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CASE REPORT / OLCU SUNUMU

DOI: 10.4274/mjima.galenos.2025.25454.7

Mediterr J Infect Microb Antimicrob 2026;15:25454.7

Erişim: <http://dx.doi.org/10.4274/mjima.galenos.2025.25454.7>

Unveiling the Unexpected: Two Rare Cases of Human *Fasciola hepatica* Infection

Tarcan et al. Fascioliasis: Two Case Reports

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Cite this article as: Tarcan T, Şahin İH, Tetik Metin H, Kandemir M. Unveiling the unexpected: Two rare cases of human *Fasciola hepatica* infection. Mediterr J Infect Microb Antimicrob.

01.09.2025

08.12.2025

Epub: 08.01.2026

Published:

Abstract

Fascioliasis is a parasitic zoonotic infection caused by the liver flukes *Fasciola hepatica* and *Fasciola gigantica*. Although herbivorous mammals such as cattle, sheep, horses, and buffalo serve as primary hosts, humans can act as accidental hosts. Human infection typically occurs through ingestion of watercress or other aquatic plants contaminated with larvae from water sources in areas where these animals graze. Clinical manifestations include fever, right upper-quadrant abdominal pain, nausea, fatigue, and eosinophilia. Diagnosis relies on a combination of parasitological, laboratory, and imaging investigations, which can be challenging. Nevertheless, treatment with the anthelmintic drug triclabendazole is effective and straightforward. Here, we report two cases of human fascioliasis identified during the evaluation of abdominal pain, highlighting the importance of considering parasitic infections in the differential diagnosis of liver lesions accompanied by eosinophilia in endemic regions.

Keywords: *Fasciola hepatica*, fascioliasis, anthelmintic, triclabendazole

Öz

Fasiyoliyaz, *Fasciola hepatica* ve *Fasciola gigantica* nın neden olduğu asıl konağı sığır, koyun, at, manda gibi otçul memeliler olmasına rağmen insanların da rastlantısal bir konak olduğu zoonotik paraziter bir enfeksiyondur. İnsanlara bulaş daha çok bu tür hayvanların beslendiği yerlerde kontamine sularla temas etmiş su teresi bitkilerinin tüketilmesiyle meydana gelmektedir. Ateş, karın ağrısı, bulantı, halsizlik, sağ üst kadrın ağrısı gibi semptomlarla seyreden bu zoonotik enfeksiyonun tanısında parazitolojik, laboratuvar ve görüntüleme yöntemleri kullanılmaktadır. Tanının konulmasında güçlüklerle karşılaşılmasına rağmen tedavisinde antihelmintik ilaç olan triclabendazol'un kullanıldığı bu enfeksiyonun tedavisi kolaydır. Karın ağrısı etiyojisi araştırılırken fascioliasis tanısı konulan iki olgunun sunulduğu bu çalışmada, endemik bölgelerde eozinofilinin eşlik ettiği karaciğer lezyonları olan hastaların ayırıcı tanısında, paraziter enfeksiyonların da göz önünde bulundurulması gerektiği anlaşılmaktadır.

Anahtar Kelimeler: *Fasciola hepatica*, fascioliyaz, antihelmintik, triclabendazol

Introduction

Fascioliasis is a parasitic infection of the hepatobiliary system caused by the trematodes *Fasciola hepatica* and *Fasciola gigantica*, which may occasionally infect human^[1]. This disease is most prevalent in cattle- and sheep-raising regions in temperate climates and affects an estimated 0.4–5.6% of the population in our country^[2]. Infection begins when eggs excreted in the feces of animals carrying adult parasites in their bile ducts contaminate freshwater sources. Humans acquire the infection by consuming aquatic plants harboring the encysted larval stage (metacercariae) or by drinking contaminated water^[3].

