



SHORT ORIGINAL ARTICLE / *Gastrointestinal imaging*

Superinfection of focal liver lesions after bile duct procedures

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KEYWORDS

Liver abscess;
Biliary enteric
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Bile ducts;
Focal liver lesion

Abstract

Objectives:

Pyogenic liver abscess is a rare condition in the general population. The source of infection is most often biliary, and more rarely gastrointestinal via the portal tract, or even hematogenic. Other than in special contexts (scarring after radiofrequency ablation), focal liver lesions are not a usual risk factor for hepatic abscesses in patients with a history of bile duct procedures (sphincterotomy, biliary stenting, biliary enteric anastomosis).

Materials and method - results: We report four cases of focal liver lesions (two patients with benign lesions of the biliary cyst type and two other patients with lesions due to pancreatic cancer) complicated by a superinfection in patients with a history of bile duct procedures. There were no predisposing factors other than a context of cancer or diabetes.

Conclusion: Superinfection of a focal liver lesion should be considered when there is a suggestive clinical picture and a change in the appearance of the lesion in patients with a history of bile duct procedures in a context of cancer or diabetes.

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Pyogenic liver abscess is a rare condition in the general population; its incidence is approximately 10–20 cases per 100,000 [1]. It consists of a collection of pus in stratified or destroyed hepatic tissue, and its etiology – when one is found – is primarily biliary or gastrointestinal, and sometimes promoted by immunosuppression or diabetes [2]. It has

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now been firmly established that abscess formation in hepatic territory that has been treated with radiofrequency ablation or chemoembolization is promoted by the presence of a biliary enteric anastomosis [3–5]. However, we have found no articles in the literature illustrating the increased risk of spontaneous superinfection of preexisting focal liver lesions due to bile duct procedures. We present four cases of liver abscesses as complications of biliary cysts or liver metastases in patients with a history of bile duct procedures.

Case studies

Case no. 1

A 68-year-old man followed for adenocarcinoma of the head of the pancreas was treated by cephalic duodenopancreatectomy and biliary enteric anastomosis. Two years later, during adjuvant chemotherapy, a metastatic lesion appeared in segment 2 and then another in segment 5, revealed by an MRI of the liver. Three months later, the patient was taken to the emergency room for morphine-resistant violent right hypochondrial pain, accompanied by an inflammatory syndrome on the laboratory work-up with a C-reactive protein (CRP) of 42 mg/L (normal range < 6 mg/L) and hyperleukocytosis of > 10,000/mm³. The abdominopelvic CT scan showed that the segment 5 lesion had increased in size, with liquefaction in the center (Fig. 1). An ultrasound-guided needle biopsy confirmed the infection, as the specimen contained numerous impaired polymorphonuclear leukocytes, multidrug sensitive *Escherichia coli*, and *Streptococcus anginosus*. Antibiotic therapy was adjusted based on the sensitivity testing (tazocillin, switched to a combination of amoxicillin and levofloxacin) and administered for 3 weeks, with a rapidly favorable clinical outcome.



Figure 1. Case 1. A 68-year-old man followed for pancreatic adenocarcinoma, treated by cephalic duodenopancreatectomy, with liver metastases. Abdominopelvic CT scan with injection of contrast product. Hypodense fluid-filled lesion with ring-pattern contrast uptake.

Case no. 2

A 73-year-old man underwent cephalic duodenopancreatectomy and biliary enteric anastomosis for adenocarcinoma of the head of the pancreas. The postoperative course was complicated by a pulmonary embolism and deterioration of the patient's condition. The adjunctive chemotherapy was postponed. A follow-up abdominopelvic CT scan showed multiple hypodense hepatic images with a metastatic appearance.

The patient was admitted through the emergency room shortly afterward for marked sepsis with a fever of 40 °C, leukocytes of 40 G/L (normal range < 10 000/mm³), and a CRP of 192 mg/L. Empirical antibiotic therapy with tazocillin and gentamycin was started immediately. The MRI of the liver (Fig. 2) clearly showed that at least two of the hepatic lesions had increased in size, and had hyperintense fluid content on T2-weighted images, and ring-pattern enhancement on the sequences after injection of gadolinium. The blood cultures were positive for *Klebsiella* and *Enterococcus*. The needle biopsy of one of the hepatic lesions corroborated both the *Enterococcus* superinfection and the presence of tumor cells, thus confirming the metastasis of pancreatic adenocarcinoma. The antibiotic therapy was adjusted to a combination of imipenem, vancomycin, and amikacin, which resulted in partial regression of the inflammatory syndrome (CRP 132) and apyrexia. Unfortunately, the patient progressed to cachexia and death a few weeks later.

Case no. 3

A male patient was followed for adenocarcinoma of the head of the pancreas, revealed by pruritus, deterioration of the patient's condition, weight loss of 14 kg, and repeated septic episodes of the angiocholitis type. While awaiting the preoperative workup, a biliary stent was placed endoscopically, which improved the cholestasis and the infectious syndrome. The patient also had numerous single biliary cysts. The hepatic MRI performed during an episode of angiocholitis (Fig. 3) showed that some of the biliary cysts had changed, with a fluid/fluid level and marked peripheral contrast uptake. The CRP was initially 43 mg/L. A blood culture grew *E. coli*. Antibiotic therapy was initiated with amoxicillin and clavulanic acid, resulting in improvement in the patient's condition (+6 kg) and normalization of the CRP. The clinical outcome was also favorable with antibiotic therapy, with regression of the radiologic images, a decrease in the size of the complicated cysts, and disappearance of the ring-pattern contrast uptake.

Case no. 4

A 68-year-old diabetic woman was followed for inoperable adenocarcinoma of the pancreas treated palliatively with a simple biliary enteric bypass. During the initial workup, two single biliary cysts were discovered. Chemotherapy was then initiated with Gemzar. After one line of chemotherapy, the patient was hospitalized for severe sepsis, but no portal of entry was found. The patient was febrile with a CRP of 50, but no hyperleukocytosis. The only etiological explanations were an outright change in appearance on the CT scan (Fig. 4) of one of the biliary cysts, which increased

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