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Amoebic Liver Abscess With Concurrent Hepatitis-A Infection In A Child: A Rare Microscopy-Confirmed Case With Sequential Ultrasonographic Documentation Of Recovery.

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Abstract

Background:

Amoebic liver abscess (ALA) is the most common extraintestinal manifestation of Entamoeba histolytica infection, particularly in developing countries. Diagnosis is typically based on serological and imaging findings, with direct microscopic confirmation now rarely reported.

Case Presentation:

Case report 6-year old male presented with fever, vomiting and right upper abdominal pain. Laboratory studies showed increased levels of SGPT (59 IU/L) and CRP (39.9 mg/L) and positive Hepatitis A IgM serology, indicating concurrent acute viral hepatitis. The first serial ultrasonography showed a hypoechoic lesion (3.6 × 3.9 × 3.7 cm) in the left hepatic lobe that increased and displayed mild liquefaction in subsequent ultrasonography. Microscopic examination of abscess established that E. histolytica cysts were present. The infant was managed with IV metronidazole (TDS), supportive antibiotics and fluids. Ultrasound-guided pigtail (8.5-12 Fr) drainage was performed by increasing size of abscess. Follow-up imaging on 8 September 2025 demonstrated a shrunk abscess cavity (2.6 × 2.0 × 1.4 cm) with pigtail in place. The patient progressed favorably and was discharged in good conditions.

Conclusion:

This case highlights that microscopy, though seldom used today, can still provide definitive and rapid etiological confirmation of amoebic infection in resource-limited settings. Sequential ultrasonography remains invaluable in diagnosing and monitoring therapeutic response in ALA, and combined medical plus interventional management ensures excellent outcomes. This case highlights the importance of considering mixed hepatic infections such as Hepatitis A co-infection, which may exacerbate inflammatory response and transiently elevate liver enzymes in amoebic liver abscess.

Index Terms: Amoebic liver abscess, Entamoeba histolytica, Hepatitis A co-infection, microscopy, pediatric, ultrasonography, metronidazole

Introduction

Amoebic liver abscess (ALA) is the most common extraintestinal complication of Entamoeba histolytica infection, a protozoan parasite that predominantly involves the colon and secondarily invades the liver through portal blood flow [1]. It continues to be a significant public health concern in tropical and sub-tropical regions, especially in developing countries with poor sanitation, overcrowding and without access to safe drinking water [2]. Worldwide, it is thought that 50 million cases of E. histolytica occur annually and result in 40,000–100,000 deaths annually [3].

It is more frequent in young men but pediatric cases have also been described, mostly with atypical presentations or delayed diagnoses [4]. Presentation and symptoms are diverse from mild right upper quadrant pain with fever to complex issues such as rupture or peritonitis if left untreated [5].

The diagnosis of amoebic liver abscess is based on a combination of clinical suspicion, imaging findings (ultrasonography or CT), and serological or antigen tests retrieving anti-amoebic antibodies or E. histolytica antigens [6]. Until recently, microscopic demonstration of E. histolytica trophozoites or cysts in stool or aspirated pus was the cornerstone of diagnosis but is now rarely employed because it is less sensitive and does not permit differentiation between pathogenic E. histolytica and its non-pathogenic congeners, such as E. dispar and possibly even E. moshkovskii [7,8].

Hepatitis A virus (HAV) infection is another common hepatotropic infection transmitted via the fecal–oral route, frequently affecting children in similar socioeconomic and environmental conditions [9]. Coinfection with *E. histolytica* and HAV, though rare, has been described in endemic regions due to shared transmission pathways and poor sanitation [10]. HAV infection may contribute to transient hepatic inflammation, elevated liver enzymes, and may complicate the clinical picture of amoebic liver abscess without necessarily altering its pathogenesis [11].

This case is unique as the diagnosis was confirmed by microscopy, demonstrating the cystic form of *E. histolytica*, providing direct etiologic evidence in an era where most diagnoses are indirect or serology-based. The aim of this report is to describe a microscopy-confirmed pediatric case of amoebic liver abscess with sequential ultrasonographic documentation and successful recovery following anti-amoebic therapy.

