

Time: 2:00:00 PM - 2:06:00 PM

Presenter: Clinton Jokerst, MD

Title of Abstract: Diffusion Weighted MRI for Staging and Predicting Response in Diffuse Large B-Cell Lymphoma: A Pilot Study

Institution: University of Arizona

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Modality: Multi

Organ System: Multi

Intro: Diffusion weighted MRI (DW-MRI) appears to be effective in staging non-lymphomatous tumors, but its usefulness in staging and assessing treatment response in diffuse large B-cell lymphoma (DLBCL) is unknown.

Purpose: To compare DW-MRI with PET/CT for staging and evaluating treatment response in DLBCL

Methods Used: Institutional review board approval was obtained for this study. DW-MRI and FDG-PET/CT were performed before chemotherapy in 12 patients with DLBCL and in 8 and 11 patients, respectively, after 2 cycles of chemotherapy. Pretreatment tumor sites and Ann Arbor stage by DW-MRI (b 50 and 800 sec/mm²) and PET/CT were compared. After cycle-2 chemotherapy, number of tumor sites and percent change in tumor size, ADCs and maximum standardized uptake value (SUVmax) were determined for the 8 patients who had DW-MRI and FDG-PET, and compared to treatment response based on International Working Group criteria.

Results of Abstract: There were 6 men and 6 women, median age 57.5 years. Overall agreement between DW-MRI and PET/CT for staging was 97% (60/62 tumor sites; 44/46 nodal and 16/16 extranodal lesions). Ann Arbor stage agreed in all patients between the two modalities. At interim assessment of 35 lesions meeting IWG criteria, the mean (\pm standard deviation) percent change from baseline was, 74% \pm 20% for tumor size and 83% \pm 9% for SUVmax; For ADC values, the median percent change was 85% ($p < 0.01$ versus baseline).

Discussion: This pilot study demonstrated that DW-MRI provides comparable information to PET/CT for staging DLBCL and as a biomarker of interim response to chemotherapy.

Scientific and/or Clinical Significance? Our results have implications for treatment. The data suggest that DW-MRI may allow for adaptive treatment strategies in DLBCL, with reduction in radiation burden associated with PET/CT imaging.

Relationship to existing work Prior studies assessing DW-MRI in lymphoma are few and have important limitations, such as non-uniformity of histologic subtypes of lymphoma and nonuniformity of experimental or reference-standard imaging.