

The Image Quality and the Accuracy of Four Different T2-weighted MR Imaging Pulse Sequences in the Detection of Focal Hepatic Lesions**이승수, 변재호, 홍혜숙, 원형진, 김아영, 신용문, 김표년, 하현권, 이문규**

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목적 :

To evaluate the image quality and diagnostic performance of a free-breathing navigator-triggered T2-weighted turbo spinechosequence with prospective acquisition correction (PACE-TSE), a free-breathing respiratory-triggered (RT) TSE, a breath-hold turbo spin-echo (BH-TSE), and a HASTE in the detection of focal hepatic lesions.

대상 및 방법 :

Fat-suppressed T2-WT MRI obtained with the four sequences in 50 patients with 41 solid and 79 nonsolid lesions were retrospectively analyzed. Two readers, blinded to clinical data, independently reviewed a total of 200 T2-WT imaging sets. In session 1, the reader asked to identify all solid and nonsolid hepatic lesions. In session 2, the reader reviewed all T2-WT images again and identified only solid hepatic lesions. The reader's confidence was graded by using a scale of 1-4 (1<50%; 4>95%). The degree of artifact and image sharpness was also evaluated on a five-point scale (1, unacceptable; 5, excellent). Diagnostic accuracy of four T2-WT sequences was evaluated by using the free-response receiver operating characteristic method. In addition, SNR for liver and CNR for hepatic lesions were also calculated.

결과 :

For the detection of all solid and nonsolid hepatic lesions, mean figures of merit (FOM) for four T2-WT MR sequences were 0.80 for RT-TSE, 0.79 for PACE-TSE, and 0.69 for HASTE and BH-TSE. For the detection of solid hepatic lesions, mean FOMs were 0.76 for PACE-TSE, 0.74 for RT-TSE, 0.61 for HASTE, and 0.60 for BH-TSE. The accuracy of hepatic lesion detection of PACE-TSE and RT-TSE was superior to those of BH-TSE or HASTE. However, there was no statistically significant difference in accuracy of hepatic lesion detection between PACE-TSE and RT-TSE. Minimal artifacts were seen in images with HASTE, and followed by RT-TSE, PACE-TSE, and BH-TSE ($p<0.001$). The best image sharpness was achieved with RT-TSE, and followed by PACE-TSE, HASTE, and BH-TSE. Liver SNR was significantly higher in HASTE than the other three sequences ($p<0.001$). PACE-TSE and RT-TSE had significantly higher lesion-to-liver CNR for solid lesion than BH-TSE and HASTE ($p<0.01$).

결론 :

All four T2-WT MR sequences had both advantages and drawbacks. RT-TSE and PACE-TSE provided images with better sharpness and they were more accurate in the detection of both solid and nonsolid hepatic lesions than HASTE and BH-TSE. Whereas, HASTE provided the fewest image artifacts and took the least time for image acquisition. The adequate T2-WT MR pulse sequence for the liver should be selected in consideration of the characteristics of those pulse sequences, the purpose of each MR examination, and patients' clinical condition.