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MRCP findings of biliary ascariasis before and after medical treatment

Biliyer askariazisin medikal tedavi öncesi ve sonrası MRKP bulguları

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A 53-year-old woman presented with the complaints of abdominal pain on right upper quadrant, nausea, vomiting, diarrhea, and loss of appetite. Her physical exam was unremarkable except for right upper quadrant tenderness. Abdominal ultrasound revealed a tubular, mobile, non-shadowing echogenic structure within the slightly dilated common bile duct. Examination of feces for ova suggested the diagnosis of ascariasis. In this report, ultrasonographic and magnetic resonance cholangiopancreatographic findings of the case are described before and after medical treatment.

Key words: Biliary ascariasis, ultrasonography, magnetic resonance cholangiopancreatography, medical treatment

Elli üç yaşında kadın hasta sağ üst kadran ağrısı, bulantı, kusma ve iştahsızlık yakınmaları ile başvurdu. Fizik muayenede sağ üst kadran hassasiyeti dışında bir özellik saptanmadı. Yapılan batın ultrasonografisinde hafifçe dilate olan koledok lümeninde tübüler, akustik gölge vermeyen, hareketli ekojen yapı izlendi. Dışkı incelemesinde askariazis yumurtalarının görülmesi biliyer askariazis tanısını düşündürdü. Bu olgu sunumunda biliyer askariazis tanılı hastanın medical tedavi öncesi ve sonrası ultrasonografi ve manyetik rezonans kolanjiyopankreatografi bulguları tanımlanmıştır.

Anahtar kelimeler: Biliyer askariazis, ultrasonografi, manyetik rezonans kolanjiyopankreatografi, medikal tedavi

INTRODUCTION

Ascariasis, caused by the parasite Ascaris lumbricoides, is the most common parasitic infestation in humans (1). Its worldwide prevalence is estimated as 25% (>1 billion people) (2). Due to the improvement in travel opportunities and immigration, infestation is not only limited to the developing countries but is also seen in developed countries. In one-third of cases, the worm can enter into the biliary tree and causes jaundice, recurrent pyogenic cholangitis, pancreatitis, hepatic abscess and septicemia (3, 4).

Ultrasonography (US) can be used for the diagnosis of biliary ascariasis. But it has some limitations, such as operator dependency and duodenal gas obscuring the common bile duct. Magnetic resonance cholangiopancreatography (MRCP) is a well-established modality for the diagnosis of biliary ascariasis (5) and takes the place of endoscopic retrograde cholangiopancreatography (ERCP) diagnostically in patients whose papilla is inaccessible.

In this report, the US and MRCP findings of a patient with biliary ascariasis are described before and after the treatment.

CASE REPORT

A 53-year-old woman presented with the complaints of abdominal pain on her right upper quadrant, nausea, vomiting, diarrhea, and loss of appetite for three months. Her past medical history revealed Billroth-II gastric resection for a gastric ulcer 10 years previously. Physical examination demonstrated only tenderness over the right upper quadrant of the abdomen. Laboratory investigations showed no abnormality including serum bilirubin, transaminases levels, and complete blood counts.

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Abdominal US examination showed a tubular, mobile, non-shadowing echogenic structure with an anechoic center within the slightly dilated common bile duct (CBD) (Figure 1) that suggested the diagnosis of biliary ascariasis. Subsequently, MRCP was carried out for further confirmation of the ultrasonographic diagnosis. MRCP revealed a tubular hypointense filling defect in the slightly dilated CBD (Figure 2). ERCP could not be performed because of the previous Billroth-II gastrectomy operation. Percutaneous transhepatic cholangiopancreatography was not done because of normal caliber of intrahepatic bile ducts. Examination of feces for the ova of parasites suggested the diagnosis of ascariasis. The patient was treated with albendazole (10 mg/kg/day) for two weeks. Two weeks after medical treatment, all of the complaints of the patient had resolved. Follow-up US examination showed similar findings as previously described. Subsequent follow-up MRCP showed the worm was fragmented at the middle and this finding suggested the worm had died (Figure 3). There was no sign of biliary obstruction in laboratory findings.

