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Liver fibrosis: comparison of MR elastography and gadoxetate disodium-enhanced MR imaging

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PURPOSE: To compare the MR elastography and gadoxetate disodium-enhanced MRI in staging hepatic fibrosis in patients with chronic liver disease or suspected focal hepatic lesion who subsequently undergone surgical resection.
MATERIALS AND METHODS: A hundred sixty-eight patients with chronic liver disease or suspected focal hepatic lesion underwent MR elastography and gadoxetate disodium-enhanced MRI. Hepatic fibrosis grades were histopathologically determined according to standard-disease specific classification. The performance of MRE and contrast enhancement index (CEI) in staging hepatic fibrosis was compared by receiver operating characteristic (ROC) curve analysis on the basis of histopathologic analysis. CEI was calculated as SIpost / SIpre, where SIpost and SIpre are liver-to-muscle SI ratio on hepatobiliary phase images and on nonenhanced images, respectively.
RESULTS: The Spearman rank correlation test indicated that MRE ($r = 0.802$, $p < .0001$) was more strongly correlated with hepatic fibrosis stage than it was with contrast enhancement index ($r = -0.378$, $p < .0001$). Area under the ROC curves (AUC) values for MRE were significantly larger than those for contrast enhancement index(CEI) in discriminating all stages of liver fibrosis ($p < .0001$ for $\geq$ F1, $\geq$ F2, and $\geq$ F3, $p = .0002$ for F4). Higher sensitivity and specificity were shown by MRE in predicting fibrosis scores $\geq$ F1 (95% and 87%), scores $\geq$ F2 (88% and 91%), scores $\geq$ F3 (79% and 89%), scores F4 (80% and 84%) compared with CEI (85% and 46%, 82% and 46%, 68% and 62%, and 65% and 76%, respectively).
CONCLUSION: MRE is superior to the Gadoxetate disodium-enhancement MR imaging in staging hepatic fibrosis.