CASE REPORT

Hepatocolic fistula: a rare presentation of pyogenic liver abscess

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SUMMARY

A 58-year-old man was admitted due to a 4-month history of colicky right upper quadrant pain, intermittent fever, anorexia and weight loss. A contrast-enhanced CT scan of the abdomen showed an encapsulated, peripherally enhancing focus occupying the right liver lobe exhibiting capsular rupture and extension to the walls of the hepatic flexure. He immediately underwent emergency ultrasound-guided percutaneous catheter drainage and cultures of the purulent fluid later revealed *Escherichia coli*. A colonoscopy was then performed which showed a pinpoint opening with draining pus at the hepatic flexure. A fistulogram confirmed a fistulous tract arising from the inferior aspect of the abscess cavity, draining into the posterosuperior aspect of the hepatic flexure. He was started on intravenous antibiotics and after 1 week of decreasing output, a repeat ultrasound showed very minimal residual fluid. The percutaneous catheter drain was then removed after 2 weeks and the patient was discharged improved.

BACKGROUND

Rupture of a liver abscess with subsequent fistulisation into the gastrointestinal tract is an extremely rare phenomenon to the best of our knowledge; only 13 reports have been published since its first description in 1983. Patients often present with fever, abdominal pain, nausea, vomiting, anorexia, weight loss and sometimes jaundice. Since its presentation is very protean, difficulty and subsequent delay in diagnosis are commonly encountered. This case highlights the importance of having a high index of suspicion to diagnose such a rare presentation in order to provide prompt surgical drainage and to facilitate early closure of the fistulous tract.

CASE PRESENTATION

A 58-year-old man with no known comorbidities was admitted due to right upper quadrant pain. He was apparently well until, 4 months prior to admission, he experienced colicky right upper quadrant pain, intermittent low-grade fever, anorexia and weight loss. There was no jaundice, tea-coloured urine, melaena, haematochezia or change in bowel habits. He denied having any vices (smoking, alcohol and illicit drug use) and any family history of hepatobiliary disease or cancer. No consult or formal workups were performed during this time.

One week prior to admission, he experienced increasing severity and frequency of right upper quadrant pain. He then sought a consult at a local clinic where an ultrasound was initially performed

showing a hepatic mass. A contrast-enhanced CT scan of the abdomen (figure 1A, B) was subsequently requested revealing an enlarged liver with an encapsulated, peripherally enhancing focus occupying segments V and VI, measuring 15.6×7.9×9.6 cm (estimated volume of 615.2 cm³), containing thick and thin, enhancing, internal septations and small air pockets. The hepatic focus was noted to have the following extensions:

- Laterally, capsular rupture with extension to the lateral abdominal wall muscles exhibiting heterogeneity, stranding and thickening;

Figure 1 (A) Contrast-enhanced CT scan of the abdomen (transverse section) showing an encapsulated, peripherally enhancing focus at segments V and VI, measuring 15.6×7.9×9.6 cm (estimated volume of 615.2 cm³) with thick (red arrow) and thin, enhancing, internal septations. (B). Contrast-enhanced CT scan of the abdomen (coronal section) showing the hepatic abscess with small air pockets (red arrow). Inferomedially, the hepatic focus is intimately related to the walls of the hepatic flexure and distal ascending colon with circumferential wall thickening (red asterisk).

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- ▶ Posteriorly, thickening of the right lateral conal and anterior pararenal fasciae with minimal fluid in the anterior perinephric space;
- ▶ Inferomedially, extrahepatic components intimately related to, and cannot be differentiated from, the walls of the hepatic flexure and distal ascending colon with circumferential wall thickening.
- ▶ Similar findings were also seen in the second segment of the duodenum.

No source of the abscess was demonstrated on the CT scan. The biliary tree and appendix were normal and no colonic mucosal outpouching suggestive of a diverticulum was noted.

The patient was then advised immediate admission.

On admission, the patient was normotensive, tachycardic and febrile (blood pressure 110/70 mm Hg, HR 110 bpm, temperature 38.1°C, body mass index: 18.7). He was pale and weak-looking. His abdomen was soft but with direct tenderness on the right upper quadrant with no mass, bruit, guarding or rebound tenderness appreciated. The rest of the physical examination was normal.