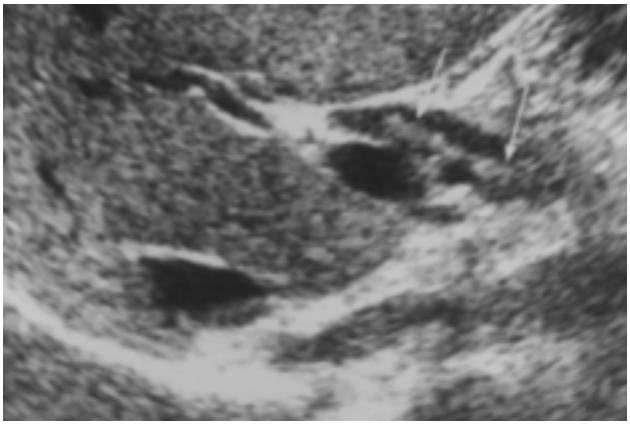

Figure 1. Abdominal US examination shows a tubular, mobile, non-shadowing echogenic structure with an anechoic center within the slightly dilated common bile duct (arrows)

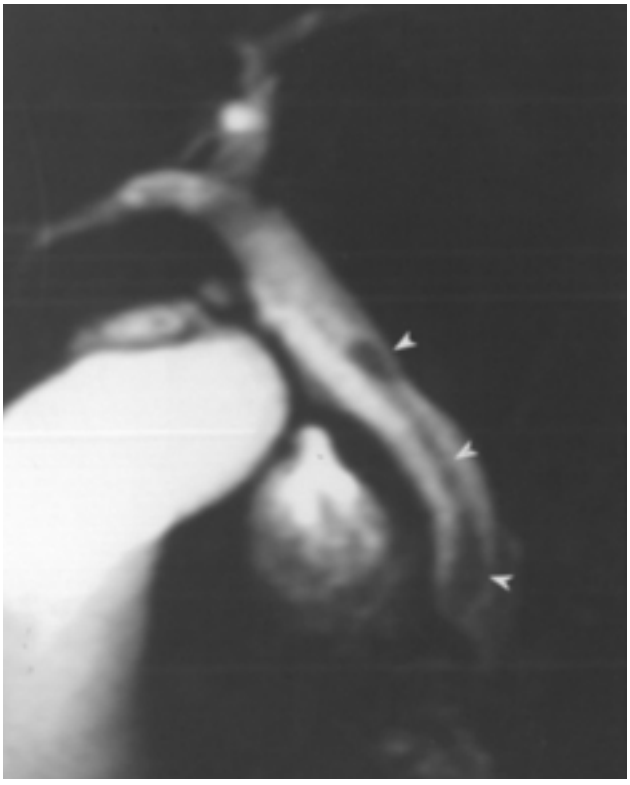

Figure 2. Magnetic resonance cholangiopancreatography (MRCP) shows a tubular hypointense filling defect in the slightly dilated common bile duct. It lies parallel with the long axis of the common bile duct (arrowheads)

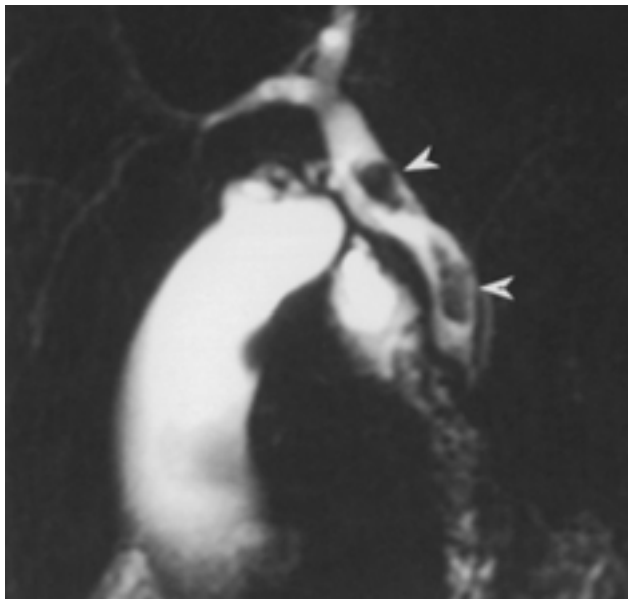

Figure 3. After two weeks of medical treatment, follow-up MRCP shows the worm was fragmented at the middle (arrowheads)

