

Liver Abscess in Crohn's Disease:

A Report of Three Cases

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Abstract

Liver abscess is a rare complication of Crohn's disease and must be considered part of the differential diagnosis. We present three case reports and a review of the literature.

The incidence of liver abscess is higher in patients with Crohn's disease than in the general population. Since Crohn's disease patients who present with a liver abscess generally do not respond to medical management alone, surgical or percutaneous drainage of the abscess is necessary.

Key Words: Crohn's disease, liver abscess, abscess drainage, complications, surgery, inflammatory bowel disease.

Introduction

LIVER ABSCESS is a rare complication of Crohn's disease (CD), as evidenced by a paucity of cases in the literature (1, 2). In 1870, Fagge described hepatic abscesses in a patient with ulceration of the colon (3, 4); it was probably due to Crohn's colitis, since there have been no documented cases of liver abscess associated with ulcerative colitis. The first cases of liver abscess complicating CD were documented in the 1940s. The incidence of liver abscess in patients with CD is 8–16 per 100,000, about 10–15 times that found in the general population, even though intra-abdominal abscesses are encountered relatively often in CD (3). Diagnosis of the abscess is often delayed because its clinical presentation can be similar to an exacerbation of CD or may precede the diagnosis of CD. Liver abscesses usually appear as late sequelae of CD. There are only six reports of liver abscesses which developed prior to the establishment of the diagnosis of CD (5–7). And to our knowledge, aseptic abscesses have been re-

ported only once (8). We report three cases of liver abscesses associated with CD; the first involves an aseptic liver abscess that led to the diagnosis of CD, and the others involve two patients with CD and the subsequent identification of liver abscess.

Cases Reports

Case 1

A 52-year-old man was hospitalized with a two-week history of fever, chills, and right upper quadrant abdominal pain. There was no history of diarrhea or intermittent episodes of cramping abdominal pain. A colonoscopy performed one year previously had been normal. The patient's sister had quiescent CD. On physical examination, the patient had a temperature of 39.5° C and significant right upper quadrant tenderness. Laboratory data included a white blood cell count of 20,800 cells/mm³ (< 10,000 cell/mm³), platelet count of 1.2 million/mm³ (100,000–400,000 cells/mm³), Alanine aminotransferase (ALT) 8 U/L (1–53 U/L) and total bilirubin of 0.5 mg/dL (0.1–1.2 mg/dL). Ultrasound examination revealed several hypoechoic nodular lesions in the right hepatic lobe. Abdominal CT demonstrated multiple hypodense lesions suggestive of liver abscesses. Ultrasonographic percutaneous biopsy of one of the lesions yielded purulent

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material. Culture of the fluid did not grow any organisms. Blood cultures were normal. A small bowel series revealed dilated loops of small bowel, as well as two strictures suggestive of CD. Asacol 800 mg BID and IV Unasyn 1.0 gm q6h were begun. Twenty-four hours later the patient underwent an ileo-colic resection and drainage of two liver abscesses. Operative findings during the procedure included purulent liver abscesses, two ileo-ileal fistulas, inflammation and narrowing of the terminal ileum. The postoperative course was uneventful, and the patient was discharged home on postoperative day #8. The pathology report revealed active Crohn's ileitis with ulcerations, sinus tracts, transmural chronic inflammation and mesenteric fibrosis.

Case 2

A 23-year-old man with a one-year history of CD was admitted with a three-week history of fevers, chills, nausea, and right upper quadrant abdominal pain. On physical examination, the patient had a temperature of 39.5° C, scleral icterus, and right upper quadrant tenderness. Laboratory tests included a white blood cell count of 31,000 cells/mm³, total bilirubin of 2 mg/dL, alkaline phosphatase of 193 U/L (30–110 U/L), and ALT 72 U/L. A small bowel series demonstrated multiple entero-enteric and colo-enteric fistulae consistent with CD of the terminal ileum. IV hydrocortisone 50 mg q8h, IV ciprofloxacin 400 mg BID and metronidazole 500 mg BID, was initiated. A CT scan of the abdomen and pelvis demonstrated a 10 cm septated abscess in the dome of the right lobe of the liver, and a 3 cm psoas abscess adjacent to the inflamed terminal ileum. CT-guided percutaneous drainage of the liver abscess yielded 320 cc of purulent material. Cultures grew *Streptococcus viridans*. The antibiotics were changed to IV Zosyn 3.375 mg q6h. The psoas abscess could not be drained percutaneously. At laparotomy, an inflammatory mass containing purulent and necrotic material was noted in the liver and in the psoas muscle. The abscesses were drained, and ileo-colic resection was performed. Follow-up CT on postoperative day twelve demonstrated a residual hepatic abscess, which was drained using CT guidance. A pigtail drain was left in place for three weeks. The patient was treated with IV Zosyn 3.375 g q6h for 10 days and discharged home with PO augmentin 875 mg BID for 5 days.

