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CASE REPORT

Hepatic Abscess with Biliary Obstruction Mimicking Cholangiocarcinoma—a Case Report

Heejin Kwon [1]

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Introduction

Mass-forming intrahepatic cholangiocarcinoma appears varying appearance, but usually appears as homogeneous low attenuated mass with irregular peripheral enhancement and accompanied by peripheral intrahepatic dilatation [1–3]. Awareness of the morphologic characteristics of intrahepatic cholangiocarcinoma is important for differentiation from other non-tumorous lesions such as hepatic abscess [4]

However, we present a case of hepatic abscess with mimicking a typical intrahepatic cholangiocarcinoma accompanied perilesional biliary dilatation who presented with leukocytosis.

Case Report

An 86-year-old man was admitted to the hospital with intermittent fever occurring over the past 2 weeks. He also complained of anorexia and progressive general weakness. His body temperature was 100–101°F. Prior to admission to our hospital, he had been investigated for the cause of fever at another hospital. Urine and blood culture had been negative.

Laboratory tests show a white blood test 10.32 × 10^3/μl. The results of other biochemistry result analysis of the blood were total bilirubin, 1.2 mg/dL (normal range 0.2–1.2); direct bilirubin, 0.8 mg/dL (normal range 0.0–0.2); aspartate aminotransferase (AST), 27 IU/L (normal range 10–40); alanine aminotransferase, 7 IU/L (normal range 5–45); alkaline phosphatase, 175 IU/L (normal range 100–325); CEA, 2.14 ng/mL (normal range < 5.0); CA 19–9, 18.57 U/mL (normal range < 37.0); and alpha fetoprotein (AFP), 2.57 ng/mL (normal range < 10.0). Hepatitis B surface antigen, hepatitis B e-antigen, and hepatitis C virus antibody were negative. His alcohol intake was social.

Ultrasonography reviewed a hypoechoic mass in the liver with proximal biliary tree dilatation (Fig. 1a). Computed tomography (CT) showed a 5-cm sized mass in the right anterior lobe of the liver, with contrast enhancing mass with progressive enhancement in dynamic phase (Fig. 1b–d) together with definite findings of biliary obstruction which present perilesional proximal biliary dilation. In MRI examination, the tumor was low signal intensity on T1-weighted image (Fig. 1e) and hyper signal intensity on T2-weighted image (Fig. 1f). Dynamic contrast-enhanced MRI with gadolinium ethoxybenzyl diethylenetriaminepentaacetic acid (Gd-EOB-DTPA) was performed. In the arterial phase following contrast injection, the tumor was enhanced peripherally (Fig. 1g). In the portal and delay phase, the tumor was progressive enhancement (Fig. 1h). In the hepatobiliary phase, the tumor was completely washed out (Fig. 1i), similar to findings in malignant tumor. Imaging diagnosis was mass-forming cholangiocarcinoma, but clinically, it was difficult to differentiate hepatic abscess or inflammatory pseudotumor from cholangiocarcinoma. We attempted ultrasound-guided needle biopsy, and the result was organizing abscess including inflammatory cell infiltration.

After 1 month later with antibiotics therapy, CT revealed disappeared previous hepatic mass and improved bile duct obstruction (Fig. 1j).

