

CASES

An unusual presentation of amebic liver abscesses

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A 47-year-old man presented with a one-week history of fever (temperature up to 40.4°C), abdominal pain in the right upper quadrant and mild jaundice. He had no history of diarrhea. Apart from a business trip to Seoul six months before presentation, he had not travelled recently and his last extended visit to the tropics was five years earlier. When asked about his sexual history, he reported having protected sex with bisexual contacts in recent months.

On admission, his temperature was 39.5°C. He had slightly icteric skin, localized abdominal tenderness in the right upper quadrant and hepatomegaly. The results of laboratory tests indicated an elevated leukocyte count (17.9 [normal 3.5–10.0] × 10⁹/L; 83.1% neutrophils), and elevated levels of C-reactive protein (307 [normal < 10] mg/L), total bilirubin (55 [normal 5–26] µmol/L), serum gamma-glutamyl transferase (191 [normal 11–66] U/L) and alkaline phosphatase (180 [normal 43–106] U/L). Other liver enzyme levels were only mildly elevated. Results of serologic screening for HIV and hepatitis B and C were negative. Abdominal ultrasonography and computed tomography (CT) showed multiple hypodense lesions with rim enhancement in the liver. The largest lesion measured 5.2 × 5.1 cm (Figure 1).

Our presumptive diagnosis was multiple pyogenic abscesses, which are most often caused by a polymicrobial flora of *Streptococcus anginosus*, *Staphylococcus aureus*, *Streptococcus pyogenes*, *Klebsiella pneumoniae* and others. We gave our patient parenteral piperacillin–tazobactam therapy. A diagnostic ultrasound-guided drainage of one abscess yielded a viscous, reddish-yellowish fluid. Cultures and Gram staining of the aspirate yielded negative results, as did blood cultures. The histology of the liver biopsy showed nonspecific inflammatory infiltrates. Stool samples were negative for bacteria and protozoa. Results of serologic testing for amebiasis were negative with an indirect immunofluorescence assay and inconclusive with an enzyme-linked immunosorbent assay.

Our patient remained febrile, and his condition deteriorated. A follow-up CT scan four days after the initial scan showed an increase in the size of the liver abscesses, some suggesting impending rupture. Because we were concerned about abscess rupture, we placed percutaneous drainage catheters, with CT guidance, in the five largest lesions (Figure

Key points

- Invasive amebiasis should be considered in patients with liver abscesses who have travelled to a disease-endemic country or whose sexual practices put them at risk for anal–oral transmission.
- Diagnosis of amebic liver abscess relies foremost on the identification of a space-occupying lesion by ultrasonography or computed tomography and a positive serologic test result for amebiasis.
- Polymerase chain reaction testing for *Entamoeba histolytica* in an abscess aspirate can help the diagnosis when the serologic test result is negative.
- Metronidazole is highly effective in treating amebic abscesses. In some patients, drainage of the abscesses may enhance clinical recovery.

2). Results of polymerase chain reaction testing for *Entamoeba histolytica* were positive in three different samples, establishing the diagnosis of extraintestinal amebiasis.

We started oral metronidazole therapy and stopped the piperacillin–tazobactam treatment. Our patient's fever and elevated inflammation markers resolved, and we removed the drains. Within 30 days, he was discharged from hospital. The metronidazole was continued, and paromomycin was given intraluminally for 10 days. Fifteen months after treatment, the patient was in good health.

Discussion

Amebiasis is a common disease in developing countries and the second-leading cause of death from parasitic disease worldwide. However, only 4%–10% of infected people have symptomatic disease, mostly amebic colitis.^{1,2} Less than 1% of infections lead to extraintestinal manifestations, of which amebic liver abscess is the most common.¹ Untreated, amebic liver abscesses are almost always fatal; however, with timely diagnosis and treatment, mortality is as low as 1%–3%.²

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Figure 1: Coronal reconstructions of serial computed tomography scans of the abdomen in a 47-year-old man at days 0, 2, 10 and 90 show initial progression under antibiotic therapy and subsequent regression of multiple fluid collections after percutaneous drainage. Three of the abscesses are located immediately beneath the liver capsule: one laterally in the midaxillary line within segment VIII (a), another one high in the dome of the right liver, adjacent to the pleural space, again within segment VIII (b), and the third in segment II just below the pericardium (c).

Most individuals are infected via fecal–oral transmission, when insufficient hygienic conditions lead to contamination of food or water. Less often, the infection is transmitted sexually by direct anal–oral contact with an infected individual. In countries where the disease is not endemic, amebic abscesses are seen mostly in travellers or immigrants from developing countries.^{1,2}

Liver abscesses generally take several weeks to develop. Infected travellers returning from regions where amebiasis is endemic usually present with symptoms of amebic abscesses within 8 to 20 weeks (median 12 weeks) after their return. A later onset, even after years, has been described.²

Of potential relevance to our case is the growing number of patients with invasive amebiasis related to anal–oral sexual activity, especially between same-sex partners.³ According to population surveys in developed countries, direct anal–oral sexual contact takes place on a regular basis among 5.5% of men and 3.3% of women.⁴ Among those with bisexual and homosexual activity, the percentage can rise up to 46%,⁵ which explains a higher risk of infection with *E. histolytica* in this group regardless of their travel history.