Case Presentation

A. Patient Information

A 6 year old male child reported with a history of fever, vomiting and upper abdominal pain for one week. The patient had no remarkable medical or surgical history. The immunized healthy child had no other diseases. The patient reported a recent ingestion of street vendor food on their dietary history. His three sisters, who ate home-cooked meals with him, had shown no symptoms. He had no history of jaundice, diarrhea or systemic symptoms.

B. Clinical Findings

At this point, the child was afebrile on presentation but had been febrile with high grade fever off and on for four days before his admission. Vital signs were stable. Abdominal examination revealed right hypochondrial tenderness with mild hepatomegaly but no guarding, rigidity or mass. There was no icterus, ascites or splenomegaly on physical examination till date. Other systemic examinations were unremarkable.

C. Diagnostic Assessment

1. Laboratory Investigations

Test	Result	Normal Range	Interpretation
SGPT (ALT)	59 IU/L	0–35 IU/L	Mild elevation indicating hepatocellular inflammation
CRP (C-Reactive Protein)	39.9 mg/L	0–6 mg/L	Markedly elevated, suggestive of active infection or abscess
Microscopy	Cysts of *Entamoeba histolytica* observed	—	Confirmatory evidence of amoebic infection

The liver abscess sample examined under light microscopy demonstrated **cysts of *E. histolytica***, confirming the parasitic etiology of the liver abscess. No other intestinal pathogens were detected.

Hepatitis profile:

Serological testing revealed Hepatitis A IgM positivity, consistent with acute Hepatitis A infection. Liver transaminases were mildly elevated (SGPT 59 IU/L) without jaundice or clinical hepatic failure. Other viral markers (HBsAg, anti-HCV) were negative. The concurrent Hepatitis A infection was considered a contributing factor to hepatic inflammation rather than the primary etiology of the abscess.

2. Radiological Findings (Sequential Ultrasonography)

Ultrasonography of the abdomen and pelvis was performed at three time points, showing progressive resolution of the abscess following therapy.

Investigation	Findings	Interpretation
First USG	Hypoechoic lesion in the left lobe of the liver measuring 3.6 × 3.9 × 3.7 cm (volume ≈ 27 cc). Mild perihepatic free fluid.	Early abscess formation
Second USG	Lesion enlarged to 4.6 × 4.3 cm (volume ≈ 43 cc) with minimal internal liquefaction. Mild hepatomegaly and trace ascites noted.	Active liquefying abscess
Third USG	Collapsed abscess cavity seen in the left lobe of the liver measuring 2.6 × 2.0 × 1.4 cm (volume ≈ 3–4 cc) with pigtail catheter in situ. No new lesion detected.	Resolving abscess, post drainage

Figure 1: Ultrasound (1st) – early hypoechoic lesion.

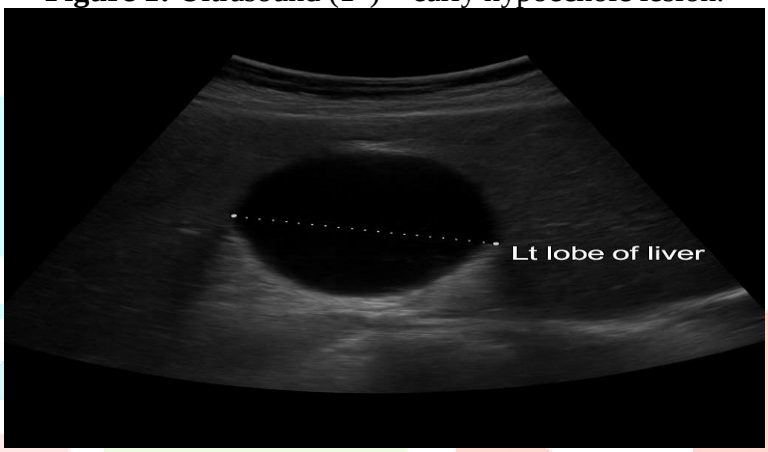


Figure 2: USG (2nd) – minimally liquefied abscess.