Fascioliasis presents in two distinct clinical stages. During the hepatic migratory phase, patients typically exhibit fever, abdominal pain, elevated liver enzyme levels, and marked eosinophilia. In the biliary phase, when adult parasites localize in the bile ducts, patients often experience right upper-quadrant pain, which may be accompanied by obstructive complications such as acute pancreatitis or cholestasis^[4–6]. The diagnosis of fascioliasis is challenging because the infection presents with a broad spectrum of clinical manifestations. Accurate identification requires stage-specific clinical findings supported by microscopic stool examination and serological assays such as the Indirect Hemagglutination Assay (IHA), Immunofluorescence Antibody Test, Complement Fixation Test, and Enzyme-Linked Immunosorbent Assay (ELISA). Molecular diagnostic techniques, in combination with imaging modalities such as abdominal ultrasonography or contrast-enhanced computed tomography (CT), may also be necessary.

During the acute phase, stool microscopy may yield negative results; therefore, serological tests that detect specific serum antibodies are essential. Owing to the parasite's migration through hepatic parenchyma, imaging findings during the hepatic phase commonly include serpiginous, hypoattenuated subcapsular tracts. These tracts are visualized on contrast-enhanced CT, whereas magnetic resonance imaging (MRI) typically shows hypointense signals on T1-weighted and hyperintense signals on T2-weighted sequences^[4]. However, imaging findings may vary and may also include hepatomegaly, nodular lesions, splenomegaly, and lymphadenopathy^[6,7].

Triclabendazole, an anthelmintic agent, is the treatment of choice for fascioliasis, and the diagnosis relies on a combination of these clinical, serological, and imaging findings^[5,8].

Case Report

A 62-year-old woman presented with a four-month history of fatigue, weakness, and prominent right upper-quadrant abdominal pain. An abdominal ultrasound performed at an external center showed mild parenchymal echogenicity extending to the peripheral subcapsular region of the right hepatic lobe. She was referred

to our clinic for further evaluation, including assessment for parasitic infections. The patient resided in the Mutki district of Bitlis Province, worked in agriculture, and reported consuming watercress. She had no significant family history, and her physical examination findings were unremarkable. Laboratory tests revealed an absolute eosinophil count of $5,100/\mu\text{L}$ (reference range: $0.05\text{--}0.5 \times 10^3/\mu\text{L}$) and an eosinophil percentage of 23.5% (reference range: 0.5%–6%). Liver function tests were within normal limits, and serology for hepatitis A, B, and C viruses and brucellosis was negative. The IHA result for hydatid cyst was negative, whereas the ELISA titer for fascioliasis was 1:280. No parasite eggs were detected in direct or concentrated stool examinations. Abdominal MRI showed patchy, heterogeneous, and poorly demarcated hyperintense areas on T2-weighted sequences involving hepatic segments VI and VII, with occasional extension into the subcapsular region (Figure 1). Based on the clinical, laboratory, and imaging findings, fascioliasis was strongly suspected. The patient was treated with triclabendazole ($2 \times 10 \text{ mg/kg}$) administered orally in a single day. Marked improvement in clinical symptoms was noted within one month. Follow-up laboratory testing at three months demonstrated normalization of the eosinophil count. A repeat abdominal MRI revealed peripheral contrast-enhancing hypodense lesions extending to hepatic segments VI–VII, with a significant reduction in size compared with the initial scan.

Case Report 2

A 42-year-old woman presented to the internal medicine clinic with a one-month history of fatigue, exhaustion, and right upper-quadrant abdominal pain. Initial imaging suggested a possible parasitic infection, prompting referral to our infectious diseases clinic. Further history revealed that she resided in Bitlis city, was a housewife engaged in agricultural work, and regularly consumed watercress. Her brother had previously experienced similar symptoms and had been treated for fascioliasis at another center. Physical examination findings were unremarkable, with normal vital signs.

Laboratory investigations demonstrated an absolute eosinophil count of $7,170/\mu\text{L}$ (reference range: $0.05\text{--}0.5 \times 10^3/\mu\text{L}$) and an eosinophil percentage of 60.1% (reference range: 0.5%–6%). Serologic testing for viral hepatitis and brucellosis was negative, as were the hydatid cyst IHA and fascioliasis ELISA. Stool microscopy and parasitological examinations revealed no parasite eggs.