Diagnosis

The most common symptoms of amebic liver abscesses are fever and abdominal pain in the right upper quadrant; hepatic tenderness may be found on examination.^{1,2,6} Concomitant gastrointestinal symptoms are present in 10%–35% of patients.¹ The onset of symptoms is usually acute but can also have a more chronic course.²

Diagnosis usually relies on identification of a hepatic space-occupying lesion by ultrasonography or CT scanning and a positive result of serologic testing for amebiasis. Magnetic resonance imaging can be helpful in some patients. The most important differential diagnoses are pyogenic abscess, echinococcal cyst and malignant disease (especially lymphoma and hepatocellular carcinoma). In 70%–80% of patients, amebic liver disease presents as a single abscess in the right lobe of the liver.¹ However, the incidence of multiple lesions appears to be increasing, possibly owing to improved imaging modalities.^{2,6}

At the time of initial presentation, 70%–80% of patients have positive serum antibodies against *E. histolytica* antigens.¹ Serologic testing by enzyme-linked immunosorbent assay has a sensitivity of more than 94% and a specificity of more than 95%, with a negative predictive value of more than 95%, although false-negative results can be obtained in the first 7–10 days.^{2,7} The indirect immunofluorescence assay has a similar sensitivity and specificity profile, whereas indirect hemagglutination is very specific but less sensitive.⁷ If extraintestinal amebiasis is suspected and serologic test results are negative, serologic testing should be repeated after several days. Antibodies will ultimately develop in up to 99% of patients with extraintestinal amebiasis.²

Histology of the lesion often shows a fibrinous border around a necrotic core with few inflammatory cells and possibly some amebic trophozoites, with adjacent liver tissue that is otherwise unaffected. Only small numbers of the organism are usually seen in the abscess fluid, the major components of which are often liquefied hepatocellular debris and dead hepatocytes.²

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Treatment

The “gold standard” treatment is with a nitroimidazole, such as metronidazole, over 7 to 10 days, followed by a luminal amebicide (paromomycin, iodoquinol or diloxanide furoate).⁸ In most patients with amebic abscesses, nitroimidazole treatment is highly effective and drainage is usually not necessary.² According to published case series and expert opinions, percutaneous drainage or needle aspiration is recommended for exclusion of pyogenic abscesses or if there is no adequate



Figure 2: Distribution of five drainage catheters as shown on maximum intensity projection at day 10. All catheters were removed after this CT scan because drainage had stopped.

response to nitroimidazole therapy after 3–5 days. Drainage is also recommended for large abscesses in the left lobe of the liver (because of the risk of rupture into the pericardium) and for abscesses with imminent risk of rupture ($> 300 \text{ cm}^3$).^{1,2,6} Polymerase chain reaction testing of the aspirate can help establish the diagnosis.⁹

In our patient, we initially suspected multiple pyogenic abscesses because of the clinical and radiological presentation. Once we considered our patient's lack of response to the antibiotic treatment and deterioration of his condition, as well as his travel and sexual history, we changed our diagnosis to amebiasis, which was confirmed by polymerase chain reaction testing.

Repeat serologic testing for *E. histolytica* after several days might also have led to the correct diagnosis, but the delay in appropriate therapy may have been fatal. Drainage catheters were initially placed because of concerns about abscess rupture; they were left in place after amebiasis was confirmed because of reports of enhanced recovery with decompression.^{2,6}

Our report illustrates that the diagnosis of amebic liver abscess can be challenging. *E. histolytica* can cause multiple liver abscesses without diarrhea, without a recent stay in a disease-endemic region and without an initial positive serologic test result. Sexual transmission can occur via anal–oral sexual contact, particularly between bisexual and homosexual partners. Therefore, a sexual history should be included in the workup of hepatic abscesses, especially in the absence of travel to a country where amebiasis is endemic.

This article has been peer reviewed.

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Resources

- US Centers for Disease Control and Prevention, Division of Parasitic Diseases (www.cdc.gov/ncidod/dpd/parasites/amebiasis/default.htm)
- BC Centre for Disease Control (www.bccdc.ca/dis-cond/a-z/_a/Amebiasis/default.htm)
- McGill Centre for Tropical Disease (www.medicine.mcgill.ca/tropmed/txt/lecture1%20intest%20protozoa.htm)
- World Health Organization, Geneva (www.who.int/topics/tropical_diseases/en/)
- London School of Hygiene and Tropical Medicine (<http://entamoeba.lshtm.ac.uk/>)

The section Cases presents brief case reports that convey clear, practical lessons. Preference is given to common presentations of important rare conditions, and important unusual presentations of common problems. Articles start with a case presentation (500 words maximum), and a discussion of the underlying condition follows (1000 words maximum). Generally, up to five references are permitted and visual elements (e.g., tables of the differential diagnosis, clinical features or diagnostic approach) are encouraged. Written consent from patients for publication of their story is a necessity and should accompany submissions. See information for authors at www.cmaj.ca.