

AbstractID: 3055 Title: MRI and MR Spectroscopic Imaging of Cancer Therapy Assessment

Purpose: To describe the use of Magnetic Resonance Spectroscopic Imaging in the assessment of treatment response for prostate cancer and brain tumor patients.

Method and Materials: Specialized 3D MR spectroscopic imaging acquisition techniques were developed for both 1.5T and 3 T MR scanners. Novel analysis and display software was developed for the processing and interpreting the MR metabolic imaging data. These techniques were applied in brain tumor and prostate cancer cohorts prior to and following radiation and/or hormonal therapy. Changes in metabolite levels were calculated and correlated with treatment response measures.

Results: The MR spectroscopic imaging techniques demonstrated the ability to reliably detect metabolite levels at both 1.5T and 3 T. Significant metabolite ratios differences were observed between normal and cancerous tissues with greater spatial resolution at 3T. Following both successful hormonal therapy and radiation treatment, significant reductions in choline levels were observed in prostate cancer patients. Similarly decreases in choline correlated with therapeutic response in brain tumor patients and increased choline significantly correlated with recurrent/residual tumor.

Conclusion: These studies demonstrate the ability of MR spectroscopic imaging to detect metabolic differences between cancer and normal tissues in brain tumor and prostate cancer patients and the ability to detect metabolic changes following therapy.

Conflict of Interest (only if applicable):