

## Case Report

# Hepatic Fascioliasis due to *Fasciola hepatica*: A Two-Case Report

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Two cases of hepatic fascioliasis due to *Fasciola hepatica* were retrieved from our surgical-pathology file since the hospital's foundation in 1969 up to 2005. The diagnosis of hepatic fascioliasis was based on detection of one live fluke in a large cystic lesion in the lobectomized liver specimen in one case and of deposited eggs in the large liver specimen obtained from open biopsy in the other. Hepatic fascioliasis is rather rare and almost worldwide in distribution including Thailand. The diagnosis should be considered in the patient from endemic areas consisting of the northern, northeastern and upper-central regions of the country, with a history of ingesting fresh water plants or drinking untreated water, and having fever, right-upper-quadrant pain or intrahepatic cystic lesion(s) together with absolute peripheral blood eosinophilia.

**Keywords:** Hepatic fascioliasis, *Fasciola hepatica*

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Fascioliasis is a zoonotic disease caused by two species of large hepatic flukes or trematodes i.e. *Fasciola hepatica* and *Fasciola gigantica*. Human fascioliasis is distributed almost worldwide and parallels that of endemic animal illness<sup>(1)</sup>. Humans can be infected by ingesting metacercaria-contaminated water plants, drinking untreated water and act as an accidental host in relation to the natural life cycles between various mammals and fresh water snails or consumption of raw animal's liver containing flukes<sup>(1-3)</sup>.

In human fascioliasis, the 3-11 week period after infection, when the young flukes migrate in the liver parenchyma, is referred to as the hepatic phase. After these periods, the young flukes reside and grow up in the biliary tract known as the biliary phase, as recently reported<sup>(2)</sup>.

Large outbreaks of human fascioliasis were recognized in Europe and South America<sup>(4,5)</sup>. Only sporadic cases, mainly in adults, were described from other parts of the world including Thailand with the previous

reports of 25 cases till 1990 and one recent case<sup>(2,6)</sup>. The causative flukes were *F. hepatica* and *F. gigantica*.

The present study was done to search for hepatic fascioliasis in the presented surgical pathology file since the foundation of Ramathibodi Hospital in 1969 up to 2005. Two cases of hepatic fascioliasis due to *F. hepatica* were obtained and presented in this communication.

### Case Report

#### Case 1

A 40-year-old Thai female patient living in Udonthani was admitted to Ramathibodi Hospital in 1999 due to abdominal mass of three-month's duration. Physical examination revealed a large firm, nontender mass occupying the right liver lobe. Laboratory investigations included serum alkaline phosphatase 156 U/l (normal 50-136), aspartate aminotransferase 48 U/l (15-37), alanine aminotransferase 41 U/l (30-65), total protein 96.7 g/l (64-82), albumin 53.5 g/l (43.1-53.4), total bilirubin 11.9 mmol/l (0-17.1), direct bilirubin 3.4 mmol/l (0-5), hemoglobin 10.1 g/dl, hematocrit 34.3%, white blood cell count  $7.5 \times 10^3/\text{ml}$  (4.8-10.8), neutrophils 41%, lym-

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phocytes 27%, monocytes 6%, eosinophils 25%, basophils 1% and alpha-fetoprotein 18 ng/ml (0-15). The abdominal ultrasonogram showed a hypoechoic liver mass involving hepatic segment VI, 5.4 x 7.8 cm. Percutaneous needle biopsy of the liver revealed necrotic tissue. Right lobectomy was performed.

The resected liver tissue revealed two large communicating cystic lesions of 1.5 and 4.8 cm in diameter after formalin fixation, and containing necrotic tissue (Fig. 1). The wall of the cyst cavities microscopically revealed a thin fibrous band, plasma cell, lymphocyte and eosinophil infiltrations as well as palisaded histiocytes. There were necrotic-tissue debris and Charcot-Leyden crystals in the cavities<sup>(7)</sup>. One live fluke of 6 x 14 x 0.8 mm was obtained from one of the cyst cavities. There was a distinct cephalic cone. The oral sucker was 1 mm in diameter and the ventral sucker or acetabulum was 1.2 mm in diameter (Fig. 2).

