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Hypofractionated stereotactic radiotherapy for the treatment of brain metastases.

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BACKGROUND:: This retrospective review evaluated the efficacy and toxicity profiles of various dose fractionations using hypofractionated stereotactic radiotherapy (HSRT) in the treatment of brain metastases. **METHODS::** Between 2004 and 2007, 36 patients with 66 brain metastases were treated with HSRT. Nine of these subjects were excluded because of the absence of post-treatment magnetic resonance imaging scans, resulting in 27 patients with a total of 52 lesions. Of these 52 lesions, 45 lesions were treated with whole-brain radiotherapy plus a HSRT boost and 7 lesions were treated with HSRT as the primary treatment. The median prescribed dose was 25 grays (Gy) (range, 20 Gy-36 Gy) with a median of 5 fractions (range, 4 fractions-6 fractions) to a median 85% isodose line (range, 50%-100%). The median follow-up interval was 6.6 months (range, 0.9 months-26.8 months). **RESULTS::** The median overall survival time was 10.8 months, and 66.7% of patients died of disease progression. After HSRT treatment of 52 brain lesions, 13 lesions demonstrated complete responses, 12 lesions demonstrated partial responses, 22 lesions demonstrated stable disease, and 5 lesions demonstrated progressive disease. Actuarial local tumor control rates at 6 months and 1 year were 93.9% and 68.2%, respectively. Maximum tumor dimension, concurrent chemotherapy, and a tumor volume <1 cc were found to be statistically significant factors for local tumor control. One patient had a grade 3 toxicity (according to National Cancer Institute Common Terminology Criteria for Adverse Events). **CONCLUSIONS::** HSRT provides a high level of tumor control with minimal toxicity comparable to single-fraction stereotactic radiosurgery (SRS). The results of the current study warrant a prospective randomized study comparing single-fraction SRS with HSRT in this patient population. *Cancer* 2009. (c) 2009 American Cancer Society.

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