



Giant Amoebic Liver Abscess Presenting as Acute Abdomen with Secondary Peritonitis and Concurrent Expulsion of Adult Ascaris lumbricoides in a Young Adult Male: A Rare Surgical Emergency

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ABSTRACT:

Background: Amoebic liver abscess (ALA) remains the most common extraintestinal manifestation of amoebiasis in developing countries. Giant liver abscesses presenting with acute abdomen, peritonitis, pleural effusion, and associated helminthic infestation are uncommon and pose significant diagnostic and therapeutic challenges. **Case Presentation:** A 24-year-old male presented to the emergency department with a one-week history of severe abdominal pain, fever, nausea, vomiting, abdominal distension, and progressive deterioration. On examination, he was febrile, tachycardic, dehydrated, and had diffuse abdominal tenderness with guarding, rebound tenderness, and abdominal distension suggestive of generalized peritonitis. Laboratory investigations revealed leukocytosis and elevated inflammatory markers. Contrast-enhanced computed tomography (CECT) abdomen demonstrated hepatomegaly with a large multiloculated hypodense lesion measuring approximately 12.5 × 10 × 12 cm involving segments VII and VIII of the right hepatic lobe with peripheral enhancement and central

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necrosis, suggestive of a giant liver abscess. Associated mild ascites, perihepatic fluid, mesenteric lymphadenopathy, and bilateral pleural effusions (right greater than left) were noted. The patient underwent emergency surgical intervention. Intraoperatively, a giant liver abscess was identified and drained. During management, a large adult *Ascaris lumbricoides* worm measuring approximately 60 cm was retrieved. Culture and histopathological evaluation excluded malignancy. The patient showed significant clinical improvement following abscess drainage, anti-amoebic therapy, broad-spectrum antibiotics, and antihelminthic treatment. **Conclusion:** Giant amoebic liver abscess should be considered in young patients presenting with acute abdomen and systemic sepsis. Coexisting ascariasis may contribute to diagnostic complexity. Early imaging, prompt drainage, and appropriate antimicrobial therapy result in favorable outcomes.

INTRODUCTION:

Amoebiasis, caused by *Entamoeba histolytica*, remains a major public health problem in developing countries, particularly in tropical and subtropical regions where poor sanitation and overcrowding facilitate transmission. Although most infections remain asymptomatic or present with mild intestinal manifestations, extraintestinal disease occurs in approximately 1–10% of infected individuals, with amoebic liver abscess (ALA) representing the most common and clinically significant extraintestinal complication. Globally, amoebiasis is responsible for substantial morbidity and mortality and remains one of the leading parasitic causes of death worldwide after malaria and schistosomiasis.^{1–4}

Amoebic liver abscess typically affects young and middle-aged males and most commonly involves the right hepatic lobe due to preferential portal venous blood flow from the right colon. Patients usually present with fever, right upper quadrant pain, hepatomegaly, malaise, and constitutional symptoms. Imaging studies, particularly ultrasonography and contrast-enhanced computed tomography (CECT), play a pivotal role in diagnosis by demonstrating characteristic hypodense lesions with peripheral enhancement and central necrosis.^{5–9} While most cases respond favorably to anti-amoebic therapy with or without image-guided drainage, delayed presentation may result in severe complications including rupture into the pleural cavity, peritoneum, pericardium, or adjacent hollow viscera, significantly increasing morbidity and mortality.^{10–13}

Large or “giant” amoebic liver abscesses, generally defined as lesions exceeding 10 cm in diameter, constitute a particularly challenging subset because of their increased risk of rupture, sepsis, respiratory compromise, and acute abdomen. In such cases, prompt recognition and timely intervention are essential to prevent catastrophic outcomes. Although percutaneous catheter drainage has emerged as the preferred treatment modality for large abscesses, emergency surgical intervention may still be required in patients presenting with generalized peritonitis, impending rupture, failed percutaneous management, or diagnostic uncertainty.^{14–18}

Soil-transmitted helminthic infections continue to coexist with protozoal infections in many endemic regions. *Ascaris lumbricoides* is the most prevalent human helminth, affecting an estimated hundreds of millions of individuals worldwide. Although most infections are asymptomatic, heavy infestations may result in intestinal obstruction, hepatobiliary disease, pancreatitis, cholangitis, liver abscess formation, and other surgical emergencies.^{19–22} The coexistence of amoebic liver abscess and ascariasis is uncommon and may complicate both diagnosis and management, particularly in resource-limited settings where parasitic infections remain endemic.^{23, 24}

We report a rare case of a giant liver abscess measuring approximately 12.5 × 10 × 12 cm involving segments VII and VIII of the right hepatic lobe in a 24-year-old male who presented with acute abdomen, systemic sepsis, peritoneal signs, pleural effusion, and associated ascariasis. The patient required urgent surgical management and subsequently achieved a favorable clinical outcome. This case highlights the importance of maintaining a high index of suspicion for complicated liver abscesses in young patients presenting with acute abdomen and underscores the continued burden of parasitic diseases in developing countries.

