

PubMed

Search

Display Settings:  Abstract

*Int J Radiat Oncol Biol Phys.* 2011 Oct 12. [Epub ahead of print]

## 7-Tesla Susceptibility-Weighted Imaging to Assess the Effects of Radiotherapy on Normal-Appearing Brain in Patients with Glioma.

[Lupo JM](#), [Chuang CF](#), [Chang SM](#), [Barani IJ](#), [Jimenez B](#), [Hess CP](#), [Nelson SJ](#).

Department of Radiology and Biomedical Imaging, University of California, San Francisco, San Francisco, CA.

### Abstract

**PURPOSE:** To evaluate the intermediate- and long-term imaging manifestations of radiotherapy on normal-appearing brain tissue in patients with treated gliomas using 7T susceptibility-weighted imaging (SWI).

**METHODS AND MATERIALS:** SWI was performed on 25 patients with stable gliomas on a 7 Tesla magnet. Microbleeds were identified as discrete foci of susceptibility that did not correspond to vessels. The number of microbleeds was counted within and outside of the T2-hyperintense lesion. For 3 patients, radiation dosimetry maps were reconstructed and fused with the 7T SWI data.

**RESULTS:** Multiple foci of susceptibility consistent with microhemorrhages were observed in patients 2 years after chemoradiation. These lesions were not present in patients who were not irradiated. The prevalence of microhemorrhages increased with the time since completion of radiotherapy, and these lesions often extended outside the boundaries of the initial high-dose volume and into the contralateral hemisphere.

**CONCLUSIONS:** High-field SWI has potential for visualizing the appearance of microbleeds associated with long-term effects of radiotherapy on brain tissue. The ability to visualize these lesions in normal-appearing brain tissue may be important in further understanding the utility of this treatment in patients with longer survival.

Copyright © 2011 Elsevier Inc. All rights reserved.

PMID: 22000750 [PubMed - as supplied by publisher]

[+](#) **LinkOut - more resources**