INVESTIGATIONS

Pertinent laboratories showed normocytic, normochromic anaemia (haemoglobin 64 g/L), a normal white cell count but with a pronounced neutrophilic predominance ($6.78 \times 10^9/L$, 90%, respectively). Liver biochemical tests revealed hypoalbuminaemia (albumin 22 g/L) and an elevated alkaline phosphatase (360 IU/L). The rest of the liver biochemical tests were unremarkable (aspartate aminotransferase 28 U/L, alanine transaminase 33 IU/L, total bilirubin 1.05 mg/dL, prothrombin 15.6 (control 13.1), International Normalised Ratio 1.2). α Fetoprotein was normal (2 IU/mL) and hepatitis profile (A/B/C) was non-reactive. The patient was diagnosed with impaired fasting glucose with a fasting blood sugar result of 120 mg/dL. He was also screened for HIV using enzyme-linked immunoassay and was tested negative.

TREATMENT

On admission, the patient was started on intravenous antibiotics (ceftriaxone 1 g intravenously q24 hours and metronidazole 750 mg intravenously q8 hours) and immediately underwent ultrasound-guided percutaneous catheter drainage. A total of 500 cc mucopurulent, foul-smelling fluid was drained and microbiological examination later revealed Gram-negative bacilli (culture: heavy growth of *Escherichia coli*) and a negative test for *Mycobacterium tuberculosis*, (PCR). Blood cultures performed from two peripheral sites did not grow any organism.

To further evaluate the presence of any enteric involvement, an upper endoscopy and colonoscopy were performed. On esophagogastroduodenoscopy (EGD), no mucosal defect, sinus or fistulae were appreciated. However, on colonoscopy, a pinpoint opening with draining pus was noted at the hepatic flexure with surrounding nodular mucosa (figure 2A, B). Biopsies taken on the nodular mucosa only revealed chronic non-specific inflammation.

To confirm the presence of a fistulous connection between the hepatic abscess and the colon, a fistulogram was performed (figure 3A, B). On instillation of contrast through the percutaneous drain, a tract was noted arising from the inferior aspect of the abscess cavity, draining into the posterosuperior aspect of the hepatic flexure.

OUTCOME AND FOLLOW-UP

After 1 week of decreasing output, a repeat ultrasound showed very minimal residual fluid. The percutaneous catheter drain

Figure 2 (A) Colonoscopic picture of a nodular mucosa at the hepatic flexure with a pinpoint opening (black arrow). (B) Closer view of the pinpoint opening at the hepatic flexure on colonoscopy.

was then removed after 2 weeks and the patient was discharged markedly improved.

DISCUSSION

Since the advent of effective antimicrobial therapy and widely available diagnostic procedures, pyogenic liver abscess is now an uncommon event. Compared to the past where cases were reported to occur mainly from a complicated abdominal disease such as appendicitis, diverticulitis or an infected liver malignancy (whether primary or metastatic), most reports now are said to be cryptogenic.¹ These cases commonly develop in older men with a predisposing condition such as immunocompromised states¹ (malignancy, alcoholism, diabetes mellitus) and invasive intra-abdominal manipulation (foreign body ingestion,²⁻³ hepatobiliary surgery,⁴ interventional endoscopy).

As a complication of an untreated pyogenic liver abscess, a fistulous tract formation between the liver and the gastrointestinal tract is an even rarer occurrence. Owing to the closer proximity of the liver to the proximal gut, a fistulous tract following rupture of a hepatic abscess is more commonly observed to form in the duodenum than the colon.⁵ However, in rarer instances when a liver disease does invade the colon, the fistulous communication often forms in the hepatic flexure or the ascending colon.⁶ Until now, only 13 published cases of

Figure 3 (A) Instillation of contrast through the percutaneous drain showed a tract (white arrow) at the inferior aspect of the abscess cavity. (B). Fistulogram showing opacification of posterosuperior aspect of the hepatic flexure on instillation of contrast through the percutaneous drain.

hepatocolic fistula have been reported worldwide since its first description in 1983. Of these 13 cases, only 4 were reported to occur as a consequence of a primary liver abscess. Table 1 shows the 13 reported cases of hepatocolic fistula and their aetiologies.

