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### Original Article

## Salvage stereotactic radiosurgery effectively treats recurrences from whole-brain radiation therapy

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### KEYWORDS

brain metastases • whole-brain radiation therapy • stereotactic radiosurgery • gamma knife • salvage

### ABSTRACT

#### BACKGROUND.

The purpose of the current study was to examine overall survival (OS) and time to local failure (LF) in patients who received salvage stereotactic radiosurgery (SRS) for recurrent brain metastases (BM) after initial management that included whole-brain radiation therapy (WBRT).

#### METHODS.

The records of 1789 BM patients from August 1989 to November 2004 were reviewed. Of these, 111 underwent WBRT as part of their initial management and SRS as salvage. Patients were stratified by Radiation Therapy Oncology Group (RTOG) recursive partitioning analysis class, primary disease, dimension of the largest metastases and number of BM at initial diagnosis, and time to first brain recurrence after WBRT. Overall survival, survival after SRS, and time to local and distant failure were analyzed.

#### RESULTS.

The median OS from the initial diagnosis of BM was 17.7 months. Median survival after salvage SRS for the entire cohort was 9.9 months. Median survival after salvage SRS was 12.3 months in patients who had their first recurrence >6 months after WBRT versus 6.8 months for those who developed disease recurrence  $\leq$  6 months after ( $P = .0061$ ). Primary tumor site did not appear to affect survival after SRS. Twenty-eight patients (25%) developed local recurrence after their first SRS with a median time of 5.2 months. A dose <22 grays and lesion size >2 cm were found to be predictive of local failure.

#### CONCLUSIONS.

In this study, patients who recurred after WBRT and were treated with salvage SRS were found to have good local control and survival after SRS. WBRT provided good initial control, as 45% of these patients failed >6 months after WBRT. Those with a longer time to failure after WBRT had significantly longer survival after SRS. Cancer 2008. © 2008 American Cancer Society.

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