

CASE REPORT

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Distinctive Histopathological Features of *Fasciola Hepatica* Adult

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ABSTRACT *Fasciola hepatica* is a parasite of the Trematoda class, found worldwide but primarily seen in cattle-raising countries. It usually settles in the biliary tract and causes nonspecific gastrointestinal symptoms such as abdominal pain, right upper quadrant tenderness, and fever in humans. Parasitological examination of stool or bile samples is required for definitive diagnosis. In our case, demonstrative histopathological features of *Fasciola hepatica* adult parasite seen in a 38-year-old female patient suffering from abdominal pain were evaluated. *Fasciola hepatica*, a rare parasite in pathology practice, should be considered in the diagnosis in the presence of nonspecific gastrointestinal complaints because it can be seen worldwide as well as in endemic regions.

Keywords: *Fasciola hepatica*; histopathology; parasites; parasitic diseases

Fasciola hepatica, also known as liver fluke, is a parasite of the trematoda class of helminths, of which humans are the accidental hosts. The main transmission route for humans is eating raw watercress or other contaminated freshwater plants.¹ Although there are two main causal agents *F. hepatica* and *F. gigantica* for fascioliasis, *F. hepatica* is the most common form, typically located in the biliary tract and often causes nonspecific gastrointestinal symptoms, as a result, the diagnosis may not consistently be considered in the diagnostic process. Rare localizations such as subcutaneous tissue, eyes, brain, pancreas, lungs, and genitourinary tract are also shown.¹ Even though fascioliasis agents are observed in many countries worldwide and in a large number of cases, the disease stands out as one of the most neglected zoonotic diseases.¹ Through the presentation of this case of fascioliasis, our primary aim is to highlight the distinctive histopathological features of *F.*

hepatica. Simultaneously, we hope to raise awareness about fascioliasis.

CASE REPORT

A 38-year-old female patient with intermittent abdominal pain for three months applied to the department of general surgery and was followed up with acute cholecystitis and choledocholithiasis as a result of radiological and clinical evaluation.

Magnetic resonance cholangiopancreatography had been reported as sludge and multiple millimetric stones in the gallbladder lumen, prominence in the intrahepatic bile ducts reaching approximately 10 mm in diameter, 8 mm in diameter stone at the distal end of the common bile duct, and edema in the pancreatic parenchyma. The described findings were evaluated to be consistent with acute pancreatitis, acute calculous cholecystitis, and choledocholithia-

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sis. As a result of the endoscopic retrograde cholangiopancreatography (ERCP) performed afterwards, a filling defect, choledocholithiasis, and dilated common bile duct were detected.

Cholecystectomy was performed under elective conditions with the preliminary diagnosis of cholecystitis in the patient whose complaints did not regress. The material detected in the common bile duct at cholecystectomy was aspirated and sent to the pathology laboratory for evaluation.

Macroscopic and microscopic pictures of the parasites were as follows. On macroscopic examination, 2.3×1.2×0.2 cm in size, grayish, partially intact leaf-shaped material was observed. The spinous tegument was the most striking morphological feature of adult *F. hepatica* in histological sections. The spines were broad-based and pointed at the ends. Multi-branched ceca and testes were easily observed even at low magnification. The parenchyma was mesenchymatous tissue interspersed with smooth muscle cells.

The eggs of *F. hepatica* in histological sections had a thick yellowish shell (Figure 1).

The histopathology of chronic cholecystitis showing marked eosinophilia was seen in H&E stained sections prepared from the gallbladder of the patient (Figure 2).

After the pathological diagnosis of fascioliasis, it was learned that the patient ate watercress in her anamnesis. The patient was treated with triclabendazole, 750 mg twice, with an interval of 12 hours. There were no drug-related complications.

Informed written consent is provided by the patient for this case report.

DISCUSSION

F. hepatica, described by Brie in 1379, has been known to infect humans for over 5,000 years.^{2,3} Until the early 1990s, fascioliasis was not considered an essential human disease.^{4,5} Fascioliasis has started to

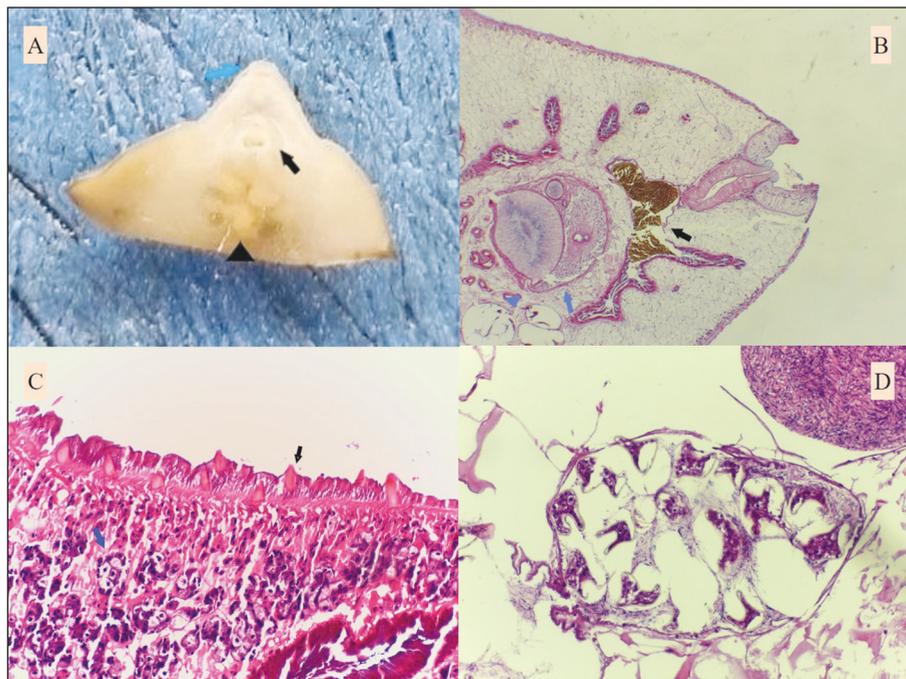


FIGURE 1: Macroscopic and microscopic photographs of *Fasciola hepatica*.

