

2006-2007 MEDICAL STUDENT SUMMER RESEARCH DAY ABSTRACT OF POSTER

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Type abstract below and include a title and the name(s) of any collaborator(s).

Utility of diffusion weighted MR in distinguishing hepatic lesions

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Purpose: Diffusion-weighted MR has been widely used in the brain but less widely used in the abdomen. It has been recently shown to be helpful in distinguishing benign from malignant hepatic lesions in several recent studies. Many studies were small and did not include all types of lesions. We reviewed our experience to determine if there was a correlation between ADCs in common liver lesions.

Materials and methods: 542 lesions in 380 patients were evaluated using a SS-SE-EPI sequence with b value of 500. ADC values were measured in 112 hepatomas, 107 metastases, 166 hemangiomas, 95 cysts, 10 abscesses, 43 FNH, and 9 adenomas. Intraclass correlation was measured for agreement in ADC of different lesion types, pairwise comparisons were carried out with Tukeys studentized range test.

Results: There was high agreement in ADC for all lesion types. The mean ADC for hemangiomas was 2.26×10^{-3} mm²/sec, cysts 3.40, FNH 1.79, adenomas 1.48, abscesses 1.97, HCC 1.53, and metastases 1.64. The mean ADC for benign lesions was 2.50 and malignancies were 1.57. Using a cut off ADC value of 1.5 for malignant lesions had a sensitivity of 53%, specificity of 91%, PPV of 81%, and NPV of 74%. Cysts were easily distinguished from other lesions; however, there was overlap between FNH, adenomas, HCC and metastases.

Conclusions: Benign lesions have higher mean ADC values than malignant. Using a cut off ADC value of 1.5 has a high specificity for malignancy but low sensitivity. ADC values of solid benign lesions (FNH and adenomas) are similar to malignant lesions limiting its distinguishing value as cysts can be easily characterized by imaging.

J. M. M. L.

10/3/07

Preceptor's Approval (*please sign*)

Date

Role of Student in Project.

Sagar mastered basic clinical research skills such as data interpretation, statistical analysis, and scientific writing, as well as gained exposure to clinical radiology, including the efficacy of diffusion-weighted imaging (DWI) in detecting malignant liver lesions and differentiating them from benign lesions. Sagar had the opportunity to work one-on-one with several radiologists viewing and interpreting numerous MR Diffusion patient studies. He evaluated and measured ADC values strengthening his understanding of imaging technology.