



The Role of Magnetic Resonance-Guided Laser Ablation for Intracranial Metastatic Tumors

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Introduction

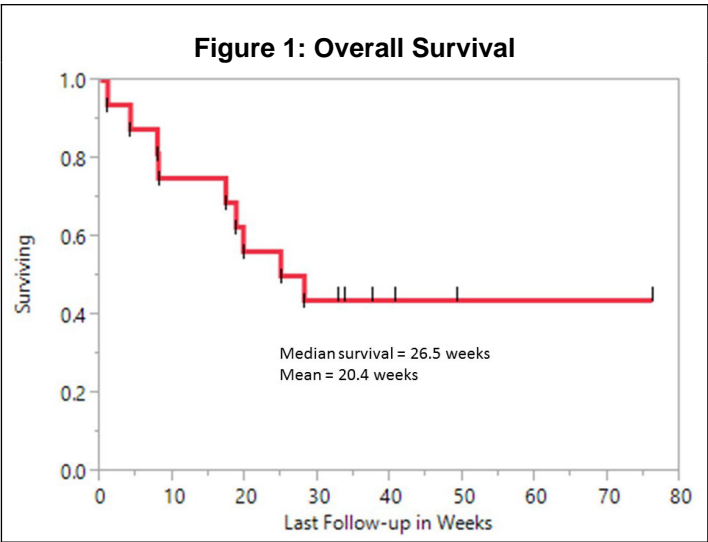
Magnetic resonance-guided laser-induced thermotherapy(MR-LITT) is a minimally invasive technique that shows promise in neuro-oncology due to its superiority in delivering precise minimally invasive thermal energy with minimal collateral damage. In this analysis we investigate initial data on its effect on brain metastases have progressed through radiation.

Methods

16 patients were identified over a 2 year period with intracranial metastases with clear evidence of radiological progression after treatment of radiosurgery. All patients received MR-LITT and then a follow-up MRI scan at 24 hours post treatment, at one month, and at each subsequent follow up visit. The primary end point of the study was local control of the ablated tumor and overall survival. Secondary endpoints include reporting the volume changes after LITT, steroid usage, and symptomatic relief.

Learning Objectives

Understand the safety and preliminary efficacy of LITT therapy with metastatic intracranial lesions which progress through radiation.



Results

16 LITT treatments were performed with the average age of 57.2years. All lesions were treated with prior radiosurgery. The average tumor volume was 4.0cm3 and ablation dosage was 12.3Watts. In total, 90.2% of the pretreatment lesion volume was ablated. The median overall survival was 26.5 weeks. The mean follow-up time was 28 weeks. In total, 9 patients died, 2 due to aspiration pneumonia and 7 due to extracranial disease progression. 12 of 16 patients showed no local disease progression at there last followup. Interesting, only 1 patient with >85% of tumor ablation had progression (p=0.01). There were no major complications.

Conclusions

MR-LITT is a promising technology for cerebral metastases resistant to radiosurgery. This initial study demonstrates that MR-LITT is safe and offers several advantages over other treatment methods. MR-LITT offers a reasonable alternative therapy for patients who are not open surgical candidates and have already undergone radiosurgery. Randomized studies are needed to evaluate its role as a treatment adjunct.

