Hepatocellular Carcinoma in Liver Transplantation Candidates: Intraindividual Comparison of Gadobenate Dimeglumine (Gd-BOPTA) enhanced MR Imaging and Multiphasic 64-slice CT

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PURPOSE: To intraindividually compare gadobenate dimeglumine (Gd-BOPTA) enhanced MRI and 64-slice CT for detection of HCC in patients with cirrhosis.

METHODS: Thirty-six consecutive patients with 46 HCC nodules underwent MRI at 1.5T (Avanto, Siemens) and 64-slice CT (Sensation 64, Siemens) at a mean interval of 14 days (range, 10–20 days). All patients underwent transplantation within 60 days. MR acquisitions comprised unenhanced breath-hold T2W images and volumetric 3D Gd-BOPTA-enhanced (0.1 mmol/kg; MultiHance, Bracco®) T1W GRE images acquired at 25s, 60s, 180s (dynamic phase) and 90 min (hepatobiliary phase). 64-slice CT was performed with 0.6 x 64 mm collimation, 3-mm section thickness, 250 mAs, 120 kVp. A triple-phase protocol was started 18s, 60s and 180s after reaching a trigger threshold of 150 HU above baseline CT number of the aorta. Image analysis was independently performed by three observers in two sessions separated by 4 weeks. Findings were compared directly with explanted liver pathologic results. Diagnostic accuracy was evaluated using the alternative-free response receiver operating characteristic (AFROC) method. Sensitivity and specificity with corresponding 95% confidence intervals were determined. Informed consent and ethical approval were obtained.

RESULTS: The mean area under the AFROC curve for Gd-BOPTA MRI (0.92) was significantly higher than that of CT (0.84) (P<.05). On a lesion-by-lesion basis, the mean sensitivity (77%, 106/138) of Gd-BOPTA MRI was significantly higher than that of CT (66%, 91/138) (P<.05). Both techniques showed an equal mean specificity (90%, 123/138).

CONCLUSION: Gd-BOPTA-enhanced MRI is significantly more accurate and sensitive than 64-slice CT for the diagnosis of HCC in patients with cirrhosis prior to liver transplantation.
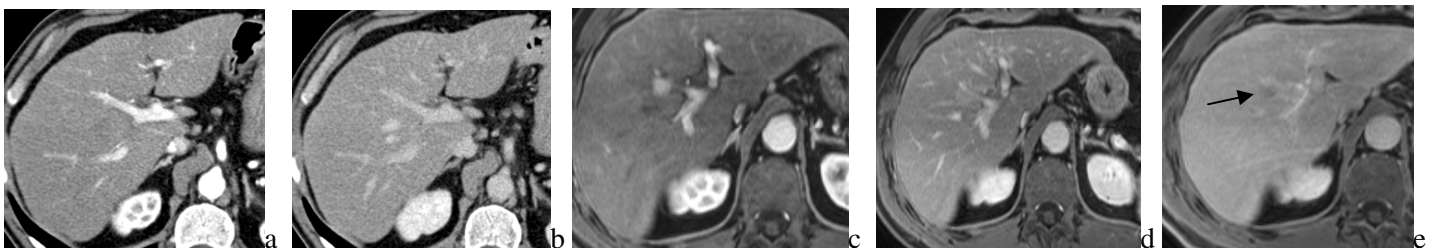
Figure1.Hepatitis C, and small HCC tumor (1 cm) that was not prospectively diagnosed by three readers at CT examination in a 60-year-old man Child A. **(a-b)**Transverse late arterial and equilibrium phases CT images show a chirrotic liver without an identifiable mass. **(c)** Transverse T1-weighted fat saturated image in arterial phase shows a small hypervascular HCC tumor which does not show wash out during the delayed phase **(d)**. The lesion is ascribed as low conspicuity (not HCC) **(e)** Transverse T1-weighted fat saturated image in delayed hepatobiliary phase (90 min) demonstrates the loss of signal of the lesion and correctly interpretated as an HCC tumor (arrow).