CASE PRESENTATION

A 24-year-old male presented to the emergency department with:

- Severe abdominal pain for 7 days
- Fever with chills
- Nausea and recurrent vomiting
- Progressive abdominal distension

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- Loss of appetite
- Generalized weakness

There was no history of jaundice, tuberculosis, chronic liver disease, diabetes mellitus, alcohol abuse, or previous abdominal surgery.

Clinical Examination

General Examination

- Ill-looking and toxic
- Temperature: 39°C
- Pulse: 124 beats/minute
- Blood pressure: 100/60 mmHg
- Respiratory rate: 28/minute

Abdominal Examination

- Distended abdomen
- Diffuse tenderness
- Guarding and rigidity
- Positive rebound tenderness
- Reduced bowel sounds
- Features suggestive of generalized peritonitis

INVESTIGATIONS

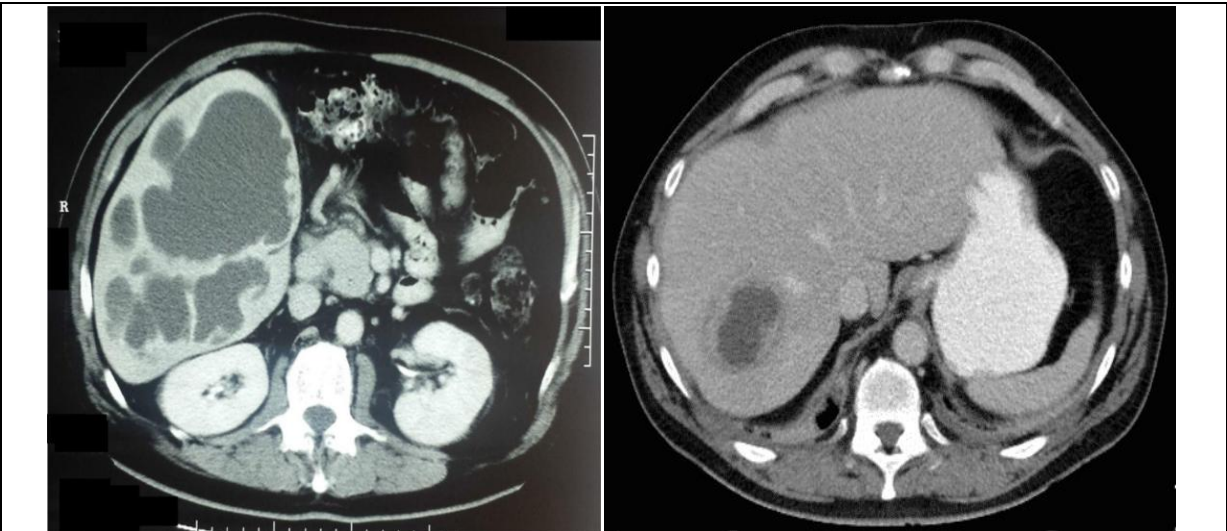


Figure 1. Axial CECT abdomen showing a giant multiloculated hypodense lesion in segments VII and VIII of the right hepatic lobe with peripheral enhancement and central necrosis, suggestive of liver abscess.

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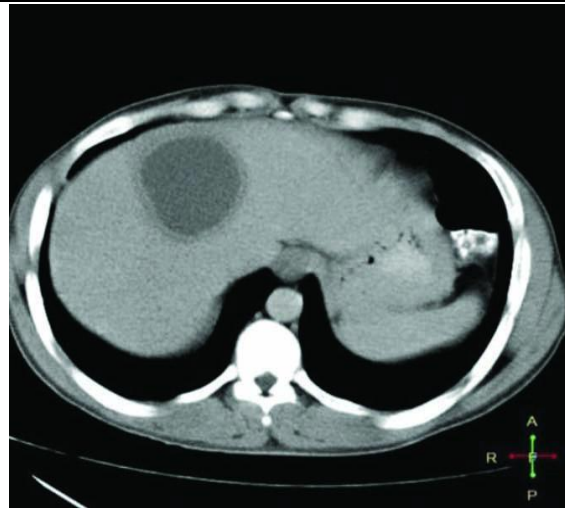


Figure 2. Coronal CECT reconstruction demonstrating a large right lobe hepatic abscess with associated perihepatic fluid, mild ascites, and right-sided pleural effusion.

