Contrast-enhanced Ultrasound Kupffer Imaging of Well-differentiated Hepatocellular Carcinoma

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Abstract

[Introduction]Sonazoid contrast-enhanced ultrasonography plays an important role in the evaluation of liver tumors, but we encounter difficulty in the diagnosis and evaluation of biological malignancy of well-differentiated hepatocellular carcinoma. In this study, we compared Sonazoid contrast-enhanced ultrasonographic (CEUS) Kupffer imaging and the pathological findings of well-differentiated hepatocellular carcinoma.

[Subjects and Methods] The subjects were 10 patients who underwent CEUS and were histologically diagnosed. CEUS Kupffer imaging findings and cells positive for CD68 staining, which is histopathological immunostaining of Kupffer cells, were compared. After intravenous bolus injection of Sonazoid at 0.075 ml/kg, imaging was observed until 60 seconds after injection as a vascular phase and then as Kupffer imaging from 10 minutes after injection. The ultrasonographic diagnostic device used was Aplio XG (Toshiba Medical Systems Corporation), and the MI value was set at 0.2～0.4.

[Results] In the CEUS vascular phase, no early intense staining was observed or the intensity was similar to that of the liver parenchyma. In the Kupffer image, the intensity was similar to or slightly higher than that of the liver parenchyma, but no apparently unstained region was noted. On CD68 staining of histopathological preparations, which is immunostaining of Kupffer cells, the number of positive cells decreased to about 1/2, was similar, or increased compared to that in the liver parenchyma, but no disappearance of positive cells was noted in any patient.

[Discussion] On CEUS Kupffer imaging, the intensity of well-differentiated hepatocellular carcinoma was similar to, weaker, or stronger than that of the liver parenchyma, but no apparently unstained region was noted, suggesting that Kupffer cells were not lost. The findings of histopathological immunostaining suggested that Kupffer cells are similarly present in well-differentiated hepatocellular carcinoma and the liver parenchyma.

[Conclusion]

When no apparently unstained lesion is noted in the liver parenchyma on Sonazoid contrast-enhanced ultrasonographic Kupffer imaging, Kupffer cells are present. For such cases, biologically low malignant well-differentiated hepatocellular carcinoma should be considered in the diagnosis.

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Keywords

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