A) Adult *Fasciola hepatica*, oral sucker (blue arrow), ventral sucker (black arrow) and uterus (triangle),

B) Black arrow: The two main ceca of the intestine, bifurcation from the pharynx, extending throughout the whole body, posterior to the oral, sucker, dorsal to the reproductive structures. Two suckers are available; one is anteriorly located around the mouth and the other is a ventral sucker. (H&E, x100)

C) Black arrow: spinous processes on the tegument which protects the parasite from host enzymes and immunity (H&E, x200),

D) Packed mature eggs surrounded by a hyaline yellowish shell in Fluke's uterus (H&E, x400).

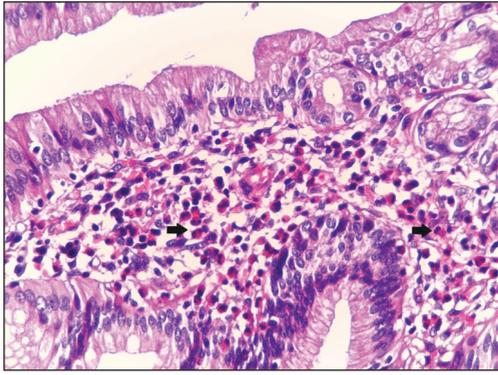


FIGURE 2: The histopathological examination of the patient's gallbladder revealed chronic cholecystitis characterized by prominent eosinophils, black arrows indicate eosinophils (H&E, x200).

be accepted as a significant zoonotic disease after it was determined that this parasitic agent is found in focal regions of more than 70 countries, such as in parts of Latin America, the Caribbean, Europe, the Middle East, Africa, Asia, and Oceania.¹

F. hepatica has hepatic (acute) and biliary (chronic) phases. In the biliary phase, signs of cholelithiasis predominate. About 3 to 4 months after infection, the parasites reach the bile ducts of the mammalian host, initiating the second phase of fascioliasis, the biliary phase. The presence of cholecystitis, cholelithiasis, acute pancreatitis findings, and the absence of a noisy clinical picture in the patient suggests a chronic infection period, which includes the gallbladder phase. In the gallbladder, parasites can live for several decades.¹ In this case, the 3-month duration of complaints and findings are consistent with the development of infection.

Consistent with the literature, the diagnosis was made by examining the material noticed in the common bile duct at cholecystectomy. The diagnosis of fascioliasis can be made by identifying eggs in feces, bile and duodenal aspirates, positive ELISA test, or detecting *F. hepatica* in the common bile duct at cholecystectomy.⁶ Additionally, live parasites can be detected through methods such as ERCP not only in patients initially suspected of having fascioliasis but also in those without initial suspicion due to vague symptoms and findings.^{7,8}

Radiological findings may be nonspecific and include filling defect, biliary sludge, and enlargement

of the biliary tract.⁹ Obstruction of the bile ducts could be caused both by the parasite itself and its products. These effects may result in inflammation (cholangitis and cholecystitis), hyperplasia of the epithelium, and enlargement and mineralization of the bile ducts and gall bladder.¹⁰ When the parasite's eggs are laid into the bile ducts, they may pass through the ampulla, obstruct the pancreatic duct, and cause pancreatitis. In the literature, cases of pancreatitis caused by *F. hepatica* have been reported.^{11,12} In another study, a case of *F. hepatica* presenting with a tumor-like radiological and macroscopic appearance in the liver was reported.¹³

One unique morphological characteristic of adult flukes is the spinous tegument, which is typified by broad-based and pointed spines in H&E sections. *Clonorchis sinensis*, also known as Chinese fluke living in the bile ducts, should be considered in the differential diagnosis. On histological sections, adult *C. sinensis* can be distinguished from *Fasciola* species by the straight tegument, two unbranched cecum, and much smaller eggs in the uterus apart from size differences.¹⁴ In this case, differential diagnosis from other parasites was made by seeing the tegument containing broad-based and pointed spines, a specific feature on H&E sections.

Fascioliasis should be kept in mind in the differential diagnosis of eosinophilia accompanied by liver and gallbladder localized pathologies and in the presence of nonspecific gastrointestinal complaints. *F. hepatica* is a rarely seen parasitic agent in pathology laboratory practice, which is now accepted as an essential zoonotic disease agent. However, pathologists need to know the defining histopathological features of H&E sections.

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Conflict of Interest

No conflicts of interest between the authors and / or family members of the scientific and medical committee members or members of the potential conflicts of interest, counseling, expertise,

working conditions, share holding and similar situations in any firm.

Authorship Contributions

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