Patients with pyogenic liver abscess typically present with non-specific signs and symptoms that are often very subtle and chronic.⁷ These include vague epigastric pain or right upper quadrant discomfort, low-grade fever, anorexia and malaise. Physical examination usually reveals a tender right upper quadrant (with or without a palpable mass), ascites and jaundice in more severe conditions. Since its presentation is very protean, difficulty and subsequent delay in diagnosis are commonly encountered. As in our case, non-specific symptoms have already been present for months, none of which seemed to suggest any colonic involvement that may raise the suspicion of contiguous spread and/or fistulous formation. Therefore, a high index of suspicion is important to facilitate early diagnostics and subsequent treatment.

Apart from a good history and physical examination, imaging modalities combined with microbiological studies aid in the diagnosis and confirmation of the abscess. A triple contrast-enhanced CT scan is useful to demonstrate the lesion, to rule

Table 1 Literature review of cases of hepatocolic fistula

Published cases	Aetiology
Morris, 1983 ¹²	Hepatic hydatid cyst
Ortiz, 1988 ¹³	Hepatic hydatid cyst
Stambuk, 1991 ¹⁴	Hepatic hydatid cyst
Satoh, 1994 ¹⁵	Pyogenic liver abscess after percutaneous transhepatic abscess drainage
Berkelhammer, 1996 ¹⁶	Hepatocellular carcinoma (HCCA)
Lo Casto, 1997 ¹⁷	Hepatic hydatid cyst
Shin, 2006 ¹⁸	Adenosquamous CA of the liver
Kim, 2007 ²	Colonic foreign body (toothbrush)
Kim, 2007 ³	Colonic foreign body (fishbone)
Kim, 2011 ¹¹	Pyogenic liver abscess after radiofrequency ablation for HCCA
Stevens, 2013 ⁴	Liver abscess after laparoscopic cholecystectomy
Choi, 2013 ⁶	HCCA
Ishwar, 2015 ⁵	Amoebic liver abscess

out other aetiologies and to assess potential complications. Suspicion of a direct communication between the gut and the liver may be demonstrated by visualisation of air or rectal contrast within the abscess cavity.⁸ However, when neither air nor contrast is appreciated, a fistulogram—with instillation of contrast through a percutaneous drain in the abscess cavity—may confirm the presence of a patent tract.

As in our case, where there was a possibility of gastrointestinal tract involvement, endoscopic evaluation is essential. This permits direct visualisation of the area and allows tissue sampling for microbiological and/or histological evaluation. In our patient, an upper endoscopy and colonoscopy were performed. On EGD, no mucosal break that may indicate a fistula was appreciated despite radiological suggestion of infiltration to the duodenum. However, on colonoscopy, a pinpoint opening exuding purulent fluid was indeed observed at the hepatic flexure, consistent with the CT scan findings. Colonoscopy allowed mucosal sampling for tuberculosis PCR and histopathological examination to rule out malignancy and inflammatory bowel disease.

There are two essential aspects in the management of hepatocolic fistula. The first arm is antibiotic therapy. An empiric broad-spectrum parenteral antibiotic is instituted after adequate samples of cultures have been obtained. Mixed enteric facultative and anaerobic species are the most common pathogens. In a retrospective analysis by Chan *et al*⁹ in 2005, *E. coli* and *Klebsiella pneumonia* were the most common isolates in the blood and abscess fluid. A similar pattern was also seen in another retrospective study by Seeto *et al*¹⁰ carried out almost a decade earlier. Other pathogens reported are: *Enterococcus*, *Staphylococcus*, *Streptococcus* sp, *Pseudomonas* sp and other Gram-negative rods and anaerobes.

The second arm of management is to ensure adequate drainage. The approach to drainage depends on the size and complexity of the abscess. A single abscess measuring 5 cm or less can either be managed with percutaneous catheter drainage or needle aspiration. However, for larger abscesses measuring at least 5 cm, percutaneous catheter drainage is the preferred approach.

This case report highlights the importance of early recognition and prompt drainage of the liver abscess to facilitate closure of the fistulous tract. A study by Ishwar *et al*⁵ described spontaneous closure of the fistula from a complicated amoebic liver abscess after needle aspiration and a course of antibiotics.

This, however, is not always the case and most have resorted to embolisation of the abscessocolonic fistula,¹¹ resection of the abscess–fistula complex with right hemicolectomy, or intestinal diversion in cases of refractory hepatocolic fistula.

