

## The Serpiginous Tracks Sign of Hepatic Fascioliasis: MRI Appearance

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### ABSTRACT

MRI findings of an uncommon case of hepatic fascioliasis are reported showing an inflammatory mass with peripheral serpiginous parasitic tracks of the right hepatic lobe. Right hepatic vein thrombosis, secondary to inflammatory process is observed. The diagnosis of hepatic fascioliasis was based on positive serological tests and the presence of liver flukes of fasciola species from the surgical specimen of right hepatectomy.

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### INTRODUCTION

Fascioliasis is a common parasitic disease of cattle and sheep. Infection in humans occurs following incidental ingestion of metacercariae in contaminated water or water plants. Imaging findings vary and are associated with traumatic hepatitis caused by migration of the worm in the liver<sup>(1)</sup>. There are three types of lesions reported in MR literature. The first type presents as a rim of isosignal intensity in T1W, slightly high signal intensity in T2W, and diffuse enhancement after intravenous gadolinium. The second type presents as a well-defined low signal intensity in T1W and T2W, and does not enhance after gadolinium. The third type has low signal intensity in T1W, high signal intensity in T2WI, and shows diffuse enhancement after gadolinium. This third type of presentation is simi-

lar to inflammatory lesion in pyogenic abscess<sup>(2)</sup>. Distinguished feature that separate hepatic fascioliasis from other inflammatory process is a tortuous serpiginous tracks, believed to be the route of parasitic migration<sup>(3)</sup>. In Thailand, there is no report of MRI appearance of hepatic fascioliasis, we therefore report a case of hepatic fascioliasis, emphasizing on its characteristic features of serpiginous parasitic tracks.

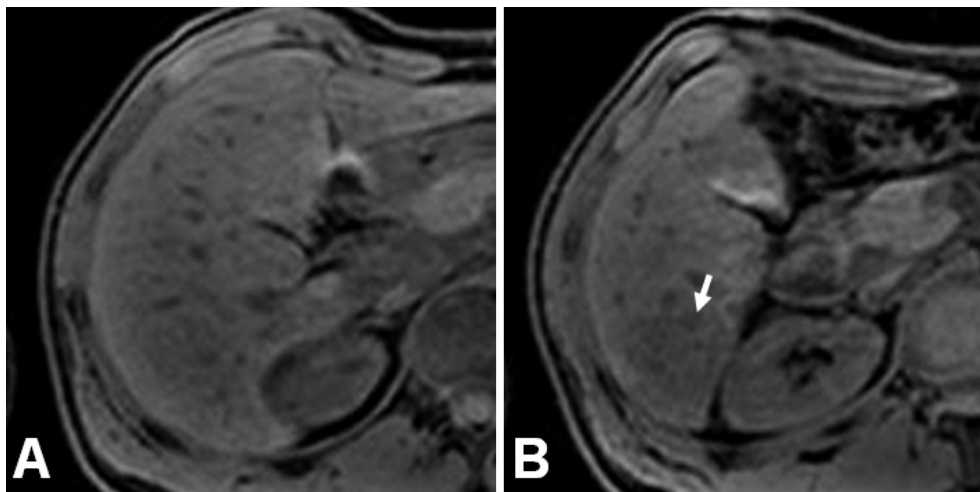
### Case report

A 48-year-old Thai man presented with weight loss, about 4 kg in one month. He had no abdominal pain or fever. Laboratory test revealed leukocytosis (10,900/mm<sup>3</sup>) and eosinophilia (22%). Liver function tests were within normal limits. The stool exam did not reveal any parasitic egg or worm. Abdominal

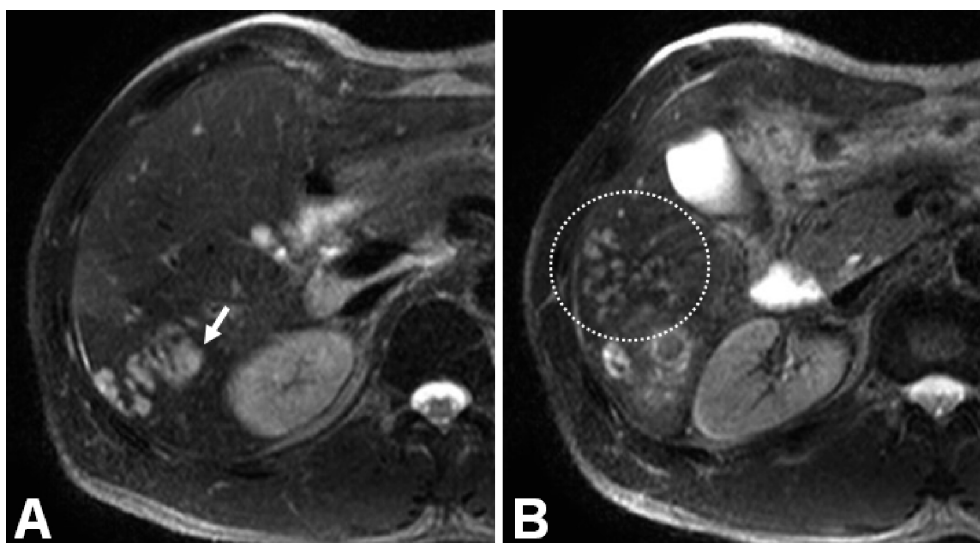
ultrasound was performed because of the unexplained weight loss and revealed abnormal echogenicity of the right hepatic lobe. MRI was requested for further evaluation of the liver. MR images were obtained with a superconducting system operating at 3.0 Tesla. T1W images revealed an ill-defined low signal intensity mass (Figure 1). This mass appeared moderately high signal intensity in T2W with focal area of high signal intensity cystic space. Peripheral tortuous serpiginous tracks of high signal intensity are observed (Figure 2). The lesion showed delayed enhancement after gadolinium injection, except the small cystic space and peripheral serpiginous tracks (Figure 3). The adjacent