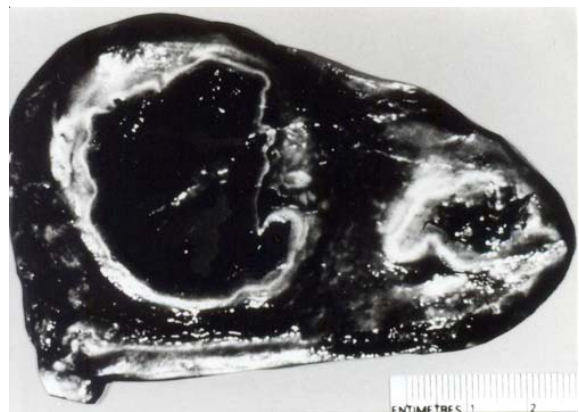
The ratio between oral and ventral suckers of 1.2, the cephalic cone and the length/width ratio of 2.2 indicated the species to be a broad fluke i.e. *Fasciola hepatica*<sup>(8)</sup>. No intrauterine egg could be identified in the fluke microscopically by wet mount. No deposited egg could be found in the cavity by screening from 20 hematoxylin and eosin sections.

The postoperative course was uneventful. Albendazole 400 mg was given for 7 days. She was doing well seven years after the operation.

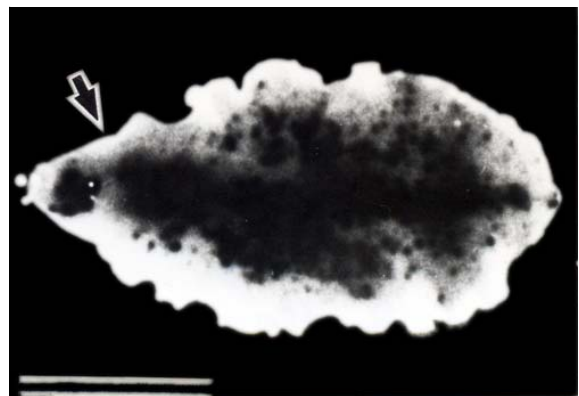
#### Case 2

The patient was a 47-year-old female from Angtong province admitted to the hospital in 1985 due to multiple space-occupying lesions in the liver (the detailed clinical history could not be obtained due to the official disposal of old medical charts). Open liver biopsy was done.

The specimen from wedged biopsy consisted of liver tissue of 5 x 7 x 2 cm with necrotic tissue on one side. Microscopic examination revealed fibrosis, plasma cell, lymphocyte and eosinophil infiltrations, and palisaded histiocytes in the wall of cavitory lesion containing necrotic-tissue debris and Charcot-Leyden crystals. Two eggs could be obtained measuring 90 and 65 mm in width within the cavity (Fig. 3). The egg length could not be obtained with certainty due to the uncontrollable plane of sectioning. The largest width of 90 mm could be the overlapping widths between those of *F. hepatica* and *F. gigantica*, but the 65 mm-width was smaller than the smallest width for *F. gigantica* i.e. 70 mm in diameter<sup>(9)</sup>. The identification of the fluke thereby was *F. hepatica*.



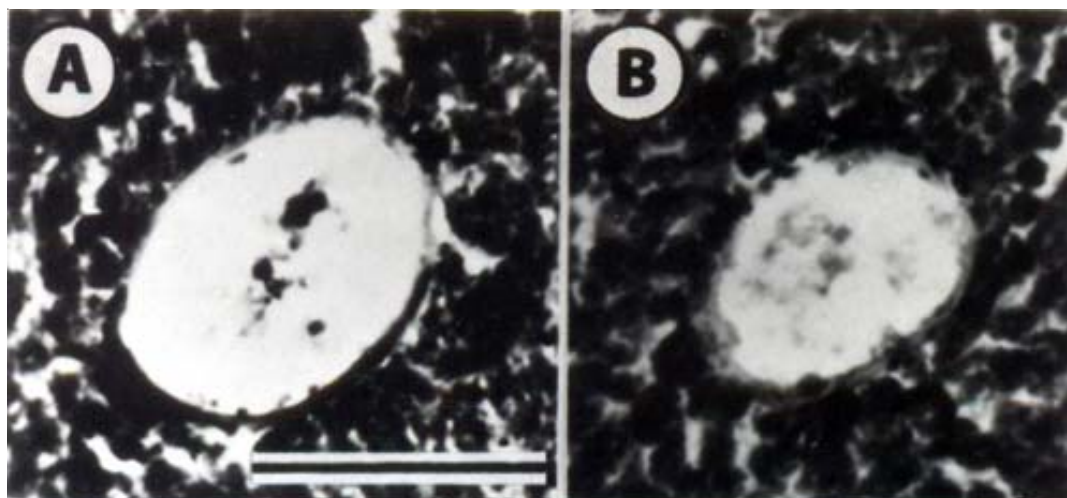
**Fig. 1** Cut surface of the lobectomized liver specimen from case 1 revealing two cystic lesions