Case 3

A 56-year-old man was admitted with a ten-day history of non-productive cough, fever, anorexia and lethargy. There was no history of abdominal pain, diarrhea, nausea or vomiting.

The patient had a medical history of Crohn's disease for 30 years, without medical treatment for the previous 10 years. Twenty-five years prior to admission, the patient had undergone incision and drainage of perirectal abscess. Colonoscopy performed two years prior to admission was normal.

On physical examination, the patient had a temperature of 39° C, heart rate of 105 and blood pressure of 110/70 mmHg. The chest was clear to auscultation, the abdomen was soft, non-distended with mild tenderness in the right upper quadrant, without peritoneal signs. Laboratory data included a white blood cell count of 17,300 cells/mm³, total bilirubin 2.1 mg/dL, direct bilirubin 1.5 mg/dL (0.0–0.8 mg/dL), alkaline phosphatase 208 U/L and ALT 30 U/L.

Abdominal CT (Fig. 1) demonstrated a hypodense liver lesion suggestive of abscess and an entero-enteric fistula involving the sigmoid colon and cecum. The patient was treated with IV cefepime 1 g BID and IV metronidazole 500 mg q8h. The next day the patient underwent CT-guided drainage of the abscess (Fig. 2). Gram stain revealed gram positive cocci, and antibiotics were switched to IV Unasyn 1.0 mg q6h. Two days later, the temperature went down to normal and the white cell count was 10,000 cells/mm³.

On hospitalization day (HD) #4, the patient underwent a small bowel series (Fig. 3), which showed strictures in the terminal ileum as well as an ileo-cecal fistula and an ileo-sigmoid fis-



Fig 1. CT scan showing multiloculated liver abscess.

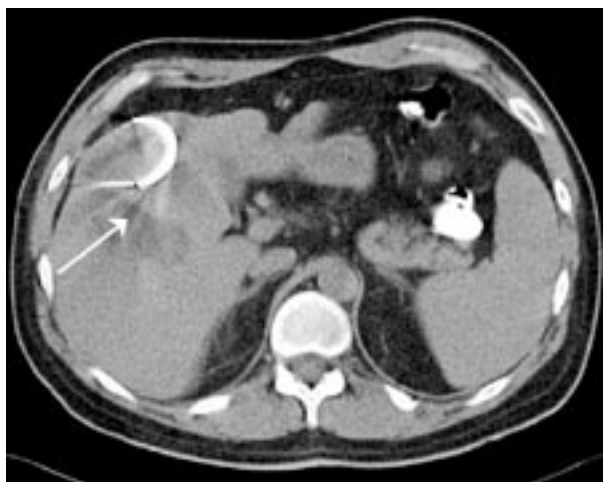


Fig 2. CT scan showing percutaneous drainage of the abscess.

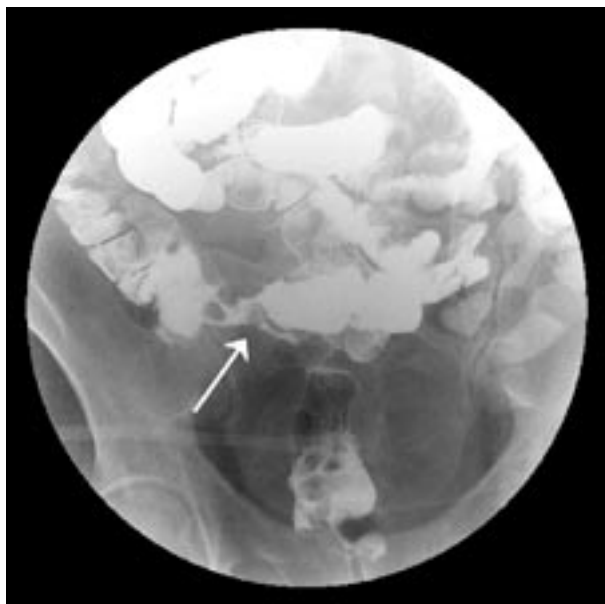


Fig 3. Small bowel series showing ileo-sigmoid fistula.

tula. Colonoscopy showed inflammatory changes in the terminal ileum, evidence of a fistula involving the cecum, collection of pseudopolyps at 30 cm and at 15 cm, from the anal verge, consistent with fistulization to these areas. The distal 10 cm demonstrated inflammatory changes consistent with Crohn's scar tissue. On HD #8, the patient underwent ileo-colic resection, takedown of ileo-sigmoid fistula, anterior resection and drainage of residual liver abscess. The postoperative course was uneventful; the patient was treated with IV Unasyn for 7 days and discharged home on postoperative day #9 in good condition.

