GADOXETIC ACID-ENHANCED MRI OF LIVER: CAN 5 MIN-DELAYED HEPATOCYTE-PHASE IMAGING WITH HIGH FLIP ANGLE (30°) REPLACE 20 MIN-DELAYED HEPATOCYTE-PHASE IMAGING WITH LOW FLIP ANGLE (10°)?
Eun-Suk Cho and Jeong-Sik Yu
1Radiology, Yonsei University College of Medicine, Gangnam Severance Hospital, Seoul, Korea

**Background:** To increase the flip angle (FA) from 10-15° to 30–35° in gadoxetic acid-enhanced hepatocyte phase MR imaging (HPI) improved focal hepatic lesions (FHLs) detection and increased lesion-to-liver contrast noise ratio (CNR) because higher FA increases T1-weighting (1, 2). The sensitivity for hepatic metastases detection on HPI with 30° FA was significant higher than that on HPI with 10° FA at both 5 and 10 min delay time. But there were no significant differences of sensitivities between HPIs with 10° and 30° FA at both 15 and 20 min delay time (2).

**Introduction:** To compare 5 min-delayed HPI using 30° FA and 20 min HPI using 10° FA, regarding FHLs detection and lesion-to-liver CNR. And to determinate whether 5 min-delayed HPI using 30° FA could replace 20 min HPI using 10° FA, which led to 15 min timesaving.

**Methods:** 116 patients with 282 FHLs (malignancy n=146, benign n=136) underwent gadoxetic acid-enhanced MRI with 5 min-delayed HPI using 30° FA and 20 min HPI using 10° FA. Lesion-to-liver CNRs at both two HPI sets were calculated and compared. Three radiologists judged independently the presence of FHLs using a four-point scale.

**Results:** Mean CNR for FHLs on 5 min-delayed HPI using 30° FA (167.9 ± 84.1) were significantly higher than that on 20 min HPI using 10° FA (160.2 ± 79.5) (Fig. 1 and 2). However, mean CNR difference between two HPI sets was very small, such as 7.8 – 22.6. There was no significant difference at sensitivity of FHLs detection on two HPI sets for all three readers, irrespective of lesions’ malignancy or benignity and the size of FHLs.

**Conclusion:** Lesion-to-liver CNR and sensitivity of detection of FHLs on 5 min-delayed HPI using 30° FA were higher or similar to those on 20 min HPI using 10° FA in gadoxetic acid-enhanced MRI. This finding indicates that 5 min-delayed HPI using 30° FA provides similar diagnostic performance compared to 20 min-delayed HPI using 10° FA and could replace 20 min-delayed HPI with 15 min time-saving.

**References**

Fig 1. CNRs of FHLs on two HPI sets
Fig 2. A 66-year-old man with liver metastasis.