Radionecrosis of malignant glioma and cerebral metastasis: A diagnostic challenge in MRI.

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Abstract

Detecting a new area of contrast-enhancement at MRI after irradiation of malignant brain tumor arises the problem of differential diagnosis between tumor recurrence and radiation necrosis induced by the treatment. The challenge for imaging is to distinguish the two diagnoses given: the prognostic and therapeutic issues. Various criteria have been proposed in the literature based on morphological, functional or metabolic MRI. The purpose of this study was to perform an analysis of these tools to identify MRI best criteria to differentiate radiation necrosis lesions from malignant gliomas and brain metastases recurrence. For gliomas, the morphology of the contrast-enhancement cannot guide the diagnosis and the use of perfusion techniques and spectroscopy (multivoxels if possible) are necessary. In the follow-up of metastasis, a transient increase and moderate lesion volume is possible with a good prognosis. Morphological characteristics (volume ratio T2/T1Gd) and perfusion analysis provide valuable tools for approaching the diagnosis of radionecrosis.

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