Discussion

Liver abscess is a rare complication of CD. Mir-Madjlessi calculated the incidence to be 114–297 per 100,00 cases of CD vs. 8–16 per 100,000 in the general population (1). All of the case series and case reports, including the present report, support a male predominance with a male: female ratio of 23:8 (1–8). This is in contrast to the equal male-to-female ratio found in CD in general. The average age of the patients reported in the literature ranged from 24–44 years (1, 2, 7). While most of the abscesses developed in patients with longstanding CD, six occurred in patients in whom the initial presentation of CD was the liver abscess (3, 5). The mean duration of CD prior to the development of liver abscess ranged from 6 months to 9 years (1, 2, 5). Our patients described as Case 2 and Case 3 had CD for one year and 30 years, respectively, while the patient described as Case 1 presented with a liver abscess prior to the diagnosis of CD.

Several factors have been implicated as possibly predisposing to, or being associated with, development of liver abscess. Steroids and antibiotics have been suggested as a possibility, but there is insufficient evidence to support this (1, 3). Considering the widespread use of antibiotics among CD patients, it would seem that the prevalence of liver abscess should be higher if this were truly a predisposing factor. There is no significant association with any specific location of intestinal disease activity. In most of the reported cases (3, 5, 8), the patients did have inflammatory or perforating disease as opposed to fibrostenotic disease. Again, considering the number of patients with CD who develop fistulae and intra-abdominal abscesses, one might expect the incidence of liver abscess to be higher if this were truly a predisposing factor. In two reported patients, the CD was quiescent at the time of the development of the liver abscess (5). In all of our cases, active CD of the ileum was present. The presence of fistulous disease and intra-abdominal abscesses has been suggested by some to be a predisposing factor (1, 2). Our patient, Case 1, had fibrostenotic disease, while the others had fistulizing disease. Several mechanisms have been proposed regarding the development of a liver abscess. These include direct extension of an intra-abdominal abscess into the liver via the portal vein from intra-abdominal infection, indirectly from complications of CD (i.e., biliary disease), and from sepsis occurring in a carcinoma which had metastasized to the liver (1).

The clinical picture with which these patients present is also quite variable. Certain characteristics are commonly found, such as fever, elevated white blood cell count and elevated alkaline phosphatase. In only a few patients were the other liver enzymes elevated, as was seen in Case 2. Intestinal symptoms may not always be present. Tenderness, fullness and palpable mass in the right upper quadrant may not be appreciated. In short, there is often no clear evidence on clinical presentation to suggest the presence of liver abscess.

However, the advent of advanced imaging techniques, such as CT scanning and ultrasound, has facilitated diagnosing this rare complication. Early diagnosis has improved survival rates. In the 12 documented cases during the past 10 years, there has been only one death, an 87-year-old patient who experienced an acute myocardial infarction (3, 5). This is in comparison to the 19 previous cases, in which there were 7 mortalities, presumably related to inability to correctly identify liver abscess as the underlying problem (1, 2, 4, 6–8).

Because of the infrequency of this serious complication in clinical practice, controversy still exists as to which treatment modality is appropriate. Attempts have been made to treat liver abscesses with antibiotics alone; the results have been dismal. Greenstein reported a 75% mortality rate in the group of patients treated with antibiotics alone (3). Most of the patients had some form of percutaneous drainage performed, usually in conjunction with insertion of a pigtail catheter for continued drainage. There does not appear to be any consensus as to type and duration of antibiotics. The duration of intravenous antibiotics ranged from 2–6 weeks. Oral antibiotics were also utilized. One patient received oral penicillin for 3 months after surgical drainage of his abscesses and intravenous penicillin as well (7). Another patient underwent ultrasound guided percutaneous drainage of his liver abscess and then received a 6-week course of oral amoxicillin, having never received intravenous antibiotics at all. The choice of antibiotics is dependent on the organisms obtained at culture. In Case 2, the culture of the liver abscess revealed *S. viridans*. There is clear evidence that Streptococcus species, particularly *S. milleri*, are especially likely to be cultured from a CD-related abscess. This organism is identified repeatedly throughout the cases reviewed, as in Case 3 (1, 2, 5–7).

Development of disseminated sterile abscesses preceding inflammatory bowel disease,

as seen in Case 1, is a rare presentation. Negative bacterial tests and serologies do not necessarily mean that the abscess is aseptic: slowly growing organisms and previous antibiotic therapy could explain the absence of causative agents, and other systemic disease could predispose the patient to abscess formation. In Case 1, CD was the only systemic disease that could be linked to the abscess.

Regarding percutaneous vs. surgical drainage, many patients were managed satisfactorily with percutaneous drainage and antibiotics (1, 2, 5, 8). Those patients in whom percutaneous drainage was unsuccessful (i.e., multiple abscesses which were not connected) required surgery, especially if there was other intra-abdominal pathology that also had to be addressed. Under these circumstances, the majority of authors (1–3, 5–7) advocate surgical drainage.

Summary

Liver abscess is a rare complication of patients with CD. Despite advances in imaging, the diagnosis is frequently delayed and a high degree of suspicion is required. In our opinion, shaking chills and fevers with elevated white cell count and alkaline phosphatase should arouse suspicion. Abdominal CT scan or ultrasound should be performed in order to make an earlier diagnosis.

Broad spectrum IV antibiotics combined with percutaneous or surgical drainage is the treatment of choice.

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