

Liver Abscesses Caused by *Streptococcus milleri*: An Uncommon Presenting Sign of Silent Colonic Cancer

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Colorectal cancer is one of the most prevalent cancers. Common presenting symptoms are well known, but it is less commonly recognized that unusual infections may herald the presence of such cancer. We describe a patient in whom colon cancer presented clinically with liver abscesses, without evidence of liver metastases. Effective management of pyogenic liver abscesses requires identification and treatment of the underlying cause in addition to elimination of the abscesses.

Patient Description

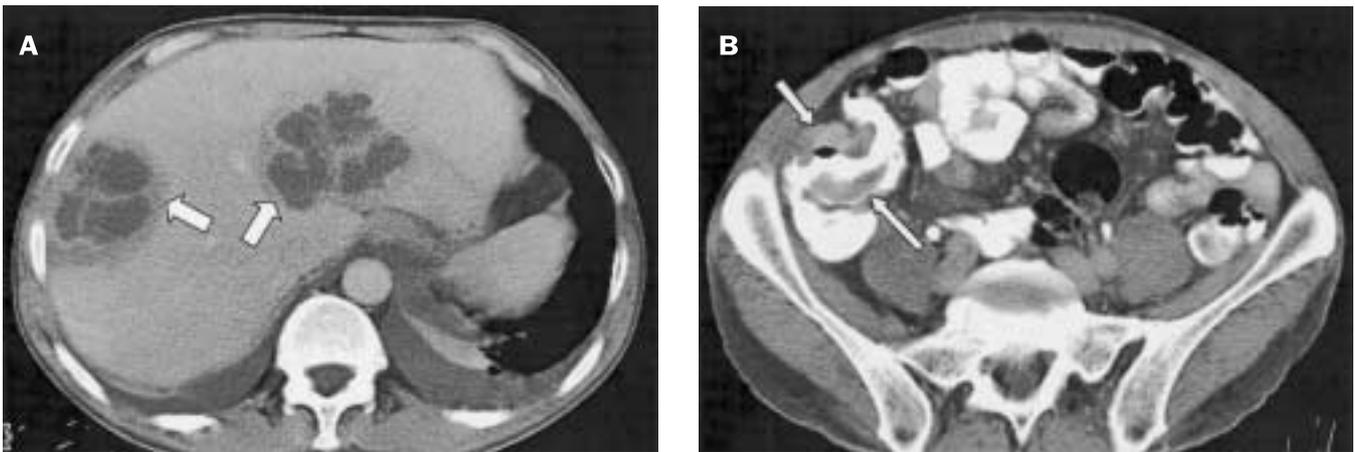
A 64 year old man was admitted to the hospital suffering from right upper abdominal pain, high fever and chills lasting for 2 days. His medical history was unremarkable. The patient did not report altered bowel habits, loss of weight or loss of appetite. Physical examination revealed pallor, a temperature of 38.4°C, enlarged liver, and severe tenderness of the epigastrium and the right upper abdomen, without peritonitis. Significant laboratory data included: hemoglobin of 9.6 g/dl, white

blood cell count 13,060, aspartate aminotransferase 222 IU/L, alanine aminotransferase 270 IU/L, alkaline phosphatase 358 IU/L, gamma-glutamyltranspeptidase 245 IU/L, lactate dehydrogenase 891 IU/L, total bilirubin 26 mol/L, alpha-fetoprotein 1.6 ng/ml, and carcinoembryonic antigen level 1.3 ng/ml. Chest X-ray revealed an elevated right diaphragm. Abdominal ultrasound demonstrated a round non-homogeneous lesion 4 x 5 cm in size located in the right lobe of the liver.

The patient was treated with broad-spectrum antimicrobial treatment but the pyrexia persisted. Computed tomography demonstrated bilateral pleural effusion accompanied by partial atelectasis of the lower lobe of the right lung, two large lobular septated lesions located in the right lobe of the liver, and a space occupying lesion in the cecum [Figure]. Blood cultures were positive for *Streptococcus milleri*. Echocardiography revealed no vegetations.

