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## Salvage stereotactic radiosurgery for breast cancer brain metastases: Outcomes and prognostic factors.

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### Abstract

**BACKGROUND:** Salvage stereotactic radiosurgery (SRS) is often considered in breast cancer patients previously treated for brain metastases. The goal of this study was to analyze clinical outcomes and prognostic factors for survival in the salvage setting.

**METHODS:** The authors retrospectively examined 79 consecutive breast cancer patients who received salvage SRS (interval of >3 months after initial therapy), 76 of whom (96%) received prior whole-brain radiation therapy. Overall survival (OS) and central nervous system (CNS) progression-free survival rates were calculated from the date of SRS using the Kaplan-Meier method. Prognostic factors were evaluated using the Cox proportional hazards model.

**RESULTS:** Median age was 50.5 years. Fifty-eight percent of this population was estrogen receptor positive, 62% was HER2 positive, and 10% was triple negative. At the time of SRS, 95% had extracranial metastases, with 81% of extracranial metastases at other visceral sites (lung/pleura/liver). Forty-eight percent had stable extracranial disease. Median interval from initial brain metastases therapy to SRS was 8.4 months. Median CNS progression-free survival after SRS was 5.7 months (interquartile range [IQR], 3.6-11 months), and median OS was 9.8 months (IQR, 3.8-18 months). Eighty-two percent of evaluable patients received further systemic therapy after SRS. HER2 status (adjusted hazard ratio [HR], 2.4; P = .008) and extracranial disease status (adjusted HR, 2.7; P = .004) were significant prognostic factors for survival on multivariate analysis.

**CONCLUSIONS:** In patients with good Karnofsky performance status, salvage SRS for breast cancer brain metastases is a reasonable treatment option, given an associated median survival in excess of 9 months. Furthermore, patients with HER2-positive tumors at diagnosis or stable extracranial disease at the time of SRS have an improved clinical course, with median survival of >1 year. Cancer 2011. © 2011 American Cancer Society.

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