazitik tedavi başlandı. Tedavi sonrası yapılan kontrol ultrasonografide safra kesesi, koledok ve pankreatik kanal normal olarak gözlendi.

Anahtar kelimeler: Hepatobilier askariyazis, pankreatit, kolanjit, ultrasonografi

INTRODUCTION

Ascaris lumbricoides is the most widespread cause of helminthic infestations in developing countries. It is more prevalent and its course more serious in children than in adults (1). The parasite most commonly settles in the mid-section of the ileum and jejunum in the intestines. Intestinal infection is generally asymptomatic. However, serious complications may occur, such as ascending cholangitis, acute acalculous cholecystitis, obstructive jaundice, pancreatitis, liver abscesses, and septicemia, with the settlement of the parasite in the biliary tract ascending upwards from the intestines (2,3). Due to the narrow and tortuous structure of the biliary tract, it is rare for the parasite to invade the gallbladder or the pancreatic duct (1). This presentation evaluates the diagnosis and follow-up findings with ultrasonography (US) of a rare case of ascariasis settled in the gallbladder, choledochus and pancreatic duct, causing cholangitis and pancreatitis.

CASE REPORT

A 15-year-old female living in a rural area presented to our hospital with complaints of abdominal pain, nausea, vomiting, fever, anorexia, and weight loss. The patient had sensitivity in the right hypochondriac and epigastrium and hepatomegaly. Her laboratory examinations revealed: leukocytosis (18000/µl), significant increases in aspartate aminotransferase (AST) 55 (<37) IU/L, alanine aminotransferase (ALT) 107 (<40) IU/L and amylase 340 (<83) IU/L. They also showed slight increases in alkaline phosphatase 94 (32-92)

Address for correspondence: Korcan Aysun GÖNEN
Değirmenaltı Mah. Gündoğan Yapı Kooperatifi
C Blok D: 5 59300 / Tekirdağ, Turkey
Phone: + 90 282 293 27 10 • Fax: + 90 282 260 38 50
E-mail: aysunbalc@yahoo.com

Manuscript received: 09.04.2009 **Accepted:** 05.11.2009

doi: 10.4318/tjg.2010.0137

IU/L, C-reactive protein (CRP) (1.4 mg/dl), calcium (Ca) (10.6 mg/dl), and direct bilirubin (0.28 mg/dl). A real-time abdominal US (Logic 200, England) was conducted with a convex probe (3.5 MHz). This revealed a tubular-shaped worm with a shorter axis of 3.8 mm and a longer axis of 7–9 cm, the center of which was hypoechoic and the periphery of which was hyperechogenic. It did not leave an acoustic shadow at its posterior, and characteristic zig-zag movements were detected in the gallbladder (Figure 1a). Similar tubular structures were observed in the dilated choledochus (9 mm) and the Wirsung duct (4 mm) (Figures 1b, 1c). The dimensions of the gallbladder and the wall thickness were normal. The pancreas had an edematous appearance and reduced echogenicity (Figure 1c). Ascaris eggs were determined in the feces analysis. With cholangitis and pancreatitis diagnoses, albendazole (1x200 mg tablet/day) was administered to the patient for three days. After administration of mebendazole for three days, the child's condition improved remarkably. The patient was managed with intravenous (IV) hydration, antispasmodic and antibiotic (gentamicin 5 mg/kg) additionally. Seven days later, she was free of symptoms and the clinical course, biochemical parameters and radiologic findings of the patient had recovered completely (Figures 2a, 2b).

DISCUSSION

Settlement of adult-form Ascaris parasite in the gallbladder is rare, constituting 2.1% of hepatobiliary ascariasis (4). As biliary ascariasis does not have any characteristic laboratory or clinical features, radiologic imaging methods play an important role in the diagnosis of a parasite in the biliary tree. Computed tomography (CT), magnetic resonance imaging (MRI) and endoscopic retrograde cholangiopancreatography (ERCP) are used in the diagnosis of hepatobiliary ascariasis. However, US is still the method that is first utilized and most preferred, in the follow-up as well, due to its ease of applicability and the fact that it is inexpensive and noninvasive. In addition, US enables active movements of the worm to be displayed, which helps to identify whether it is alive, an important advantage over CT and MRI (5). Various studies in the literature report the significance of US in the diagnosis of ascariasis in the gallbladder and biliary tract (1,5–7). US findings vary based on the orientation of the probe against the worm, the resolution of the transducer, the existence of fluid around the worm, the imaged part of the worm (head or body), and whether or not the worm is alive. All of the cases with two or more worms in the biliary tract represent a characteristic sonographic image; however, if there is a single worm, it may be missed, at a rate of 50% (1). It has been noted that the Ascaris parasite can sometimes be observed as a soft tissue mass in dilated biliary tracts, in which case it should be differentiated from bile sludge, non-opaque bile stone and cholangiocarcinoma (9). In addition, due to the temporary passage of the parasite in the gallbladder and biliary tracts, it has also been reported that its imaging with US can be difficult (10,11). In our case, US made it easy to diagnose the existence of more than one parasite inside the biliary tract and their characteristic movements in the bladder. When a low-frequency transducer is used, ascaris appears as two parallel echogenic lines separated by the anechoic central area, referred to as a 'triple sign' (1). Reported US findings include long, linear or curly echogenic structures in the biliary tracts and the characteristic movements of these echogenic structures, dilatation in the biliary