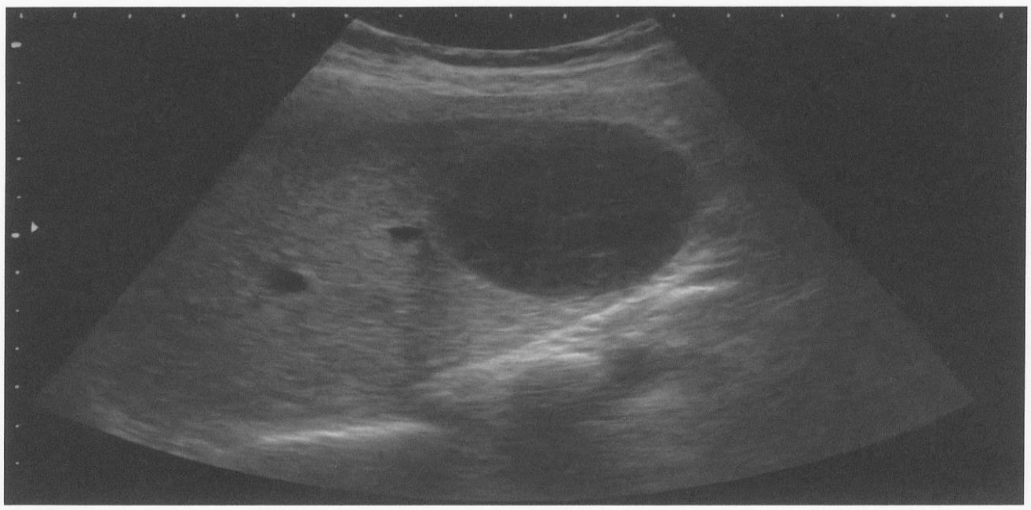
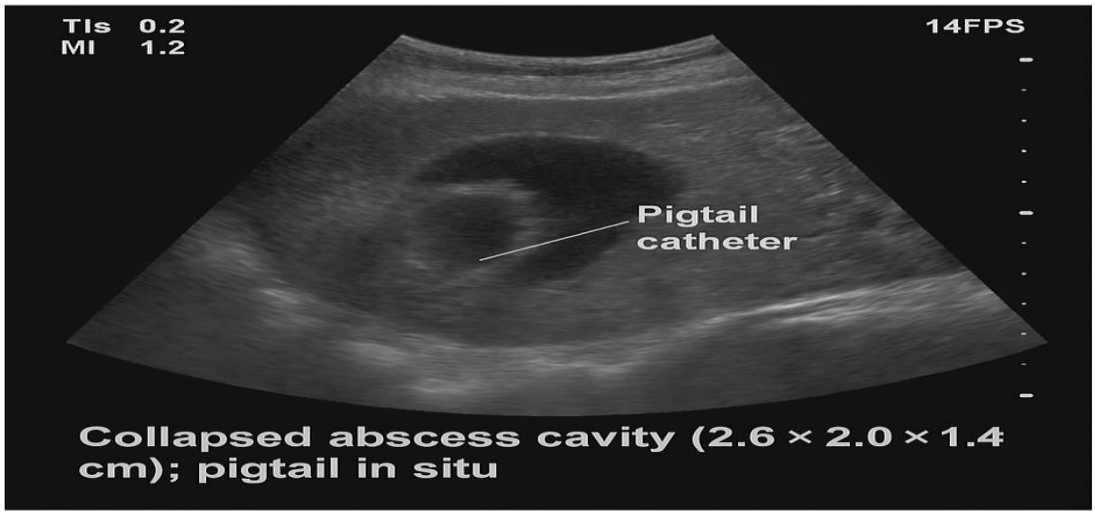


FIGURE 2: USG (26 AUG 2025) – MINIMALLY LIQUEFIED ABSCESS

Figure 3: USG (3rd) – collapsed abscess cavity.