right hepatic vein showed evidence of bland thrombus with delayed perfusion of the adjacent liver parenchyma (Figure 4). Preoperative MRI diagnosis was equivocal for inflammatory mass versus neoplastic mass with bile duct dilatation.

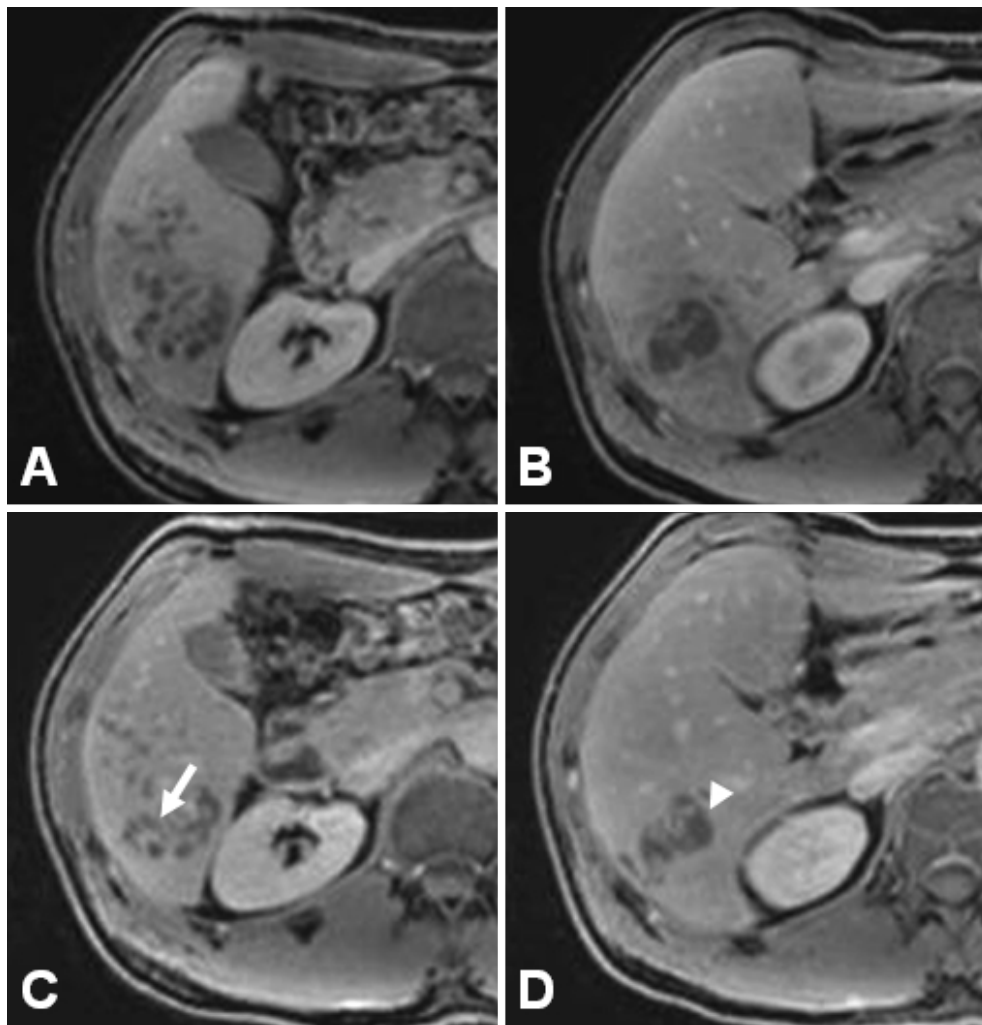
After MRI, the patient underwent partial right lobe hepatectomy. The pathological examination showed necrotizing granulomatous inflammation with eosinophilia, likely secondary to parasitic infestation. The serum for fasciola titer showed Ag-Ab banding; pattern similar to those controls from Egypt and Thai cases. The serodiagnosis was positive for fasciola. Flukes of fasciola species were found in reviewed specimen.



