

Signal intensity of hepatic nodules detected by gadoxetic acid-enhanced MR imaging: Correlation with arterial and portal blood supply.

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Purpose

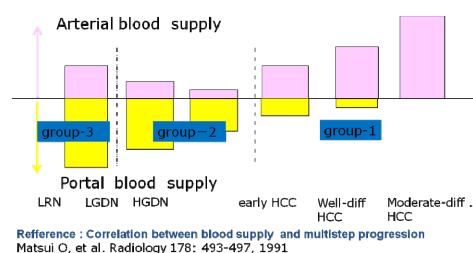
To investigate enhancement patterns of hepatic nodules in gadoxetic acid-enhanced MR imaging (EOB-MRI) in relation to arterial and portal blood supply.

Methods and Materials

Between May 2008 and 2010 October, 164 patients who were suspected of hepatocellular carcinomas (HCCs) underwent both EOB-MRI and angiographic CT. Among them 301 hepatic nodules larger than 1cm were detected by EOB-MRI in hepatobiliary phase. The nodules were divided into two groups with low signal intensity (SI) and iso- to high SI compared to surrounding hepatic parenchyma. Arterial and portal blood supplies were evaluated by CT during hepatic arteriography (CT-HA) and arterial portography (CT-AP). According to the enhancement pattern on CT angiography, nodules were categorized as 3 groups as follows; group-1: high density on CT-HA and low density on CT-AP, group-2: iso- to low density on CT-HA and low density on CT-AP, group-3: iso- to low density on CT-HA and iso- to high density on CT-AP.

Results

EOB-MRI in hepatobiliary phase showed 243 nodules were low SI and 58 nodules were iso- to high SI. The 243 low SI nodules were classified into 173 in group-1, 31 in group-2, and 39 in group-3. The 58 iso- to high SI nodules were classified into 25 in group-1, 7 in group-2, and 26 in group-3. The 198 nodules were categorized as group-1 and diagnosed as typical HCC. Among them 173 nodules (87.4%) showed low intensity, 25 nodules (12.6%) showed iso to high intensity on EOB-MRI in hepatobiliary phase (fig.a). SI of EOB-MRI in hepatobiliary phase did not always correlate with tumor blood supply.



	EOB Low 243	EOB Iso to High 58	Total
group-1	173(87.4%)	25(12.6%)	198
group-2	31(81.5%)	7(18.5%)	38
group-3	39(60%)	26(40%)	65

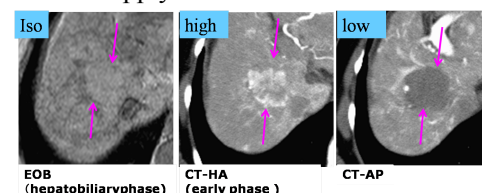


Fig. a) 50 years old woman with hepatitis C virus infection. EOB-MRI showed iso intensity nodule was seen at S5 (red arrow). CT-HA and CT-AP indicated increased arterial blood supply and decreased portal blood supply of this nodule which was diagnosed as typical HCC. 12.6 % of hypervascular HCC become iso to high intensity.

Conclusion

Some nodules showed discrepancy between SI on EOB-MRI in hepatobiliary phase and tumor blood supply reflecting the malignant transformation of HCCs. Diagnosis by EOB-MRI in hepatobiliary phase alone is impossible.