Single-isocenter, frameless VMAR for multiple intracranial metastases can produce clinical outcomes comparable with those of conventional radiosurgery techniques.

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PURPOSE: Stereotactic radiosurgery is a well-accepted treatment for patients with intracranial metastases, but outcomes with volumetric-modulated arc radiosurgery (VMAR) are poorly described. We report our initial clinical experience applying a novel single-isocenter technique to frameless VMAR for simultaneous treatment of multiple intracranial metastases.

METHODS: Between 2009 and 2011, a total of 15 patients underwent frameless VMAR for multiple intracranial metastases using a single, centrally located isocenter. Among them, three patients were treated for progressive or recurrent intracranial disease. A total of 62 metastases (median 3 per patient, range 2–13) were treated to a median dose of 20 Gy (range: 15–30 Gy). Three patients were treated with fractionated SRS. Follow-up, including clinical examination and magnetic resonance imaging (MRI), occurred every 3 months.

RESULTS: Median follow-up for all patients was 7.1 months (range: 1.1–24.3 mo), with 11 patients (73.3%) followed until death. For the remaining four patients alive at the time of analysis, median follow-up was 19.6 months (range: 9.2–24.3 mo). Overall survival (OS) at 6 months was 60.0% (95% confidence interval [CI], 40.3%–88.2%). Local control rates at 6 and 12 months were 91.7% (95% CI, 84.6%–100.0%) and 81.5% (95% CI, 67.9%–100.0%), respectively. Regional failure was observed in nine patients (60.0%), and seven patients (46.7%) received salvage therapy. Grade ≥ 3 treatment-related toxicity was not observed. Median total treatment time was 7.2 minutes (range: 2.8–13.2 min).

CONCLUSIONS: Single-isocenter, frameless VMAR for multiple intracranial metastases can produce clinical outcomes comparable with those of conventional radiosurgery techniques.

Proceedings of the 97th Annual Meeting of the American Radium Society — americanradiumsociety.org

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