

Case Report

Pyogenic Liver Abscess Secondary to Sigmoid Diverticulitis

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Abstract

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Introduction

Liver abscesses usually result secondary to an abdominal infection that spreads from the portal vein or due to liver injury. About 2.3 cases per 100,000 persons are reported annually. It affects males more than females. The majority are pyogenic or amoebic [1]. The characteristic triad of fever/chills, malaise and right upper quadrant pain is seen only in 30% of patients. Therefore, a strong index of suspicion is necessary for an early diagnosis of pyogenic liver abscess (PLA) [2]. Despite the rare occurrence of liver abscesses, these lesions must be identified and treated promptly because untreated patients have a high risk of morbidity and mortality [1].

We report a case of an elderly female with a background history of diverticular disease presenting with a pyogenic liver abscess. Complete resolution was achieved following percutaneous drainage of the liver abscess along with completion of intravenous (IV) antibiotics.

Case presentation

A 65-year-old female presented to a tertiary care hospital in London with fever, vomiting, loss of appetite and burning abdominal pain for 3 weeks. She had a past medical history of diverticular disease for 5 years which was managed medically.

On physical examination, she had a temperature of 36.1°C and was not icteric with a pulse rate of 64 bpm and a blood pressure of 130/80 mmHg. The lungs were clear. Examination of the abdomen revealed mild tenderness in the right upper quadrant.

White cell count was $15.8 \times 10^9/L$, haemoglobin was 11.7g/dL and the platelet count was $268 \times 10^9/L$. Serum electrolytes and renal functions were normal. C-reactive protein was 426.1mg/dL. Liver function tests revealed an alanine transaminase of 102U/L, aspartate transaminase of 105U/L, alkaline phosphatase of 172U/L, gamma-glutamyl transferase of 47U/L, total bilirubin of 16 μ mol/L, albumin of 32g/L and globulin of 38g/L. Blood culture was negative.

The differential diagnosis we considered at this point was a liver or a gall bladder infection. Ultra-sound done at the emergency department revealed a partially well-defined 4x5cm structure in the liver with a thin-walled normal gall bladder without intra-biliary sludge or obvious stones. Computed tomography (CT) revealed a large, solitary, 6.1 cm, rounded, hypo-attenuating lesion in hepatic segment VIII with irregular internal septation, in keeping with a liver abscess and a short segment of thick-walled distal sigmoid colon with localized pericolic inflammation on a background of severe diverticulosis, along with findings that represented acute diverticulitis (Figure 1). The radiology team mentioned that the most likely primary source of the liver abscess would be the acute diverticulitis.

