

Radiation necrosis diagnosis

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Unfortunately, symptomatic [radiation necrosis](#) is notoriously hard to diagnose and manage. The features of RN overlap considerably with tumor recurrence and misdiagnosing RN as tumor recurrence may lead to deleterious treatment which may cause detrimental effects on the patient ¹⁾

Differentiating [radiation necrosis](#) from [tumor progression](#) on standard [magnetic resonance imaging](#) (MRI) is often difficult and advanced [imaging](#) techniques may be needed to make an accurate [diagnosis](#).

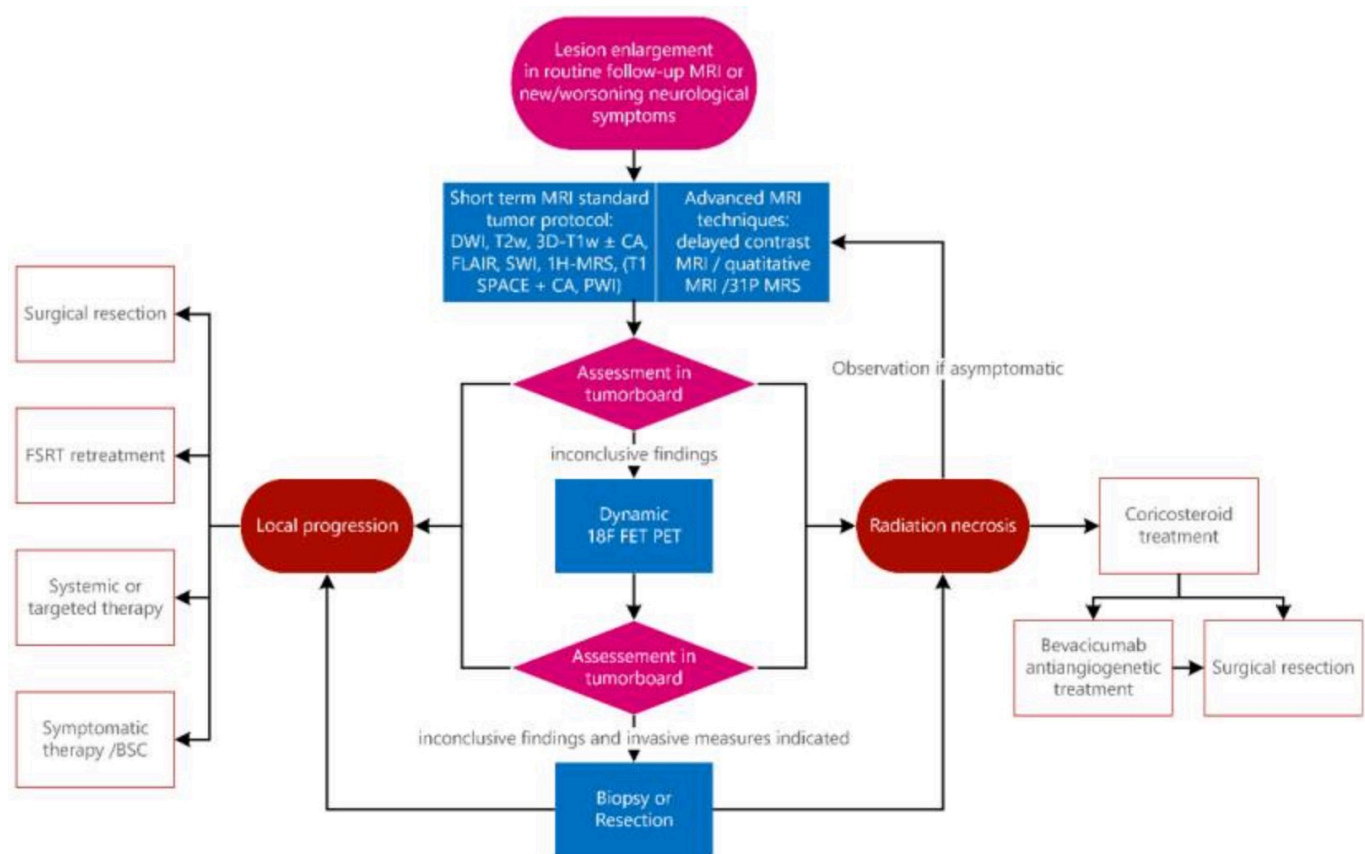
Mayo et al. performed a [literature review](#) addressing the radiographic modalities used in the diagnosis of [radiation necrosis](#).

Differentiating radiation necrosis from [tumor progression](#) remains a diagnostic challenge and advanced imaging modalities are often required to make a definitive diagnosis. If diagnostic uncertainty remains following conventional imaging, a multi-modality diagnostic approach with [perfusion MRI](#), [magnetic resonance spectroscopy](#) (MRS), [positron emission tomography](#) (PET), single photon emission spectroscopy (SPECT), and [radiomics](#) may be used to improve diagnosis.

Several imaging modalities exist to aid in the diagnosis of radiation necrosis. Future studies developing advanced imaging techniques are needed ²⁾.

Mangesius et al. provide the experience of a tertiary tumor [center](#) with this important issue in

neurooncology and provide an institutional pathway for dealing with this problem ³⁾.



Differential diagnosis

Radiation necrosis differential diagnosis.

¹⁾
Vellayappan B, Tan CL, Yong C, Khor LK, Koh WY, Yeo TT, Detsky J, Lo S, Sahgal A. Diagnosis and Management of Radiation Necrosis in Patients With Brain Metastases. Front Oncol. 2018 Sep 28;8:395. doi: 10.3389/fonc.2018.00395. PMID: 30324090; PMCID: PMC6172328.

²⁾
Mayo ZS, Halima A, Broughman JR, Smile TD, Tom MC, Murphy ES, Suh JH, Lo SS, Barnett GH, Wu G, Johnson S, Chao ST. Radiation necrosis or tumor progression? A review of the radiographic modalities used in the diagnosis of cerebral radiation necrosis. J Neurooncol. 2023 Jan 12. doi: 10.1007/s11060-022-04225-y. Epub ahead of print. PMID: 36633800.

³⁾
Mangesius J, Mangesius S, Demetz M, Uprimny C, Di Santo G, Galijasevic M, Minasch D, Gizewski ER, Ganswindt U, Virgolini I, Thomé C, Freyschlag CF, Kerschbaumer J. A Multi-Disciplinary Approach to Diagnosis and Treatment of Radionecrosis in Malignant Gliomas and Cerebral Metastases. Cancers (Basel). 2022 Dec 19;14(24):6264. doi: 10.3390/cancers14246264. PMID: 36551750; PMCID: PMC9777318.

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