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Case Series of SRS for Myxomatous Oncotic Cerebral Aneurysms

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Abstract

Objectives: Oncotic aneurysms are a rare metastatic phenomenon observed in a few cancer types, including atrial myxoma [1]. The natural history of myxomatous oncotic cerebral aneurysms (MOCA) can vary, and in some cases, intervention is indicated because of their potential for neoplastic growth and risk of rupture. Depending on MOCA morphology, location, multiplicity, and patient comorbidities, endovascular or surgical techniques may at times be too high-risk. If controlling a MOCA requires sacrificing the host vessel, this threatens any eloquent cortex downstream of the lesion. Our prior case study showed stereotactic radiosurgery (SRS) as a noninvasive alternative. We hypothesized that SRS was an appropriate modality for controlling growth of oncotic cerebral aneurysms arising from atrial myxomas.

Methods: We performed a single-institution retrospective case series that included all patients with a history of atrial myxoma who received SRS to one or more oncotic aneurysms. We recorded the measurements of each documented MOCA at the time of diagnosis, pre-SRS, 6 months post-SRS, 12 months post-SRS, and at the time of most recent imaging. Medical records were also reviewed for details about their presentation, treatment, and MOCA-related clinical outcomes.

Results: All (four) patients who received SRS for MOCA at our institution were identified, with a total of 18 MOCA targets treated on 9 SRS treatment dates spanning 2016–2024. All were treated to 14 Gy / 1 fx. One patient was initially diagnosed with MOCA due to hemorrhage, and all patients had evidence of prior ischemic/embolic events at the time of MOCA diagnosis. Factors that had influenced a recommendation for SRS included: MOCA progression or multiplicity; eloquent location; aneurysm morphology; poor patient surgical candidacy; patient stroke risk; and patient preference for minimally invasive intervention. Qualitative outcomes for MOCA status were obtained for the 12 targets with adequate time (>1 year) since SRS: obliteration (3), marked decrease with obliteration of distal branches (1), marked decrease to stable (1), decrease to stable (4), stable (2), mild increase to stable (1). The size of all MOCA were compared to their pretreatment measurements and plotted over time from SRS. Treatments were well-tolerated without any acute complications; the only SRS-associated adverse effects included one episode of radionecrosis that responded to steroids, and possible a contribution to preexisting chronic neurological conditions in two patients. No new hemorrhages were observed for any MOCA that was treated.

Conclusion(s): This case series suggests that SRS may be a reasonable alternative for MOCA control in select patients with procedural contraindications. Further research is warranted to broaden the management strategies for this rare but recognized condition.