DISCUSSION

Ascariasis is a common helmintic disease in developing countries, especially in the tropical and high temperature regions (6, 7). In the human infection, life cycle begins by ingestion of an egg, with the larvae hatching in the small intestine. The larvae invade small-bowel mucosa, migrate through the circulatory system to the lungs, invade the alveoli, ascend the tracheobronchial tree, and then are swallowed into the small intestine

where they mature into adult worms (8). Intestinal infestation is often asymptomatic, but may cause symptoms such as abdominal pain on right upper quadrant, nausea, vomiting, diarrhea, and loss of appetite, as observed in our patient. Migration of worms into the biliary tree is a well-known complication, which may result in biliary colic, cholecystitis, cholangitis, intrahepatic abscess, or pancreatitis (3, 4). In our patient, the serum levels of bilirubin and transaminases were within normal limits; therefore, we did not consider the biliary complications.

Ultrasound is the most commonly employed initial examination for the diagnosis of biliary ascariasis. At US, Ascaris lumbricoides in the biliary ducts usually manifests as an echogenic tubular structure, and has a diameter of approximately 3-6 mm, a relatively hypoechoic center, and a more echogenic wall (9). Ascaris typically lie parallel with the long axis of the bile duct (10, 11). This characteristic sign was also seen in our case. The worms sometimes can be seen as one or more nonshadowing tube-like structures that may be either straight or coiled "strip" sign. If multiple, they may completely fill the bile duct, producing either the "spaghetti sign" (10), or if very densely packed in the bile ducts, they may appear amorphous and manifest as hyperechoic pseudotumors (7). US is an inexpensive, rapid, accurate, and safe modality for the diagnosis of Ascaris. But it has some limitations, such as abdominal gas obscuring the biliary tree and dependence on operator experience.

MRCP is an alternative diagnostic tool for ascariasis. Although US usually demonstrates the worms in the intrahepatic bile ducts and proximal segment of the CBD, it may not show the worm in the mid and distal segment of the CBD because of gas distention. MRCP can be used to provide more details and subtle information of the biliary tree, and it is not operator-dependent. Alper et al. (12) reported hypointense tubular filling defects inside the CBD on MRCP in a pregnant woman with biliary ascariasis. It has now become the gold standard method for the diagnosis of biliary diseases, replacing ERCP which is reserved for therapeutic modalities.

ERCP is one of the best methods for the diagnosis and emergent management of Ascaris in the bile duct. Endoscopic sphincterotomy and balloon extraction of the parasite and bile duct clearance, along with pharmacotherapy, are the mainstays of treatment (13). Standard medical therapy of biliary ascariasis is oral administration of an anthelmintic agent such as albendazole and mebendazole. The predominant effect of albendazole on Ascaris lumbricoides is to cause a flaccid paralysis; such a worm often fails to move out of the biliary tract into the duodenum because of lack of peristaltic activity of the bile duct and presence of high pressure zone at the papilla of Vater. The trapped worm eventually dies, becomes macerated and fragmented and its components can elicit a severe inflammatory response with ductal necrosis, calculus formation, fibrotic stricture, and cholangitis (2).

In the present case, the worm could not be extracted due to Billroth-II gastrectomy operation. Percutaneous transhepatic cholangiography and ductal clearance were not done due to the normal caliber of bile ducts and no sign of biliary obstruction. Therefore, the patient was treated with albendazole (10 mg/kg/day) for two weeks. After the medical treatment the patient's symptoms had subsided. There was no laboratory sign of biliary obstruction. Subsequently, follow-up MRCP showed the worm was fragmented in the biliary tree after medical therapy (Figure 3). The patient was well at her three-month follow-up without any symptoms, and laboratory findings were normal.

In conclusion, if the endoscopic route is not available for management of biliary ascariasis, MRCP is a very useful alternative method to diagnose and follow-up patients with biliary ascariasis after the medical treatment.

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