The combined clinical, biochemical, and radiological picture was consistent with amoebic liver abscess involving the left hepatic lobe. The presence of *E. histolytica* cysts on microscopy of abscess sample provided direct etiological confirmation — a finding rarely reported in current practice.

D. Therapeutic Intervention

Intravenous metronidazole was commenced at a dose of 30 mg/kg/day in three divided doses (TDS regimen) as per the standard anti-amoebic regimen. Supportive treatment consisted of broad-spectrum antibiotics, intravenous fluids and antipyretics for the purpose of infection control, rehydration and symptom relief. The nutritional support and liver function were also maintained during hospitalization.

On the fourth day of hospitalization, ultrasonographic studies revealed increasing size of the abscess with central liquefaction. Thus, under aseptic precautions an ultrasound -guided pigtail catheter drainage was done where around 40 mL of thick brownish pus ("anchovy sauce" appearance) came out. Bacterial culture of the aspirate was sterile but positive for amoebic etiology.

In the present case, polymerase chain reaction (PCR) of pus from the abscess also supported that DNA of Entamoeba histolytica was present and thus confirmed the microscopic diagnosis as well. Nevertheless, the PCR report took about two days for determination and was also costly which minimized its utility as a screening test in low-resource settings of everyday clinical practice. While PCR is currently the most sensitive and specific test for distinguishing between E. histolytica compared to closely related nonpathogenic species such as E. dispar and E. moshkovskii, the time involved in obtaining results (24-72 h) and cost make it less suitable for urgent clinical decision-making. For confirmation, microscopy provides a quick cost-effective diagnosis and is especially useful in emergencies or low-tech health care facilities. The case illustrates that although the molecular methods could be used as confirmatory methods, early microscopic identifications are valuable for a rapid initiating therapy against amoebas and better prognosis especially in young patients.

There were no complications and the procedure was well tolerated by the patient. Three days after starting metronidazole, fever disappeared and abdominal pain was reduced slowly. His appetite increased, and general condition was stabilized. A repeat ultrasound after one week showed significant decrease and collapse of the abscess cavity. Therefore, pigtail catheter was withdrawn when minimal residual collection was observed.

E. Follow-Up and Outcomes

The patient was asymptomatic at the time of discharge. During the recovery LDH decline to normal. A control sonography at 4 weeks revealed total discharge of the abscess cavity without a residual lesion or recurrent. The baby returned to routine diet and physical activity without any follow-up problems complications.

Such a clinical and radiological response is an evidence of successful treatment of microscopy-proved amoebic liver abscess by combined anti-amoebic therapy with image-guided drainage.

Discussion

Amoebic liver abscess (ALA) occurs when Entamoeba histolytica enters the liver via the portal vein from the colon through a hematogenous spread of trophozoites. Once implanted into hepatic parenchyma, the trophozoites promote tissue necrosis by cytolytic enzymes like cysteine protease and amoeba pores thereby forming a necrotic cavity filled with reddish-brown "anchovy sauce" pus that defines the abscess [12]. The involvement of the right lobe is more frequent because it is bigger and has preferential blood supply, although left-lobe involvement as in this case may sometimes occur, particularly in children [13].

ALA is seen predominantly in adults and males, although pediatric cases, while less common do occur in regions with poor sanitation, unsafe water supply, and personal hygiene [14]. Malnutrition and immaturity of the immune response have been proposed as other contributing factors in children [15]. Co-infection with Hepatitis A and amoebic liver abscess is rare but documented in endemic regions. Both pathogens share fecal-oral transmission routes, and poor sanitation increases co-exposure risk [15]. Hepatitis A may transiently exacerbate hepatic inflammation, leading to elevated aminotransferases without altering abscess pathophysiology [16]. Most reported cases, similar to ours, demonstrate self-limited viral hepatitis with full recovery following anti-amoebic therapy and supportive management.