**Fig. 2** A live *Fasciola hepatica* with the cephalic cone (arrow), oral and ventral suckers. Bar = 0.5 cm

#### Discussion

Angtong province is just north of Ayuthya, the southernmost province of the distribution of fascioliasis in this country<sup>(6)</sup>. The limited area of disease distribution is not clear. Possibly, this may be related to the distribution of the snails in genus *Lymnaea*, the intermediate host of both *F. hepatica* and *F. gigantica*<sup>(9)</sup>. The diagnosis of hepatic and biliary fascioliasis should be considered in the patients from endemic areas, i.e. the northern, northeastern and upper-central parts of the country, with a history of ingesting water plants, especially “Pak boong” (water morning glory) frequently contaminated with the *Fasciola metacercariae*, or drinking untreated water<sup>(10)</sup>. Consumption of fresh raw liver containing immature and mature flukes may allow the flukes to attach themselves to the mucosa of the pharynx and may cause “Halzoun” (suffocation) syndrome<sup>(9)</sup>.



**Fig. 3** A and B deposited eggs in the liver cavity in case 2. An egg of 90  $\mu$ m in diameter in A, and another one of 65  $\mu$ m in diameter in B. Bar = 100  $\mu$ m. A) Grocott's methanamine silver stain. B) hematoxylin and eosin stain

The symptoms of hepatic fascioliasis about one month after the infection include fever, malaise, fatigue, loss of weight and loss of appetite. The patient complains also of headache, anorexia, nausea, vomiting, upper quadrant or epigastric pain, and digestive disorders. Allergic symptoms i.e. pruritus and urticaria can occur. In general, the triad of fever, right-upper-quadrant pain and absolute peripheral blood eosinophilia should raise suspicion of hepatic fascioliasis<sup>(1)</sup>.

The egg detection in the stool is negative under hepatic fascioliasis. The method most widely used for immunodiagnosis is the enzyme-linked immunosorbent assay detecting antibody to the excretory-secretory antigen products from adult *F. hepatica*. The antibody cross-reacts with other trematode antigens, including *Schistosoma spp*<sup>(1)</sup>. The computerized-tomographic (CT) findings of decreased attenuation consistent with multiple small abscesses or large abscesses were observed in fascioliasis, as the case 1<sup>(1,11)</sup>. The CT finding in parallel with the sonogram consisting with large abscess overlaps over the one of combined hepatocellular and cholangiocarcinoma due to arterial hypoperfusion<sup>(12)</sup>. Under the lack of preoperative definite diagnosis, the surgeon chose performing lobectomy for the resectable lesion in case 1 due to the known high incidence rate of primary hepatocellular carcinoma up to 9.7-10.7/10<sup>5</sup>/year country-wide in Thailand<sup>(13)</sup>.

The laparoscopic findings of white and yellow cords on the liver surface are characteristic of hepatic fascioliasis<sup>(14)</sup>. Percutaneous needle liver biopsy reveals nonspecific changes and rarely demonstrates *Fasciola*

*spp.* eggs or organism<sup>(7)</sup>. The debris of necrotic tissue, eosinophil infiltration, chronic granulomatous lesions and Charcot-Leyden crystals may suggest infection<sup>(7)</sup>. A large specimen of liver tissue obtained by open biopsy as in case 2 has a high likelihood of containing parasitic eggs<sup>(1)</sup>.

Praziquantel is not effective in the medical treatment for hepatic fascioliasis. Bithionol 30-50 mg/kg of body weight/day on alternate day for 10-15 days or triclabendazole of 10 mg/kg in a single dose after an overnight fast was recommended<sup>(1,15)</sup>. Albendazole as prescribed in case 1 is presently not recommended. In acutely ill or toxic appearing children, the use of prednisolone of 5-10 mg/day was advocated prior to the administration of fasciolicidal drugs<sup>(16,17)</sup>.