Abdominal MRI showed distinct, irregular, non-enhancing lesions with diffusion restriction, extending to the subcapsular region, and demonstrating T2-weighted hyperintensity in hepatic segments III and VII–VIII (Figure 2). Considering the patient's family history, laboratory findings, and imaging results, a diagnosis of fascioliasis was established.

The patient received oral triclabendazole ($2 \times 10 \text{ mg/kg}$) as a single-day treatment. At three months, follow-up laboratory tests showed normalization of the eosinophil count, and MRI revealed significant regression of the hepatic lesions.

Discussion

Fascioliasis progresses through two clinical stages: the hepatic phase and the biliary phase. Transmission occurs primarily through ingestion of raw aquatic vegetables, particularly watercress, which harbor the parasite's encysted larval stage, the metacercariae^[6]. After oral ingestion, metacercariae traverse the intestinal wall, penetrate the hepatic capsule, and reach the liver, resulting in abdominal pain and other manifestations of the acute hepatic phase, including capsular irritation and subcapsular abscess formation^[6]. Adult parasites that establish themselves in the bile ducts subsequently begin producing eggs. Consequently, a history of consuming watercress may raise suspicion for fascioliasis in patients presenting with hepatobiliary symptoms.

Kaya et al.^[5], in a prospective study of 30 patients with fascioliasis, reported that abdominal pain was present in all cases, with eosinophilia being the most prominent laboratory finding in both the hepatic and biliary phases. Similarly, in a report of two cases of hepatic fascioliasis originating outside the United States, both patients presented with abdominal pain and marked peripheral eosinophilia^[6]. A study from Taiwan involving two patients with a history of consuming unpurified water and freshwater plants, who were diagnosed with hepatic fascioliasis through surgical intervention, identified acute-phase findings including absolute eosinophilia, intrahepatic cystic lesions, and right upper-quadrant pain in both cases^[4].

Binici conducted a retrospective evaluation of 31 cases in our country, finding that 20 patients (64.5%) resided in rural areas, all consumed watercress, and all reported abdominal pain. Eosinophilia was observed in over 90% of these cases^[3]. Both cases in the present report share a history of rural residence and watercress consumption, consistent with previous literature.

During the acute (hepatic) phase of fascioliasis, patients may present with fever, abdominal pain, arthralgia, and elevated eosinophil counts. In contrast, the chronic biliary phase may manifest as biliary obstruction, cholangitis, pancreatitis, diarrhea, vomiting, and anorexia^[4]. In the current cases, clinical findings were indicative of the acute phase, including abdominal pain and fatigue, whereas biliary involvement was not observed.

Definitive diagnosis is established by identifying adult parasites or eggs, typically via stool examination; however, eggs may be absent during the hepatic phase. Consequently, serological tests and imaging modalities play a critical role in diagnosis^[15,16]. In our cases, stool examinations were negative, consistent with acute-phase infection, and serological tests were positive in one patient and negative in the other.

A review by Kabaalioglu et al.^[17] of 23 radiologically confirmed cases of fascioliasis reported multiple, confluent, linear, tract-like hypodense hepatic lesions without contrast enhancement on CT during the hepatic phase. Ultrasonography demonstrated adult parasites as echogenic particles in the gallbladder or common bile duct without posterior shadowing. MRI findings were described as hypo- or isointense on T1-weighted sequences and hyperintense on T2-weighted sequences^[17].

In the first case, both ultrasound and MRI were utilized for evaluation, whereas in the second case, MRI alone was performed, guided by high eosinophil counts, MRI lesions consistent with fascioliasis, and a relevant family history. Imaging findings from both cases, including the ultrasound of the first patient, demonstrated lesions consistent with those described in the literature^[15].