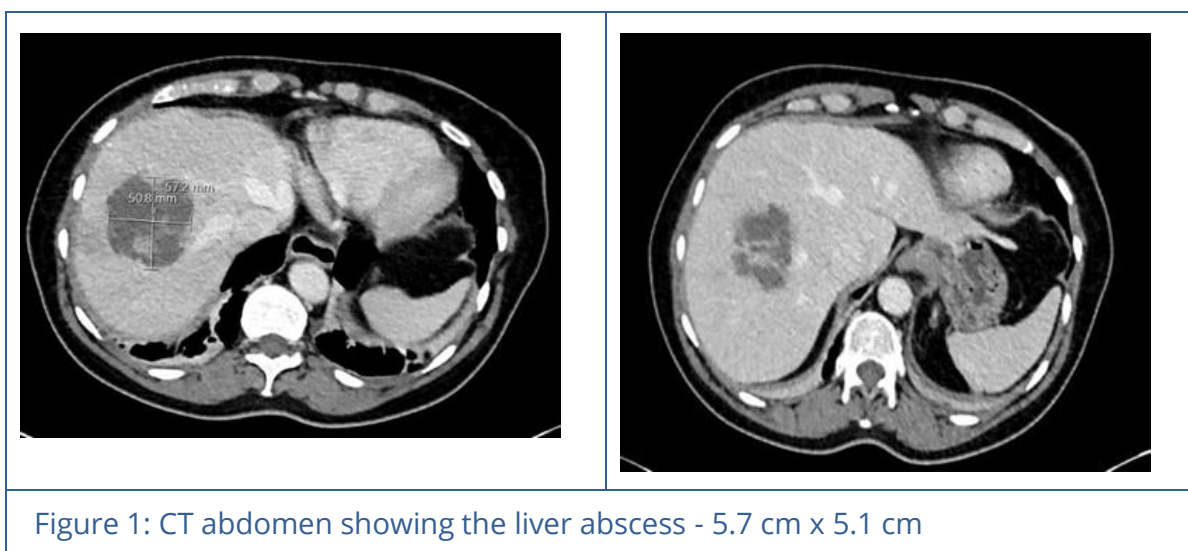


Figure 1: CT abdomen showing the liver abscess - 5.7 cm x 5.1 cm

She was managed with IV cefuroxime and IV metronidazole, as for a liver abscess secondary to diverticulitis.

Four days following admission, the patient was reviewed by the gastroenterology team and a fluoroscopic guided liver drain was inserted. Drain fluid microscopy and culture revealed Gram positive cocci. Magnetic resonance imaging of the abdomen performed at this point revealed an enlarging liver abscess, when compared to the previous CT measurement (68 cm x 6.3 cm, previously 5.7 cm x 5.1 cm) and associated mild perilesional parenchymal oedema.

However, her symptoms gradually resolved a few days following drain insertion and by the end of 2 weeks of antibiotic therapy there was marked improvement in her clinical condition and inflammatory markers. CPR came down to 47.3mg/dL and white cell count came down to $6.8 \times 10^9/L$. Repeat ultrasound scan abdomen showed marked resolution of the liver abscess with the size reduced to 2.6cm x 3.4cm.

Amoebic serology and hydatid screen were negative.

The patient was discharged with a plan to continue IV antibiotics for further 2 weeks and to repeat the US of the abdomen 5 days prior to stopping antibiotics. Repeat US revealed complete resolution of the liver abscess. Further, gastroenterology clinic was arranged in view of optimizing the management of diverticulosis.

Discussion

Liver abscesses can be classified into two categories as amoebic and pyogenic [1]. The pathogenesis of pyogenic liver abscess (PLA) is different from amoebic liver abscess (ALA). A pyogenic abscess is defined as a collection of pus containing numerous inflammatory cells, predominantly neutrophils and tissue debris. Pyogenic liver abscesses are caused by a variety of organisms, the common being *Escherichia coli*, *Klebsiella pneumoniae* and *Burkholderia pseudomallai*. ALA and PLA have identical clinical presentations. Fever and abdominal pain are the most common presenting symptoms. Our patient presented fever, vomiting, loss of appetite and burning abdominal pain. Even though inflammatory indicators including C-reactive protein, elevated alkaline phosphatase, leukocytosis (mostly neutrophils) and abnormal liver function tests are frequently seen, they are not very useful in distinguishing between pyogenic and amoebic infections [1]. The primary imaging modalities for diagnosing PLA are CT and ultrasound, with CT having a slightly higher sensitivity (93%–97%) than ultrasound (83%–95%) [2]. Pyogenic liver abscesses typically require percutaneous drainage and treatment with potent antibiotics, whereas amoebic liver abscesses can be managed conservatively [3].

Interestingly, there were only a few cases of PLA available in literature. In 2011, Muraka *et al* reported a case of a pyogenic liver abscess secondary to disseminated *Streptococcus anginosus* from sigmoid diverticulitis [4]. Unlike in our case, the patient in this case underwent sigmoid resection with primary anastomosis, repair of the colovesical fistula, enterolysis and drainage of multiple intraabdominal abscesses. In 2018 a case of recurrent diverticulitis complicated by liver abscesses was reported [5]. The patient in that case was discharged on a clear liquid diet, antibiotic infusions to be completed on an outpatient basis, and was recommended to get elective sigmoid resection after resolution of his symptoms. In 2020, Muscut *et al* reported a case where *Streptococcus intermedius* was the cause of a liver abscess secondary to diverticulitis in an elderly gentleman [6]. In contrast to our patient, the patient in that case had a background history of ulcerative colitis. Similar to our case, in all these cases antibiotic therapy combined with percutaneous drainage was the mainstay of treatment.

Conclusion

Liver abscess should be considered in the differential diagnosis of a patient presenting with fever and abdominal pain. Finding the source of the infection is important if a hepatic abscess is discovered. Diverticulitis should be considered a potential cause of liver abscess. Early diagnosis and treatment is important to reduce morbidity and mortality.

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