CT abdomen demonstrated:

- Hepatomegaly (21 cm)
- Large hypodense lesion in segments VII and VIII
- Size approximately $12.5 \times 10 \times 12$ cm
- Internal incomplete septations
- Peripheral rim enhancement
- Central necrotic component
- Mild perilesional edema
- Mild perihepatic fluid collection
- Mild ascites
- Multiple mesenteric and para-aortic lymph nodes
- Moderate right pleural effusion
- Mild left pleural effusion with passive atelectasis

Radiological Impression

Large liver abscess involving right hepatic lobe.

Differential Diagnosis:

1. Amoebic liver abscess
2. Pyogenic liver abscess
3. Hydatid cyst with secondary infection
4. Necrotic hepatocellular carcinoma
5. Infected hepatic cyst
6. Tubercular liver abscess

Management

Initial Resuscitation:

- Intravenous fluids
- Broad-spectrum antibiotics
- Metronidazole
- Analgesics
- Electrolyte correction

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Surgical Intervention

Because of:

- Giant abscess size (>10 cm)
- Features of acute abdomen
- Peritoneal signs
- Sepsis

Emergency operative drainage was performed.

Intraoperative Findings

- Large right lobe liver abscess
- Thick necrotic abscess contents
- Inflammatory exudate
- Ascitic fluid
- Adult *Ascaris lumbricoides* worm measuring approximately 60 cm recovered



Figure 3. Gross specimen of an adult *Ascaris lumbricoides* recovered during treatment. The worm measured approximately 60 cm in length and demonstrated the characteristic cylindrical morphology of *A. lumbricoides*. A 10-mL syringe is shown for size reference.

Postoperative Treatment

- Intravenous metronidazole
- Broad-spectrum antibiotics
- Albendazole 400 mg
- Nutritional support
- Chest physiotherapy
- Follow-up imaging

Outcome and Follow-Up

The patient showed:

- Resolution of fever
- Improvement in abdominal pain
- Reduction in leukocytosis
- Improved oral intake
- Gradual resolution of pleural effusion
- Uneventful postoperative recovery

At follow-up, no residual collection was identified and the patient remained asymptomatic.

DISCUSSION

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Amoebic liver abscess (ALA) represents the most common extraintestinal manifestation of *Entamoeba histolytica* infection and remains a significant health problem in developing countries despite advances in sanitation and healthcare infrastructure. The disease predominantly affects young adult males and is particularly prevalent in tropical and subtropical regions where socioeconomic and environmental factors facilitate transmission. Although most patients present with fever, right upper quadrant pain, and hepatomegaly, the clinical spectrum may vary considerably depending on the size of the abscess, duration of illness, and presence of complications.¹⁻⁷

The present case is noteworthy because of several unusual features, including the young age of the patient, giant abscess size, presentation as acute abdomen with peritoneal signs, associated pleural effusion, and concomitant ascariasis. The liver abscess measured approximately 12.5 × 10 × 12 cm and occupied segments VII and VIII of the right hepatic lobe. Right lobe involvement is reported in approximately 80–90% of cases because of preferential portal venous drainage from the right colon, which facilitates hepatic seeding of trophozoites.⁵⁻⁷

The pathogenesis of amoebic liver abscess involves invasion of colonic mucosa by *E. histolytica* trophozoites followed by hematogenous spread through the portal venous circulation. Once established within the liver parenchyma, trophozoites induce hepatocellular necrosis and liquefaction, resulting in the characteristic "anchovy sauce" appearance of abscess contents. Histologically, viable trophozoites are often identified at the periphery of the lesion rather than within the necrotic center.^{1,2,7} The CECT findings in our patient demonstrated a large hypodense lesion with peripheral enhancement, internal septations, and central necrosis, features that are highly suggestive of a complicated liver abscess.^{8,9}

Large amoebic liver abscesses are associated with a significantly increased risk of complications including rupture into the pleural cavity, peritoneal cavity, pericardium, or adjacent hollow viscera. Rupture remains one of the most feared complications and may result in generalized peritonitis, septic shock, and death if not recognized promptly.¹⁰⁻¹³ The presence of diffuse abdominal tenderness, rebound tenderness, guarding, tachycardia, fever, and abdominal distension in our patient indicated severe intra-abdominal inflammatory pathology and necessitated urgent intervention. Additionally, mild ascites and perihepatic fluid identified on CT imaging further supported the possibility of impending rupture or inflammatory extension beyond the hepatic capsule.

