

Prognosis of small hepatocellular nodules detected only hepatobiliary phase of Gd-EOB-DTPA enhanced MR imaging as hyperintensity in cirrhosis or chronic hepatitis

Target audience: Radiologist, physician.

Purpose: The purpose of this study was to evaluate the prognosis of small hepatocellular nodules which showed hyper-intensity at hepatobiliary phase and could not be detected at vascular phase and other conventional (e.g., T1, T2 and diffusion-weighted) sequences of initial Gd-EOB-DTPA enhanced MR imaging in patients with cirrhosis or chronic hepatitis.

Methods: A total of 139 patients with cirrhosis or chronic hepatitis who underwent Gd-EOB-DTPA enhanced MR imaging several times between January 2008 and January 2012 were investigated. Among these patients, 15 patients had 127 nodules which showed hyper-intensity at hepatobiliary phase but were not demonstrated in any other MR images including T1, T2 and diffusion-weighted MR images and dynamic vascular phase images. These 15 patients were included in this study (11 males and 4 females with a mean age of 65.2 years, range: 42-81 years). The underlying causes of chronic liver disease were B viral hepatitis (n=4), C viral hepatitis (n=5), Both B and C viral hepatitis (n=1), alcohol-induced hepatitis (n=3), and hepatitis of unknown etiology (n=1). All patients were found to have liver cirrhosis (Child A=14, Child B=1, Child C=0). These nodules were observed on the follow-up MR examinations until hypervascular nature was detected in the nodules on the arterial-phase images. The observation period, initial size of nodules, changes of nodule size during follow-up periods were also recorded.

Results: The median observation period of 127 nodules was 612 ± 390.4 days (range, 199 to 1366 days). The mean initial size of nodules was 10.3 ± 2.1 mm (range, 5.9 to 17.1 mm). There was no nodule showing hypervascular transformation during the follow-up periods. There was no nodule which showed increase in size more than 2 mm diameter during the follow-up periods. There was no significant difference between the nodule size of the initial (10.3 ± 2.1 mm) and latest (10.5 ± 2.2 mm) MRI examinations.

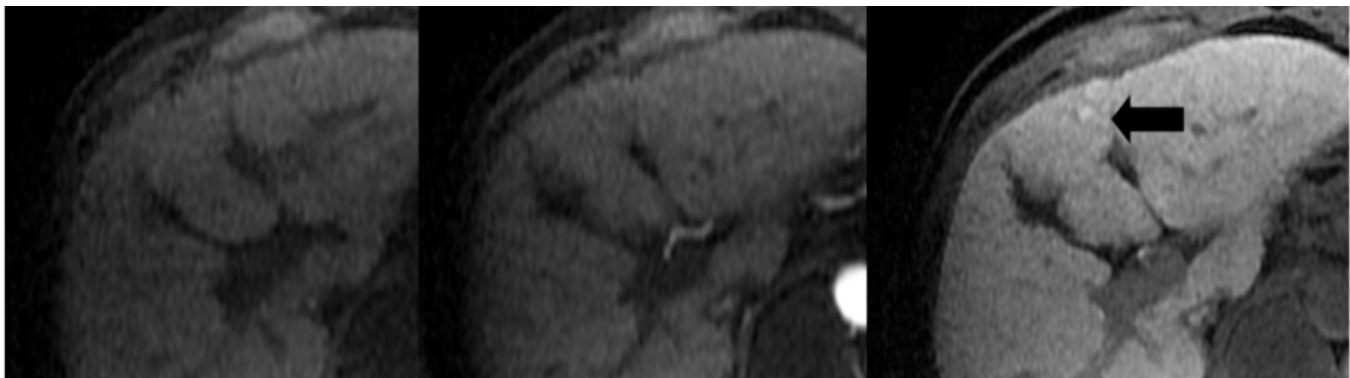
Discussion: In this study, there were no nodules which showed both hypervascularization and significant enlargement during follow-up periods. Short tumor-doubling times is one of the representative prognostic factors of HCC (1). Therefore, our results suggested that small hyper-intensity nodules at hepatobiliary phase without increase in size in this study might be clinically benign lesions. Some hyper-intensity nodules have been reported as hepapocellular adenoma (2) and HCC (3-5). However, these nodules had been already hypervascular on the initial MR examination. Accordingly, small hyper-intensity nodules in this study may not be the same as the nodules in these previous reports, because they could not be detected at vascular phase of Gd-EOB-DTPA enhanced MR imaging and other conventional sequences.

Conclusion: Our results indicate that small hepatocellular nodules which showed hyper-intensity at hepatobiliary phase but could not be detected at vascular phase and other conventional sequences of initial Gd-EOB-DTPA enhanced MR imaging in patients with cirrhosis or chronic hepatitis may be observable lesions with clinical benignity.

References:

1. Sakamoto M et al. Jpn J Clin Oncol. 1998.
2. Yoneda N et al. Jpn J Radiol 2012.
3. Kobayashi S et al. Eur. Radiol 2012.
4. Narita M et al. J Gastroenterology 2009.
5. Kitao A et al. Radiology 2010

Gd-EOB-DTPA-enhanced MR imaging



Precontrast

Arterial phase

Hepatobiliary phase