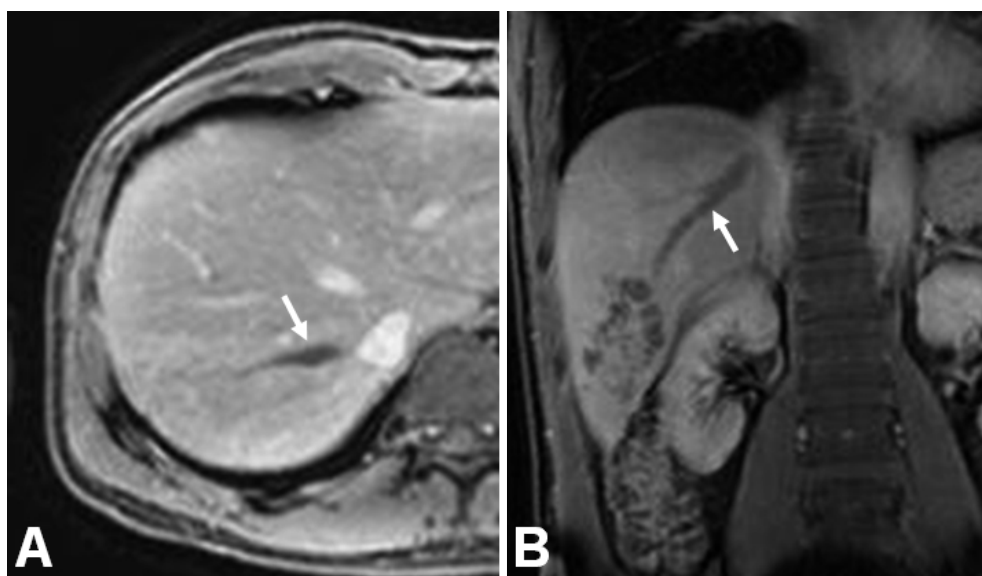
**Figure 1** T1W images show ill-defined, low signal intensity mass at posterior segment of right hepatic lobe (arrow).



**Figure 2** T2W images show moderately high signal intensity of the inflammatory mass with small abscess (arrow) and peripheral serpiginous tracks of high signal intensity (arrowhead), characteristic of parasitic tracks.



**Figure 3** Gadolinium-enhanced images; A, B: venous phase; C, D: 10-minutes delayed. There is delayed enhancement of the lesion, except a pocket of small abscess (arrowhead) and the peripheral parasitic tracks (arrow).



**Figure 4** Axial (A) and coronal (B) images after gadolinium enhancement show filling defect of the adjacent right hepatic vein, representing bland thrombus. Note nice serpiginous tracks secondary to parasitic migration.

There is low-grade eosinophilia (1%) immediately after right lobe hepatectomy. The patient was treated with plaziquantel after the surgery and showed well recovery.

Further acquired history revealed that the patient had traveled to Mainland China, approximately 9 months prior to beginning of weight loss.

## DISCUSSION

Hepatic fascioliasis is a well-known human parasite, but imaging findings are not well publicized. This may be secondary to successful diagnosis and treatment without referring for imaging studies. Correct diagnosis of hepatic fascioliasis, based upon CT or MRI, is difficult because findings may overlap between inflammatory and neoplastic processes<sup>(4)</sup>, such as seen in our case. However, the serpiginous tracks, described in our findings, deserves attention as they represent tracks of larva migrations. These serpiginous tracks are tortuous and have random distribution, which are different from biliary dilatation.

Upon literature search, we found four reports on CT findings of hepatic fascioliasis with a total of 15 patients in the English literature<sup>(5-8)</sup> and one report of six patients from Korean literature<sup>(9)</sup>. Even though, they were CT reports, findings were similar to our MRI. They all mentioned delayed enhancing, ill-defined mass associated with peripheral tubular dilatation. Acute cholangitis and cholangiocarcinoma were also in their differential diagnoses, emphasizing difficulty for correct diagnosis prospectively<sup>(4,10,11)</sup>.

Retrospective review in our case shows enough evidence for diagnosis of hepatic fascioliasis, i.e. a history of traveling to China (a country prevalent with fascioliasis)<sup>(12)</sup>, laboratory evidence of eosinophilia, and

MRI finding of an ill defined, delayed enhancing mass with peripheral serpiginous tracks. Careful history taking and good clinical information are always positive addition to correct interpretation of all imaging.

In conclusion, we propose the serpiginous tracks sign associated with an inflammatory mass as an important MRI finding for larva migration in hepatic fascioliasis.

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