

Outcomes of Adults Treated with Brain Hypofractionated Stereotactic Radiosurgery in an Established CNS Multidisciplinary Clinic for Radiation Oncology and Neurosurgery (RADIANS)

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Background

- Hypofractionated stereotactic radiosurgery (hfSRS) commonly used for management of primary and secondary malignant disease of the brain.¹
- Significant challenges in follow-up of patients treated with hfSRS to brain lesions in distinguishing pseudoprogression from tumor recurrence for which treatment and prognosis differ.²
- RADIANS community hospital, multidisciplinary CNS clinic where simultaneous evaluation with radiation oncologist and neurosurgeon.^{3,4}

Objectives

To determine rates of tumor control, pseudoprogression and tumor recurrence among adult patients with brain primary and secondary malignant disease treated at RADIANS with hfSRS.

Methods

- IRB Approval through Oregon Health & Science University (OHSU)
- Retrospective review of treatment outcomes of consecutive adult patients treated for brain tumors between June 2017 - December 2019
- Post-treatment imaging and/or histology reviewed when available for treatment response

Results

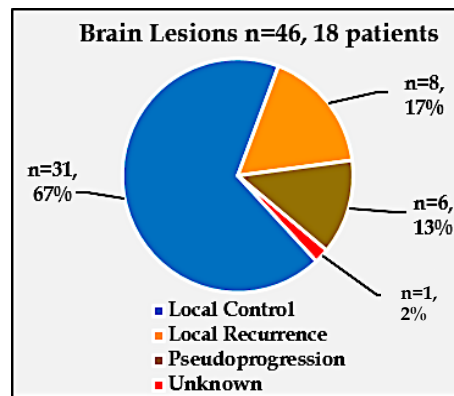
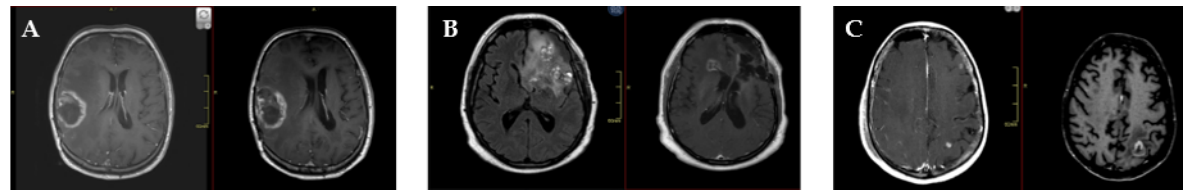


Table 1 Management and outcomes among patients (n=8) with clinical evidence of progression after brain hfSRS

	Histology	Treatment*	Outcomes
Local Recurrence (8)	Oligodendroglioma (1)	A+S	Progressed
	Metastatic NSCLC (1)	C+S	Decreased Tumor Size
	Metastatic Breast (6)	Gamma Knife Radiation	Decreased Tumor Size
Radiation Necrosis (5)	Oligodendroglioma (1)	C+R+A+Tumor Treating Fields	Decreased Tumor Size
	Metastatic NSCLC (1)	C+S	Decreased Tumor Size
	Metastatic NSCLC (2)	C+S+A	Decreased Tumor Size
	Metastatic NSCLC (1)	C	No New Growth
Likely Necrosis	Metastatic NSCLC (1)	Repeat Imaging	No New Growth
Unknown	Metastatic Breast (1)	S+R	Stable

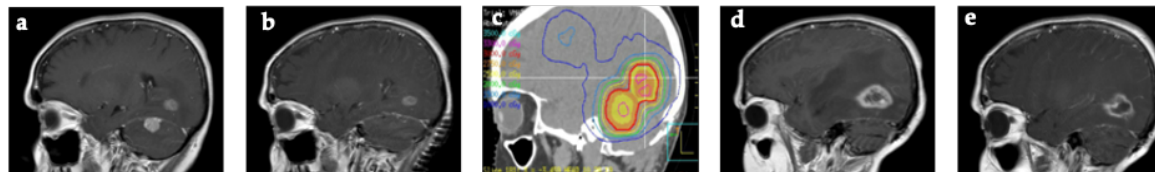
Brain Lesions, n=15, with radiographic evidence of progression after brain hfSRS. *Avastin (A), Steroids (S), Redo-craniotomy (C), Re-irradiation (R)



A Progression and worsening of radiation necrosis over a few months

B Recurrence outside treated area one year after initial treatment

C (L) Treated with hfSRS; (R) 17 months later presumed Pseudoprogression



a suboccipital lesion presented with headache; b tumor resection; c hfSRS to resection cavity; d difficult typing on computer and continued headaches; e resection of temporal-occipital mass: radiation necrosis

Limitations

- Study and analysis was a single-center, retrospective analysis over 30-month period
- Small sample size reviewed

Conclusions

- Adult patients with brain primary and secondary malignant disease evaluated/treated in RADIANS have high rate of disease control in line with previously published results from large academic institutions and multi-institutional clinical trials.
- Radiographic progression is promptly evaluated and managed with systemic, surgical, and radiation treatment modalities to minimize retreatment of pseudoprogression and to avoid undertreatment of tumor recurrence.

References

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