Microscopic visualization of E. histolytica trophozoites or cysts in stool or secondarily aspirated pus has historically been the principal diagnostic method. Nevertheless, microscopy has poor sensitivity (25–60%) and is unable to distinguish nonpathogenic E. histolytica strain from morphologically similar nonpathogenic species such as E. dispar and E. moshkovskii [16]. Nevertheless, in those instances a positive microscopy is highly specific and confirmatory when typical cysts or motile trophozoites are visualized [17].

Serological tests have significantly better sensitivity (80–95%) but use may not be easily accessible.2 They are performed by immunoenzymatically and/or indirect hemagglutination techniques and already represent the standard diagnostic method in most referral hospitals [18]. The advent of PCR and antigen detection methods has further advanced the accuracy of diagnosis [19]. However, there is a continued role for microscopy in resource-limited areas where examination can provide a rapid; cheap diagnosis allowing early treatment. Therefore, this case is remarkable for a direct microscopic verification of E. histolytica cyst in an era where serology and molecular tests are predominant.

Ultrasonography (US) is the investigation of choice in diagnosis and follow-up of liver abscess with real-time guidance intervention. The common radiological course consist of an initial hypoechogenic lesion, a central ecosystem with progressive echogenization and resulting from successful therapy or drainage collapse of the cavity [20]. This classic sequence—enlargement, liquefaction and collapse was observed with clinical improvement and metronidazole treatment in the present case.

Metronidazole is still the current gold standard drug therapy which works on both trophozoites and cystic forms of E. histolytica [21]. Larger (>5 cm) multiloculated or medically refractory abscesses may necessitate US-guided percutaneous drainage or pigtail placement, with faster resolution and less complications [22]. In this instance, combined pharmacological and image-guided drainage achieved full clinical/radiological resolution.

This case demonstrates the ongoing role of microscopy in a diagnosis of ALA, particularly in resource poor areas where serological and molecular techniques are not always available. Her diagnosis was confirmed both etiologically and noninvasively by E. histolytica cyst direct visualization, an unusual finding nowadays.

The serological diagnosis of Entamoeba histolytica infection may be complicated by co-infection with Hepatitis A virus (HAV). Both conditions induce a vigorous hepatic immune response characterized by the high level of transaminases, hypergammaglobulinemia and acute-phase reactants that could possibly lead to cross-reactivity or blind serological responses in terms of antibodies as recognized in ELISA or IHA [21, 22]. In endemic zones, where low-level exposure is common, differentiation of prior exposure and active disease becomes even more problematic during simultaneous viral hepatitis [14]. The overlap illustrates the importance of" direct diagnostic approaches (microscopy, antigen detection in aspirated material), which lead to specific etiologic confirmation without the serologic interference. Therefore, in the circumstance of concomitant hepatic infection, microscopic detection of E. histolytica cysts or trophozoites is still an accurate and definitive diagnosis as shown in our case report.

Early imaging along with timely anti-amoebic therapy and, if required, image guided aspiration secures overall good results in pediatric ALA. This case also emphasizes the need for high clinical alertness for amoebic etiology in children with fever and abdominal pain from endemic areas.

Conclusion

Amoebic liver abscess (ALA) must always be sought for in the differential diagnosis of febrile child with right-upper-quadrant abdominal pain that occur predominantly in endemic regions. Although advanced serological and molecular techniques are in vogue, microscopic examination is still an easy, prompt and confirmatory diagnostic modality in resource-poor setting when interpreted meticulously.

Also, infection with the same fecal–oral transmitted HAV can occur in such conditions and in turn increase hepatic inflammation or a temporary rise in liver function tests that could affect the serologic interpretation for E. histolytica. It is important to acknowledge this overlap for proper evaluation and adequate treatment.

Serial sonography remains essential not only to confirm the diagnosis but also for monitoring the natural course of expansion in size and liquefaction, culminating in ultimate collapse following successful therapy. This case emphasizes that an early recognition of probable mixed hepatic infections, initiating anti-amoebic drugs and performing image-guided drainage as indicated can lead to excellent clinical results even in pediatric populations.

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