

Poster #: 21

Title of Diffusion weighted MRI as a screening tool in cirrhotic livers.

Abstract:

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Modality: MR

Organ System: GI

Intro: Detection and characterization of focal liver lesions in patients with cirrhosis plays a major role in treatment planning. DWI imaging of the liver may prove efficacious and cost effective in stratifying patient follow up.

Purpose: To evaluate the role of diffusion weighted imaging as a potential screening tool for HCC in patients with cirrhosis.

Methods Used: This single institution retrospective study was performed after obtaining IRB approval. MRI scans of 37 patients who had undergone liver transplant were evaluated and findings correlated with liver explant data. Data was collected from August 2009 to April 2013. 25 male subjects and 12 female subjects age range 21-70 years were enrolled. All patients had MRI scans within six months of explant. MRI images from 17 subjects with liver lesions at imaging subsequently proven to be HCC at explant, and 20 controls without liver lesions by imaging and pathology were randomized. The studies were reviewed by three independent readers blinded to the MRI and pathology reports in two separate sittings. First, only the diffusion weighted images were interpreted. In the second sitting, the entire multiphasic MRI exam was reviewed. A consensus read was obtained by two separate radiologists who had access to the patients' explant data.

Results of Abstract: Averaged results of the three independent readers demonstrated a sensitivity of 78% and specificity of 88% for DWI alone for detection of liver lesions, with a positive predictive value of 85% and a negative predictive value of 83%. The results of the review of the entire MRI exam showed a sensitivity of 86% and a specificity of 87% with a positive predictive value of 86% and a negative predictive value of 89%. McNemar Change test revealed no significant difference between the DWI and multiphasic study.

Discussion: In our study, diffusion weighted MRI has NPV and PPV comparable to contrast enhanced multiphasic MRI examination for hepatocellular carcinoma detection. DWI may have a role in screening patients with cirrhotic livers.

Scientific and/or Clinical Significance? Diffusion weighted liver MRI may impact patient care as an accurate cost effective method for screening patients with cirrhosis, aiding in determining the nature and timing of additional evaluation.

Relationship to existing work Investigation of liver DWI compared to complete multiphase MRI compared to explant data is limited

N/A