Thoracic complications are well recognized in patients with large right lobe liver abscesses because of the close anatomical relationship between the liver and diaphragm. Reactive pleural effusion is the most common thoracic manifestation, although empyema, hepatobronchial fistula, and lung abscess have also been described.^{10,11} In the present case, moderate right-sided pleural effusion with mild contralateral pleural effusion and passive atelectatic changes were identified on imaging. These findings were likely secondary to diaphragmatic irritation caused by the large subcapsular abscess located in segments VII and VIII.

Cross-sectional imaging plays a crucial role in the diagnosis and therapeutic planning of hepatic abscesses. Ultrasonography is generally considered the initial imaging modality because of its availability and cost-effectiveness; however, CECT provides superior anatomical delineation, identifies loculations and septations, evaluates adjacent organ involvement, and facilitates procedural planning.^{8,9} In our patient, CT imaging accurately characterized the lesion, demonstrated associated intra-abdominal and thoracic complications, and assisted in determining the need for definitive intervention.

Current treatment strategies for amoebic liver abscess include anti-amoebic chemotherapy, image-guided aspiration, catheter drainage, and surgical drainage. Metronidazole remains the cornerstone of medical management and achieves cure in the majority of uncomplicated cases.^{7,14} However, intervention is generally recommended for large abscesses (>10 cm), left lobe lesions, impending rupture, persistent sepsis despite medical therapy, or diagnostic uncertainty.¹⁴⁻¹⁸ Given the giant size of the abscess and the presence of generalized peritoneal signs, emergency surgical management was considered appropriate in the present case. Surgical drainage remains a valuable option in selected patients despite the widespread adoption of minimally invasive approaches.¹⁵⁻¹⁸

An additional unique aspect of this case was the concomitant recovery of an adult *Ascaris lumbricoides* worm. Ascariasis remains one of the most prevalent helminthic infections worldwide, particularly in low- and middle-income countries.¹⁹⁻²¹ Although most infections are asymptomatic, migration of adult worms may result in hepatobiliary and pancreatic complications including biliary obstruction, cholangitis, pancreatitis, hepatic

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granuloma formation, and, rarely, liver abscess.^{22,23} The coexistence of amoebic liver abscess and ascariasis is infrequently reported in the literature and reflects the continuing burden of parasitic diseases in endemic populations.²⁴

The differential diagnosis of a large cystic hepatic lesion includes pyogenic liver abscess, hydatid cyst, infected hepatic cyst, necrotic hepatocellular carcinoma, and metastatic disease with central necrosis.^{9,11,28} In our patient, the clinical presentation, imaging characteristics, epidemiological setting, and favorable response to anti-amoebic therapy strongly supported the diagnosis of amoebic liver abscess. The absence of imaging features suggestive of hydatid disease or malignancy further strengthened this diagnosis.

This case highlights several important clinical lessons. First, giant amoebic liver abscess should be considered in any young patient from an endemic region presenting with fever, abdominal pain, and systemic toxicity. Second, acute abdomen with peritoneal signs may indicate impending rupture and warrants urgent radiological evaluation. Third, associated thoracic complications such as pleural effusion may be an important clue to the diagnosis. Finally, coexisting parasitic infestations may occur in endemic settings and should not be overlooked during evaluation and treatment. Early recognition, prompt resuscitation, appropriate antimicrobial therapy, and timely drainage remain the cornerstones of successful management and contribute significantly to favorable outcomes.^{1-3,7,14-18}

CONCLUSION:

This case highlights the importance of considering giant amoebic liver abscess in young patients presenting with acute abdomen and sepsis in endemic regions. Early CT imaging facilitates diagnosis, while prompt drainage combined with anti-amoebic therapy is crucial for successful outcomes. Concomitant ascariasis may coexist and should be actively sought in tropical populations.

Figure Legends:

Figure 1. CECT abdomen (coronal reconstruction) showing a giant multiloculated hypodense lesion occupying segments VII and VIII of the right hepatic lobe with peripheral enhancement and central necrosis.

Figure 2. Axial CT sections demonstrating a large hepatic abscess with surrounding inflammatory changes and associated right pleural effusion.

Figure 3. Gross specimen of adult *Ascaris lumbricoides* retrieved during treatment, measuring approximately 60 cm in length.

Learning Points:

1. Amoebic liver abscess may present as acute abdomen with generalized peritonitis.
2. Giant abscesses (>10 cm) require urgent drainage.
3. Pleural effusion is a common thoracic complication of large right lobe abscesses.
4. Ascariasis may coexist in endemic populations and complicate presentation.
5. Early diagnosis and intervention significantly reduce morbidity and mortality.

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