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Abstract

Balancing Cost and Quality of Life: Clinical Implementation of Stereotactic Radiosurgery (SRS) to Target Multiple Brain Metastases in a Single Treatment using Single-Isocenter Technique in the Community

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Objectives: In the era of cost containment, with prioritization of patient quality of life, the recently launched Brainlab Multiple Metastases Elements (MME) software provides a platform that uses a single isocenter dynamic conformal arc (SIDCA) technique to treat up to 15 metastases and serves to integrate this paradigm into the radiation oncology clinic seamlessly. Here, we present our initial clinical experience as one of the first community centers in the world to implement the Brainlab MME software.

Methods: Brainlab MME software was launched at AAMC in October 2017. Since then, 7 (33%) of 21 SRS patients with multiple metastases have been treated with this software. Retrospective review was performed to review clinical outcomes of these patients.

Results: 5 (71%) of 7 patients with multiple metastases (mean 3, range 2-5) underwent follow-up MRI imaging. At median follow-up time of 5.8 months (range, 0-9.5), 5 (100%) of follow-up MRI images showed stable findings, with no intracranial failure. With MME software use, the average total treatment delivery time was 18.1 minutes (range, 11.9-24.1), 59%shorter than that of published multi-isocenter treatment delivery time, 44.1 minutes (Huang, et al 2014). The prescribed doses were 15-24Gy in a single fraction (median, 22Gy). The mean PTV was 3.54cm3 (range, 0.725-7.70) defined by margins of 1-3mm. 15 (68%) of 22 total lesions had a positive response to therapy. 6 (86%) of 7 patients underwent routine follow-up with radiation oncology. Grade = 2 toxicity was not observed. SRS single isocenter treatments reduced treatment costs as well; costs were reduced by 39% and 28% when compared to multi-isocenter and whole brain radiation therapy treatments, respectively.

Conclusions: Utilizing this new paradigm to treat multiple brain metastases, we have established significant improvement in efficiency of treatment, cost containment, and local control rates.

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