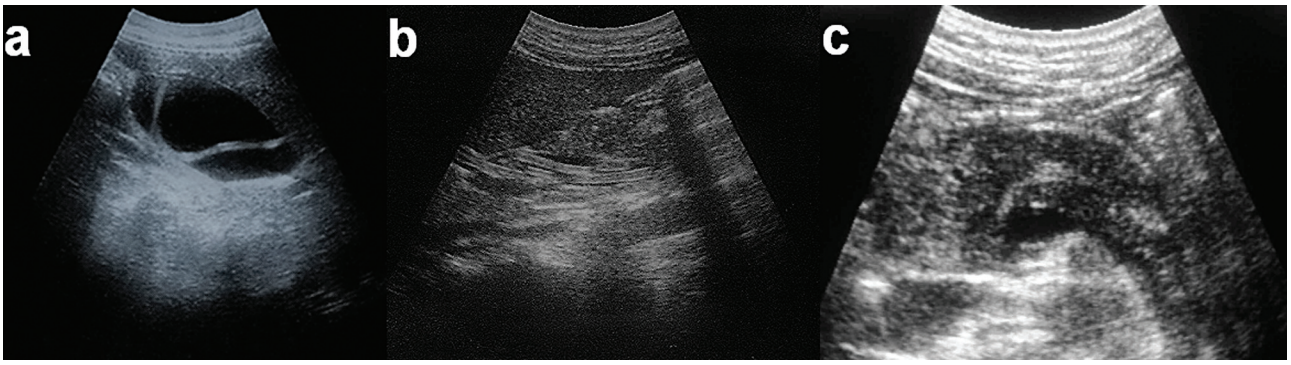

Figure 1. a. View of ascaris parasite inside normal-sized gallbladder. **b.** Echogenic images consistent with ascaris in the dilated choledochus. **c)** In transverse section, view of parasite in edematous pancreas and pancreatic duct.

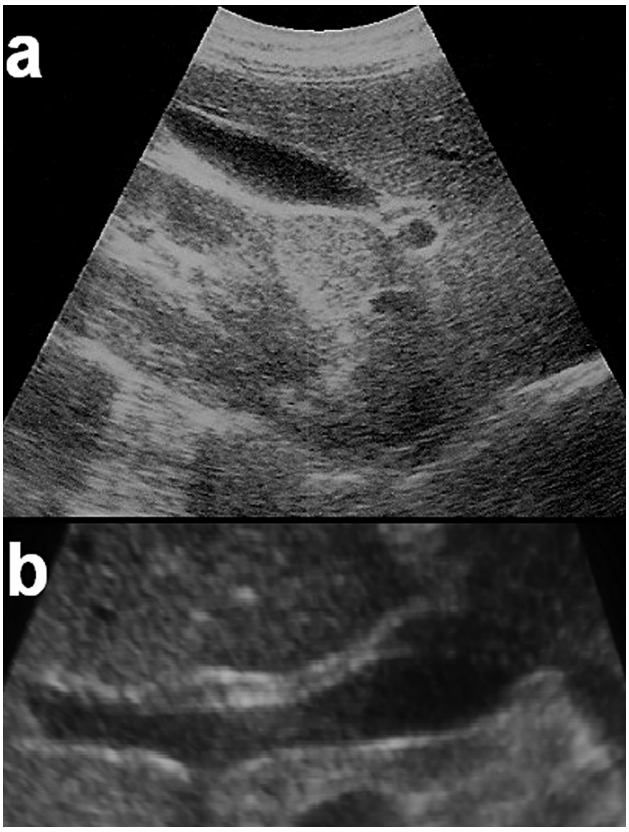

Figure 2. a. Post-treatment normal view of gallbladder. **b.** No parasite is observed in the biliary tract after treatment.