Triclabendazole, a narrow-spectrum anthelmintic belonging to the class of ampholytic benzimidazole derivatives, is active against *Fasciola hepatica*, *Fasciola gigantica*, and *Paragonimus* species. It is effective against *Fasciola* infections at all stages^[18,19]. Both patients received a single-day oral dose of 20 mg/kg triclabendazole, obtained from abroad, and were closely monitored. Common indicators of treatment response include regression of clinical symptoms, normalization of eosinophil counts, reduction in *Fasciola* serology titers, and resolution of imaging abnormalities^[20]. Complete treatment response is typically observed at three months^[21]. At the three-month follow-up, both patients exhibited near-complete resolution of symptoms, normalization of eosinophil counts and percentages, and significant regression of lesions on imaging. However, repeat ELISA titers could not be determined due to insufficient testing.

These two cases contribute to the existing literature by highlighting the clinical characteristics of fascioliasis in our region. The patients' rural living conditions, engagement in agricultural activities, and consumption of watercress provide evidence of region-specific risk factors and transmission routes. Our findings are consistent with previous case reports, while also emphasizing regional characteristics and the importance for clinicians to consider fascioliasis in the differential diagnosis of patients presenting with hepatobiliary symptoms.

Conclusion

In regions where fascioliasis is endemic, clinicians should consider this infection in the differential diagnosis of patients presenting with prolonged fever, fatigue, abdominal pain, elevated liver enzymes, and eosinophilia. A thorough medical history—including consumption of green aquatic plants, particularly watercress, and involvement in animal husbandry—can provide valuable diagnostic clues. These cases also highlight the importance of integrating clinical, laboratory, and imaging findings for accurate diagnosis. Moreover, they demonstrate that appropriate dosing of triclabendazole can achieve successful clinical and radiological improvement.

Ethics

Informed Consent: Informed consent was obtained from all participants.

Footnotes

Authorship Contributions

Surgical and Medical Practices: T.T., M.K., Concept: T.T., İ.H.Ş., H.T.M., M.K., Design: T.T., İ.H.Ş., H.T.M., M.K., Data Collection or Processing: T.T., İ.H.Ş., H.T.M., M.K., Analysis or Interpretation: T.T., İ.H.Ş., H.T.M., M.K., Literature Search: T.T., İ.H.Ş., H.T.M., M.K., Writing: T.T., İ.H.Ş., H.T.M., M.K.

Conflict of Interest: The author declare no conflict of interest.

Financial Disclosure: The author declared that this study received no financial support.

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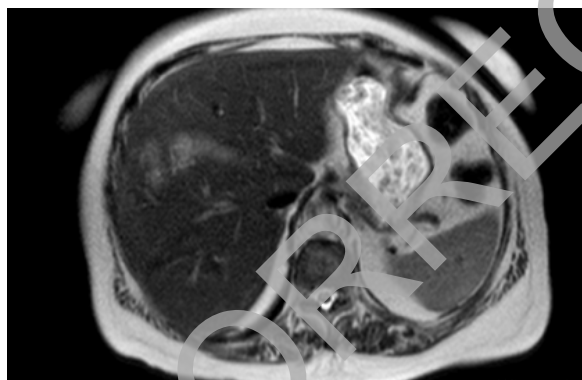


Figure 1. Irregular, patchy, heterogeneous lesions in hepatic segments VI–VII.

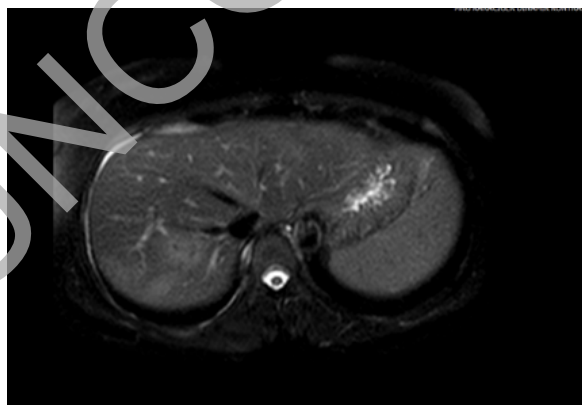


Figure 2. Irregular lesions in hepatic segments III and VII–VIII without obvious contrast enhancement.