The regular hepatic phase of fascioliasis, 3-11 weeks after infection, usually is characterized by multiple small abscesses<sup>(1,11,18)</sup>. Pathologically, small parasitic tracts of young worms can be observed in the liver<sup>(7)</sup>. The large areas of decreased attenuation by the scan corresponding to the large cystic lesions in our case 1 have been mentioned in two previous reports<sup>(1,15)</sup>. The authors' finding of one fluke growing in the large liver cavity in case 1 indicates the instance in which some young flukes, during the migration, are unable to find their way to the bile ducts. Some may survive the helminthotoxic effects of the eosinophils<sup>(18)</sup>, grow up as in case 1 and deposit eggs seen in case 2 within the liver under the prolonged hepatic phase. The fluke(s) migrates inside the liver parenchyma producing large communicating cystic lesions seen in case 1. The adult fluke(s) may no longer survive due to

starvation in the increasingly large abscess containing only necrotic-tissue debris<sup>(8)</sup>.

The deposited eggs may be unfertilized or fertilized in case of mating flukes<sup>(1)</sup>. Anyhow, the fertilized eggs would not become hatched in the liver since they require fresh water at optimal temperature of 22-25 °C<sup>(8)</sup>. The effective treatment by bithionol or triclabendazole in the patients with large cystic lesions in the liver under fascioliasis with prolonged hepatic phase has been described<sup>(1,15)</sup>.

The healing process of fascioliasis in the peritoneal nodule involves the epithelioid cells eosinophils multinucleated giant cell and fibrosis surrounding the necrotic area in the peritoneal nodule<sup>(14)</sup>. The healing process of the intrahepatic cystic lesion is similar to the one in the peritoneal nodule. The bile lakes with tissue necrosis (bile infarcts), florid granulomatous reaction, pallisaded histiocytes, infiltrations by plasma cells lymphocytes and eosinophils, an egg encaged by multinucleated giant cell together with foci of calcification had been additionally described<sup>(7,19)</sup>.

The prolonged hepatic fascioliasis and biliary fascioliasis may rarely manifest with hemobilia and microcytic anemia clinically<sup>(10,19)</sup>. Although cholecystitis has been described in hepatic and biliary fascioliasis, however, the fluke could not be detected in the gall bladder<sup>(6,10)</sup>. Only in some rare instances, the flukes and eggs located in the gall bladder were reported from endemic countries<sup>(20,21)</sup>. Peripheral blood eosinophilia and intrahepatic cystic lesion(s) in patients from endemic areas should raise the diagnosis of the prolonged phase of hepatic fascioliasis.

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## โรคฟาสซิโอเลียซิสในตับโดยพยาธิใบไม้ ฟาสซิโอลา เฮปปาติกา: รายงานผู้ป่วยสองราย

รังสิมา อรุณโรจน์, สุชิน วรวิชชวงษ์, ประวีติ นิธิยานันท์, เอาชัย กาญจนพิทักษ์, สุขุม บุญยะรัตเวช

ผู้ป่วยฟาสซิโอเลียซิสในตับจากพยาธิใบไม้ ฟาสซิโอลา เฮปปาติกา สองราย ถูกค้นหาได้จากฐานข้อมูลของหน่วยศัลยพยาธิ ตั้งแต่ก่อตั้งโรงพยาบาลในปี พ.ศ.2512 จนถึงพ.ศ.2543 การวินิจฉัยโรคได้จากการพบพยาธิตัวเป็นในซิสของเนื้อตับที่ตัดมาทั้งกลีบในรายแรก และจากการพบไข่พยาธิในชิ้นเนื้อตับขนาดใหญ่ตัดออกมาจากการเปิดหน้าท้องในรายที่สอง โรคฟาสซิโอเลียซิสในตับเป็นโรคที่พบได้น้อยมาก และมีการกระจายเกือบทั่วโลก รวมทั้งประเทศไทย โรคนี้ควรนึกถึงในผู้ป่วยที่มาจากแหล่งของพยาธินี้คือ ภาคเหนือ ภาคตะวันออกเฉียงเหนือ และภาคกลางตอนบนที่มีประวัติการบริโภคพืชน้ำสด หรือดื่ม น้ำดิบ และมีไข้ เจ็บชายโครงด้านขวาหรือซิสในตับ ร่วมกับอีโอซิโนฟิลในเลือดสูง