tracts, gallbladder distension, edema of the gallbladder wall, existence of sludge in the bladder, multiple liver abscesses, edematous pancreatitis, and normal sonographic findings (8). Literature data shows that 16–24% of cases had acute cholangitis (3,12,13), 13–16% had acute cholecystitis (3,13), and 4–10% had acute pancreatitis (3,12,13). The parasite settled in the biliary tract in 34% of cases (3), in the gallbladder in 1.6–3.7% (3,13), in the pancreatic duct in 1.4% (3), in the bladder and choledochus in 12% (13), and in the choledochus and pancreatic duct in 3.7% of cases (13). Our case had both cholangitis and pancreatitis, and it was possible to observe the parasite in the gallbladder, choledochus and pancreatic duct simultaneously.

Endoscopic retrograde cholangiopancreatography (ERCP) is a very useful diagnostic tool to delineate worms in the biliary tree. With the advent of high-resolution US, CT scan and MRI, the use of ERCP for diagnostic purposes has rapidly declined. Besides being invasive, ERCP is often difficult to conduct in a sick patient. It is difficult to study children, as general anesthesia is required. At present, ERCP is reserved for already diagnosed cases in which an endoscopic removal of worms is attempted or for those cases when US is technically inadequate (1,8). Patients with ascending cholangitis are managed initially conservatively with antispasmodics, antibiotics and antiparasitic. If patients fail to respond to conservative treatment or exacerbations of symptoms occur, referral for endoscopic clearance is done (13).

Ultrasonography (US) is the preferred imaging method in the diagnosis and post-treatment follow-up of hepatobiliary ascariasis, which particularly affects children and young adults. This is due to the advantages mentioned above as well as the facts that no need for sedation arises, it does not involve radiation and its cost is low. Planning antiparasitic treatment with US follow-up may prevent surgical treatment, other interventions and resulting complications. We recommend US as the first imaging tool in the diagnosis of hepatobiliary ascariasis and also to monitor the exit of worms from the bile duct. ERCP should be reserved for the diagnosis of those suspected cases of biliary ascariasis in which sonography is technically inadequate or is non-diagnostic.

REFERENCES

1. Das CJ, Kumar J, Debnath J, Chaudhry A. Imaging of ascariasis. Australas Radiol 2007; 51: 500-6.
2. Bahú Mda G, Baldisserotto M, Custodio CM, et al. Hepatobiliary and pancreatic complications of ascariasis in children: a study of seven cases. J Pediatr Gastroenterol Nutr 2001; 33: 271-5.
3. Khuroo MS, Zargar SA, Mahajan R. Hepatobiliary and pancreatic ascariasis in India. Lancet 1990; 335: 1503-6.
4. Khuroo MS, Zargar SA, Yattoo GN, et al. Sonographic findings in gallbladder ascariasis. J Clin Ultrasound 1992; 20: 587-91.
5. Danacı M, Belet Ü, Selçuk MB, et al. Ascariasis of the gallbladder: radiological evaluation and follow-up. Pediatr Radiol 2000; 30: 497-8.
6. Slesak G, Phanthavong P, Rasphone O, et al. Obstructive biliary ascariasis with cholangitis and hepatic abscesses in Laos: a case report with gall bladder ultrasound video. J Infect 2007; 54: 233-5.
7. Koumanidou C, Manoli E, Anagnostara A, et al. Sonographic features of intestinal and biliary ascariasis in childhood: case report and review of the literature. Ann Trop Paediatr 2004; 24: 329-35.
8. Khuroo MS, Zargar SA, Mahajan R, et al. Sonographic appearances in biliary ascariasis. Gastroenterology 1987; 93: 267-72.
9. Ali M, Khan AN. Sonography of hepatobiliary ascariasis. J Clin Ultrasound 1996; 24: 235-41.

10. Grover SB, Pati NK, Rattan SK. Sonographic diagnosis of Ascaris-induced cholecystitis and pancreatitis in a child. J Clin Ultrasound 2001; 29: 254-9.
11. Filice C, Marchi L, Meloni C, et al. Ultrasound in the diagnosis of gallbladder ascariasis. Abdom Imaging 1995; 20: 320-2.
12. Sandouk F, Haffar S, Zada MM, et al. Pancreatic-biliary ascariasis: experience of 300 cases. Am J Gastroenterol 1997; 92: 2264-7.
13. Malik AH, Saima BD, Wani MY. Management of hepatobiliary and pancreatic ascariasis in children of an endemic area. Pediatr Surg Int 2006; 22: 164-8.