

Poster #: 9

Title of Abstract: Arterial mapping prior to transarterial chemoembolization (TACE) with high temporal resolution MRI in cirrhotic patients with hepatocellular carcinoma (HCC)

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Modality: MR

Organ System: GI

Intro: We hypothesize that the high spatio-temporal resolution contrast-enhanced liver images with multiple angiographic and arterial phases within a single breath-hold and robust fat suppression from a dual echo technique enables a depiction of vascular anatomy with acceptable quality for pre-treatment planning.

Purpose: To assess the quality of vascular roadmaps for transarterial chemoembolization from high spatio-temporal resolution contrast-enhanced angiographic and arterial phase MR images of cirrhotic patients with HCC.

Methods Used: After IRB approval 35 consecutive retrospectively identified cirrhotic patients with HCC (46 lesions) who underwent MRI with a dual-echo SPGR acquisition and a view-shared 2-point Dixon reconstruction. Visibility of the hepatic arteries (HA) and tumor feeding vessels (TFV) were graded on a 5 point scale. 25/46 lesions had catheter angiography done within 2 months of MRI that served as a gold standard to determine concordance of identified donor vessel (DV) to embolized segmental vessel (SV) feeding the tumor, presence of an extra-capsular vessel (ECV), and variant arterial anatomy.

Results of Abstract: The common and proper hepatic artery were visualized adequately in 100%, right in 94-97%, and left hepatic arteries in 94% and SV in 83% of cases. HA variants were detected with sensitivities 87-100% and specificity of 100%. TFV was seen in 80% lesions. In 84% of lesions with catheter angiography, the main DV to SV embolized was concordant. Detection of an ECV had 100% sensitivity and 95% specificity.

Discussion: High spatio-temporal resolution contrast enhanced liver MRI via view sharing yields multiple angiographic and arterial phases within a single breath-hold and enables depiction of vascular anatomy with acceptable quality and concordant findings with catheter angiography. Identification of variant arterial anatomy, ECV and main donor to SV to be embolized may aid pre-treatment planning in HCC.

Scientific and/or Clinical Significance? We have shown that MRI with a high spatio-temporal resolution technique can provide an adequate vascular roadmap to plan transarterial chemoembolization of hepatocellular carcinoma.

Relationship to existing work The performance of our technique was comparable or better to the reported performance of conventional 3D spoiled GRE MR imaging in hepatic vasculature mapping in previous studies with a single arterial phase.

N/A