Learning points

- ▶ This case describes the presentation of a hepatocolic fistula in a very large and complicated pyogenic liver abscess, which in this modern age is rarely encountered due to the advent of effective antimicrobial therapy.
- ▶ The case also demonstrates the pertinent workup of a patient with pyogenic liver abscess, especially the role of endoscopy and fistulogram in confirming the presence of a fistulous tract.
- ▶ It highlights the very protean clinical presentation of hepatocolic fistula and emphasises on early recognition, adequate antibiotic coverage and prompt surgical drainage to facilitate early closure of the fistulous tract.

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REFERENCES

- 1 Pang TC, Fung T, Samra J, *et al.* Pyogenic liver abscess: an audit of 10 years' experience. *World J Gastroenterol* 2011;17:1622–30.

- 2 Kim YM, Lee TH, Jung SH, *et al.* Hepatic abscess that formed secondary to fish bone and had a fistula with the ascending colon. *Dig Dis Sci* 2007;52:3515–18.
- 3 Kim IH, Kim HC, Koh KH, *et al.* Journey of a swallowed toothbrush to the colon. *Korean J Intern Med* 2007;22:106–8.
- 4 Stevens JL, Laliotis A, Gould SWT. Hepatocolic fistula: a rare consequence of retained gallstones after laparoscopic cholecystectomy. *Ann R Coll Surg Engl* 2013;95:e15–17.
- 5 Ishwar M, Tambat R, Srinivas NM. Nature heals: spontaneous resolution of liver abscess through hepato-colic fistula. *IJSS Case Rep Rev* 2015;1:27–9.
- 6 Choi NG, Moon OI, Kim JH, *et al.* Right side fixation of sigmoid colon with a hepato-sigmoidocolic fistula in patient with hepatocellular carcinoma and midgut malrotation. *J Korean Surg Soc* 2013;84:256–60.
- 7 Kim A, Chung R. Bacterial, parasitic, and fungal infections of the liver, including liver abscesses. In: Feldman M, Friedman L, Brandt L. *Sleisenger and Fordtran's gastrointestinal and liver disease*. 10th edn. Philadelphia: Saunders, 2016:1389–90.
- 8 Gandham VS, Pottakkat B, Panicker LC, *et al.* Hepatogastric fistula: a rare complication of pyogenic liver abscess. *BMJ Case Rep* 2014;2014:pii: bcr2014204175.
- 9 Chan KS, Chen CM, Cheng KC, *et al.* Pyogenic liver abscess: a retrospective analysis of 107 patients during a 3-year period. *Jpn J Infect Dis* 2005;58: 366–8.
- 10 Seeto RK, Rockey DC. Pyogenic liver abscess: changes in etiology, management and outcome. *Medicine (Baltimore)* 1996;75:99–113.
- 11 Kim JY, Kwon YH, Lee SJ, *et al.* Abscesso-colonic fistula following radiofrequency ablation therapy for hepatocellular carcinoma: a case successfully treated with histoacryl embolization. *Korean J Gastroenterol* 2011;58:270–4.
- 12 Morris DL, Smith WD, Alexander-Williams J. Colohepatic fistula due to hydatid disease. *World J Surg* 1983;7:797–8.
- 13 Ortiz H, Carmona JA, Perez-Cabañas I. Colohepatic fistula due to hydatid disease. Report of a case. *Dis Colon Rectum* 1988;31:546–7.
- 14 Stambuk J, Karelovic S, Chamorro M, *et al.* Colo-hepatic fistula secondary to hydatid disease. Clinical case. *Rev Med Chil* 1991;119:181–2.
- 15 Satoh H, Matsuyama S, Mashima H, *et al.* A case of hepatocolic fistula after percutaneous drainage for a gas-containing pyogenic liver abscess. *J Gastroenterol* 1994;29:782–5.
- 16 Berkelhammer C, Janarthana B, Bhagavan M, *et al.* Hepatocolic fistula and lower GI bleeding in hepatoma. *Am J Gastroenterol* 1996;91:2625–6.
- 17 Lo Casto A, Salerno S, Grisanti M, *et al.* Hydatid cyst of the liver communicating with the left colon. *Br J Radiol* 1997;70:650–1.
- 18 Shin JU, Jung JT, You SS, *et al.* A case of primary adenosquamous carcinoma of the liver with formation of colonic fistula. *Korean J Gastroenterol* 2006;48:360–4.

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