INTRODUCTION

A hemangioma is the most common primary hepatic tumor with a prevalence estimated to range between 0.35 and 7%.

It is normally quiet benign and gives rise to no or minimal symptoms. Thus, many hepatic hemangioma tend to be found incidentally. With the typical hemangioma, imaging modalities are highly reliable for diagnosis. But, atypical imaging features of a hepatic hemangioma may lead to misdiagnosis and confusion with other benign lesions. In addition, it is very important to differentiate these tumors from malignant lesions, especially in patients with a high risk for malignancy. Here, we report a hepatic hemangioma with an atypical radiological feature in abdominal computed tomography (CT) and ultrasonography (US) in a patient with chronic hepatitis C, diagnosed by gadoxetate disodium (primovist®, Bayer HealthCare, Berlin, Germany) which is the innovative liver cell-specific contrast medium was done, and the patient was diagnosed as hepatic hemangioma. (Journal of Liver Cancer 2015;15:36-40)

Keywords: Hepatitis C; Hemangioma; Gadoxetate disodium; Magnetic resonance imaging
CASE REPORT

A 52-year-old woman came to our hospital for further evaluation of a hepatic mass detected by abdominal US in other clinics. The patient was a chronic alcohol abuser and diagnosed as a hepatitis C virus (HCV) carrier with serum positive HCV antibody for the first time. Laboratory data revealed that AST 302 IU/L (normal 0-37 IU/L), ALT 127 IU/L (normal 0-41 IU/L), total bilirubin 2.7 mg/dL (normal 0.2-1.3 mg/dL), PT INR 1.28 (normal 0.85-1.15), albumin 3.5 g/dL (normal 3.8-5.3 g/dL), g-GTP 141 IU/L (normal 7-32 IU/L), platelet count of 31,000/uL (normal 150,000-400,000/uL), a white blood cell count of 4,030/uL (normal 4,000-10,000/uL), hemoglobin of 11.6 g/dL (normal 13.0-17.0 g/dL), PTT 33.2 sec (normal 27.0-43.3 sec), and amylase 22 U/L.

Figure 1. The contrast enhanced abdominal CT findings (arrows). A hepatic mass shows peripheral nodular enhancement only on contrast enhanced delayed phase (D) and persistent central irregular shaped low attenuation on the precontrast (A) and contrast enhanced arterial (B), portal (C) and delayed phases (D), not typical for hemangioma. Hepatic parenchymal attenuation is diffusely decreased due to fatty infiltration on precontrast image (A). CT, computed tomography.

Figure 2. The abdominal US image (arrow). A hepatic mass shows heterogeneous mixed iso- and slightly hypoechogenicity, not typical for hemangioma. US, ultrasonography.
(normal 0-220 U/L). Serum alpha-fetoprotein level of 9.0 ng/mL (normal 0-10 ng/mL) was within normal limit. Gastroendoscopic findings were nonspecific except for erosive gastritis.

On contrast enhanced abdominal CT, a 4 cm sized hepatic mass involving both segment 5 and 6 of right lobe was noted showing central irregular shaped low attenuation portion on the precontrast and delayed phase images, and peripheral nodular enhancement only on the delayed phase image, not typical for hemangioma (Fig. 1). The finding of abdominal US conducted in our hospital was not typical for hemangioma showing heterogenous mixed iso- and slight hypoechogenicity (Fig. 2). The confirmative diagnosis could be done by dynamic MRI using gadoxetate disodium (primovist®, Bayer Healthcare) which is the innovative liver cell-specific contrast medium. Gadoxetate disodium (primovist®, Bayer Healthcare)-enhanced dynamic MRI provides the dual benefit of dynamic imaging capability as well as delayed hepatobiliary phase imaging. On liver MRI, the lesion showed low signal intensity on the T1-weighted image (Fig. 3A) and bright signal intensity on the T2-weighted image (Fig. 3B). During the dynamic study, peripheral nodular enhancement was seen in the tumor with gradual central fill-in enhance-
ment, which was consistent with typical radiologic finding of hemangioma (Fig. 3C-I).

**DISCUSSION**

A hepatic hemangioma is the most common benign liver tumor, and differentiating it from malignant liver neoplasm is clinically important. For several years, abdominal US and CT were the choice of methods for imaging diagnosis. However, the patterns displayed for hemangioma can vary and differentiation between metastasis and hemangioma is a frequent problem.

In the last decade, the diagnostic accuracy of liver MRI in focal lesion detection and lesion characterization has been significantly improved by technical advances and development of liver-specific contrast media aiming at increasing sensitivity and specificity. Gadoxetate disodium (Primovist®, Bayer Healthcare) is a more recently developed liver-specific MRI contrast medium with the possibility of bolus injection. It is taken up selectively by liver cells (hepatocytes) where it accumulates and promotes enhanced visualization of liver tissue. This contrast agent may enable the image interpreter to detect lesions at a higher rate and to characterize focal liver lesions precisely. A comparison to biphasic CT has revealed an increase in lesion detection rate between 0.8% and 5.9%. Hammerstingl et al. reported sensitivities of 77.1% for CT and 87.42% for Gadoxetate disodium (Primovist®, Bayer HealthCare)-enhanced MRI for the detection and localization of lesions. Halavaara et al. reported that gadoxetate disodium (Primovist®, Bayer Healthcare)-enhanced MRI was able to correctly characterize lesions in 89% of cases. This was significantly better than the use of US or CT, which had a sensitivity of 80%. Gadoxetate disodium (Primovist®, Bayer Healthcare)-enhanced imaging was especially effective in detecting small lesions (< 1 cm).

In our study, the tumor might have been fed by an atypical blood supply caused by some abnormal vasculature due to hepatitis and fibrosis. This suggests the possibility that a tumor fed by an atypical blood supply may result in failure to exhibit a typical peripheral nodular enhancement due to the absence of large feeding arteries. This feature may present as fibrosis or inflammation of the surrounding liver parenchyma caused by chronic liver disease due to HCV infection. This case revealed the superior capability of gadoxetate disodium (Primovist®, Bayer Healthcare)-enhanced MRI to detect hepatic hemangioma compared with abdominal US or CT. On MRI, hepatic hemangioma presents with homogeneous hyperintensity on T2-weighted MRI, and initial intense peripheral nodular enhancement with gradual central fill-in enhancement on dynamic MRI. It evidenced qualitatively in terms of both diagnostic accuracy and sensitivity that the gadoxetate disodium set was significantly better than abdominal US or CT.

Gadoxetate disodium (Primovist®, Bayer Healthcare)-enhanced MRI is helpful for differential diagnosis of hepatic hemangioma with atypical radiologic finding from malignancy in a patient with a high risk for hepatocellular carcinoma.

**CONFLICTS OF INTEREST**

The authors have no conflicts to disclose.

**REFERENCES**


http://www.klcsg.or.kr