CT-guided percutaneous drainage of the liver abscesses yielded frank pus, and

catheters were left in the cavities for drainage. *S. milleri* was cultured from the aspirate and pathologic examination revealed no malignant cells. Following drainage and an appropriate antibiotic regimen, the patient's clinical condition and laboratory tests improved dramatically. On the sixth day of hospitalization a colonoscopy was performed, demonstrating a 30 mm polypoid tumor in the proximal ascending colon. Biopsies were positive for adenocarcinoma. Twelve days later the patient underwent right hemicolectomy. Operative findings demonstrated a large inflammatory cecal mass involving the appendix and the terminal ileum. No additional hepatic lesions were found. Histologic examination of the surgical specimen revealed moderately differentiated adenocarcinoma of the colon involving all layers of the intestinal wall without involvement of lymph nodes. The postoperative course was uneventful. CT done 6 months later demonstrated almost complete resolution of the hepatic lesions.



[A] Axial images of abdominal CT scan with intravenous contrast demonstrating two large lobulated hypodense lesions in both lobes of the liver (white arrows). Septations and rim enhancement are also seen. **[B]** Lower sections of the CT scan showing an "apple core" lesion in the cecum (white arrow).

Comment

There are six currently described mechanisms whereby bacteria can invade the liver parenchyma: ascending biliary infection, portal bacteremia, septicemia, direct extension from intraperitoneal infection, direct trauma to the liver, and secondary infection of metastatic cancer.

The etiology and pathogenesis of liver abscesses have undergone a significant change in recent years. In the past, appendicitis with rupture and subsequent spread of infection was the most common route for the development of liver abscesses. Currently, associated disease of the biliary tract is most often the etiology.

Pyogenic liver abscesses are a rare first manifestation of colonic carcinoma. There are only a few reports in the literature of colonic carcinoma as an underlying cause of pyogenic abscesses of the liver in the absence of hepatic metastases [1,2]. Interestingly, in some of these reports colon carcinoma was discovered well after the liver abscesses resolved. An association of malignancy was established only in retrospect. After reviewing the literature, we believe this patient represents the first reported case of colonic carcinoma presenting with liver abscesses caused by *S. milleri* in the absence of metastasis.

S. milleri is a facultatively anaerobic, catalase-negative, gram-positive coccus displaying either alpha (viridans) or gamma hemolysis with approximately the same frequency. It can be differentiated from other *S. viridans* by chemical and physiolo-

gic reactions. *S. milleri* is part of the normal flora found in the gingiva, pharynx, vagina, and gastrointestinal tract. Several studies have shown that these streptococci are important pathogens in a wide variety of pyogenic infections.

Although *Escherichia coli* and other gram-negative rods and anaerobic bacteria are known to be the major causative pathogens of pyogenic liver abscesses, streptococcal species are isolated in 10–30% of pus aspirated from hepatic abscesses and probably play an important role in the pathogenesis of this disease [3].

Hematogenous spread via the portal venous system may have been the cause for the development of hepatic abscesses in this patient. The tumor did not cause macroscopic perforation of the colon, but it possibly enabled colonic bacteria to penetrate through a friable mucosal barrier and invade the portal venous system.

CT scan is probably the most useful aid in diagnosing and localizing hepatic abscesses [4]. In addition to its high sensitivity it can be used to visualize associated intraabdominal pathology and as a guidance in percutaneous drainage of abscesses. The distinction between hepatic malignancy and hepatic abscess is best made by needle aspiration biopsy.

In contrast to past years, the treatment of choice for pyogenic liver abscesses is ultrasound or CT-guided percutaneous drainage with broad-spectrum antimicrobial therapy. Surgical drainage is recommended only in cases in which percutaneous drainage has failed or when

further surgical intervention is needed. The efficacy of medical treatment does not obviate the need to diagnose underlying diseases, particularly of the gastrointestinal tract. This is especially true for patients with multiple abscesses since the proportion of malignancies in this group is double compared with the single abscess group [5]. In conclusion, we suggest that patients presenting with anaerobic liver abscesses should alert the clinician to search for silent colonic cancer. Positive response to medical treatment does not rule out this possibility.

References

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