A deceptive magnetic resonance cholangiopancreatogram?

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Abstract

A case describing a curious MRCP appearance is presented, which, placed in the clinical context, suggested an unusual tropical cause for the patient’s presentation and generated great debate between physicians, surgeons and radiologists.

Keywords

Magnetic resonance cholangiopancreatography; MRCP; ascariasis; parasite.

Case report

A 40-year-old white female architect presented with a 2-week history of intermittent epigastric pain and loose pale stools. She subsequently developed vomiting and icteric sclera. There was no significant past medical or family history. She was not taking any regular medications and had minimal alcohol intake. Her most recent foreign travel was to Malta a year previously.

On examination, she was pyrexial (37.8°C), icteric, and had mild tenderness of the right upper quadrant. Liver function tests were abnormal including: alanine aminotransferase 4081 IU/l, alkaline phosphatase 320 IU/l, and bilirubin 93 μmol/l. The full blood count, renal function and albumin were essentially unremarkable. A hepatic screen was positive for anti-hepatitis A IgM antibodies. Liver ultrasound revealed intra-hepatic duct dilatation but normal calibre common bile duct and no gallstones. Magnetic resonance cholangiopancreatography (MRCP) showed a low-intensity tubular filling defect within the gallbladder, extending into the proximal biliary tree (see Fig. 1).

The differential diagnoses of the MRCP appearance included intra-biliary thrombus, tumour, pus, gas, foreign body, an MRCP artefact or parasitic infection, such as with the roundworm Ascaris lumbricoides. The appearance is particularly in keeping with such a parasitic infection.

Although consensus could be reached that the patient was suffering from acute hepatitis A infection, no agreement could be reached between radiologists, gastroenterologists and surgeons as to the nature of the MRCP abnormality.

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A review of the history revealed that the patient had not noticed the passage of any worms in her stool and this was also found to be negative for ova on microscopy. The patient was treated empirically with a 3-day course of albendazole prior to establishing the diagnosis.

Follow-up investigation 1 month later in the presence of recurring symptoms revealed normal liver and biliary ultrasound and unremarkable MRCP. Symptoms subsequently settled with no further intervention. Although the predominant agreement is that this clinical episode can be attributed entirely to hepatitis A infection, the aetiology of the MRCP abnormality remains contested and considered most likely due to an MRCP artefact or roundworm colonisation of the biliary tree.

Discussion

Intestinal ascariasis affects around 25% of the world’s population; it is predominantly asymptomatic and occurs mainly in the developing world[1]. The ability of the parasite to cross the ampulla of Vater leading to biliary involvement is well recognized, with gallbladder ascariasis a rare complication of common bile duct colonisation[2].

Clinical presentation of biliary ascariasis is similar to that of acute cholecystitis or cholangitis, with episodic right upper quadrant pain and low-grade fever, often accompanied by jaundice[3]. Patients may also notice the passage of roundworms in the stool. In complicated cases, a liver abscess or systemic sepsis may develop, with corresponding clinical features.

Diagnosis of intestinal ascariasis is through identification of worms in the stool or the presence of ova in stool, sputum, vomit or small bowel aspirate. These findings may be absent in hepatobiliary infection, for which ultrasound is the diagnostic modality of choice, enabling visualization of the parasite within the biliary tree as a tubular echogenic filling defect typically with a hypoechoic centre[4]. Diagnosis can be difficult, however, and depends greatly on operator
experience. Thus, other imaging techniques such as endoscopic retrograde cholangiopancreato-
graphy (ERCP), computed tomography (CT) and MRCP have been suggested as alternatives to ultrasound for the diagnosis of biliary ascariasis\[^5\].

Treatment of biliary ascariasis infection is with antihelmintic medication, endoscopic or surgical extraction\[^6\]. Definitive diagnosis is often only achieved through direct visualization of the parasite during its removal.

Given the absence of ova in stool specimens from our patient and the finding of only intra-
hepatic biliary dilatation on biliary ultrasound, it seems most likely that the convincing tubular MRCP images are merely a result of an MRCP artefact. However, the MRCP appearance of *Ascaris lumbricoides* within the gallbladder has not been well documented.

### Teaching point

Biliary ascariasis should be considered in all patients presenting with painful jaundice, particularly those with a history of travel to an endemic area. The diagnostic modality of choice is ultrasound, although MRCP may have an increasing role as more cases are recognized in institutions with access to this form of imaging.

### References