✉ Heejin Kwon
risual@dau.ac.kr

[1] Dong-A University Medical Center, Busan, Republic of Korea

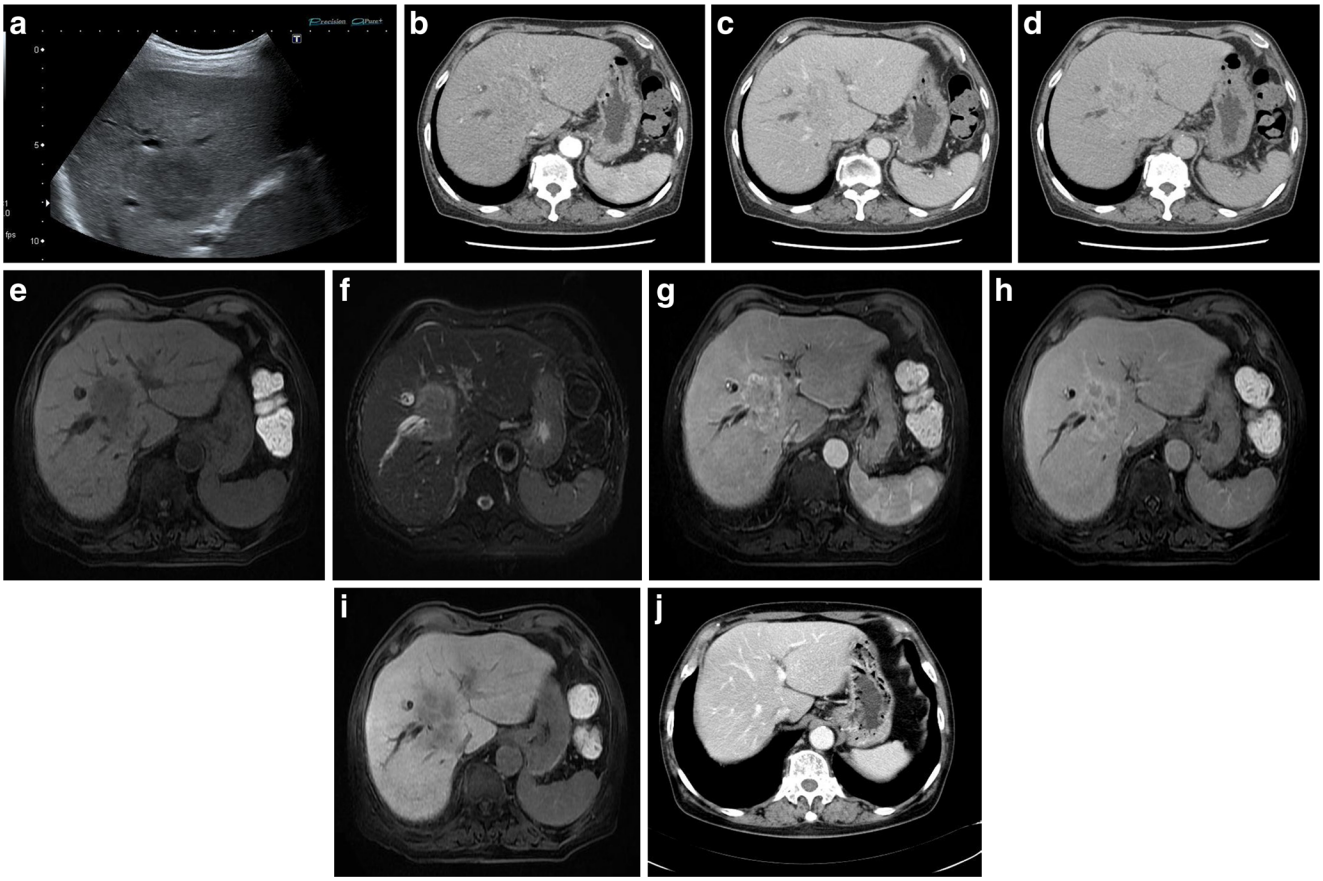

Fig. 1 An 86-year-old man presenting intermittent fever and general weakness. **a** Ultrasonography shows a hypoechoic mass in the right anterior liver with proximal biliary tree dilatation. **b**–**d** Axial CT image shows poor enhancement at arterial phase (**b**) and progressive centripetal enhancement at portal (**c**) and delay phase (**d**). **e**–**f** The tumor shows low signal intensity on T1-weighted image and hyper signal intensity on T2-weighted image. **g**–**i** After administration of Gd-Eob-DTPA, dynamic-enhanced MR image presents a lobulated mass which shows rim enhancement at arterial phase (**g**), and progressive enhancement at portal phase (**h**) associated with peripheral biliary dilatation. The mass did not enhance on hepatobiliary phase (**i**). **j** Follow-up CT images show the completely resolved hepatic mass with disappeared biliary tree dilatation in the liver

Discussion

Although H. pylori infection causes inflammation in the body and promotes Th17 cells to cause cancer [5], this study showed that inflammation did not actually cause cancer but showed cancer-like imaging findings.

Pyogenic hepatic abscess results from an infectious process of bacterial origin associated with destruction of the hepatic parenchyma and stroma. *E. coli*, Klebiella, and Enterobacter were the most commonly isolated microorganism [6]. Various morphologic and imaging features of pyogenic hepatic abscess are reported. The abscess cavity is usually hyperintense on T2-weighted image and hypointense on T1-weighted image [7–9]. Some abscess cavity could be revealed that layering low signal intensity debris on T2-weighted image is a relatively characteristic finding in abscess or signal void by air containing abscess [10]. The morphology of abscesses becomes clearer after gadolinium administration with enhancement of the abscess wall [10]. At arterial phase, intense arterial enhancement of abscess wall was present and persists on delay phase, but the center of abscess cavity usually did not enhance on any phase [7].

The "cluster sign" demonstrates multiple abscesses surrounding a large abscess [11]; perilesional edema, described as a "double target sign", could be axially features suggestive hepatic abscess [7–9]. Some kinds of malignant hepatic tumor including mass-forming cholangiocarcinoma, hepatocellular carcinoma, metastasis, and lymphoma could have possessed ring enhancement. In many of these lesions, the ring enhancement observed on arterial phase progressed in a centripetal fashion, usually associated with decrease in signal intensity on delayed images [12, 13].

Our case manifests as a mass with proximal ductal dilatation, which may show progressive enhancement at CT and MR imaging. These features represent typical mass-forming cholangiocarcinoma [1].

The biliary dilatation may be a secondary finding of the underlying fibrotic stricture or may itself represent hidden small tumor. However, in the present case, the biliary dilatation was completely disappeared at follow up CT; this means that biliary dilatation was occurred by abscess itself.

Conclusion

This paper reports for the first time the atypical features of pyogenic hepatic abscess using Eob-DTPA MRI and CT, which is difficult to differentiate from mass-forming cholangiocarcinoma. In addition, even though the imaging features are consistent with the malignant tumor, needle-guided biopsy is actively implemented to ensure when clinically suspected.

Compliance with Ethical Standards

Conflict of Interest The authors declare that they have no conflict of interest.

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