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Two-Session Radiosurgery as Initial Treatment for Newly Diagnosed Large, Symptomatic Brain Metastases from Breast and Lung Histology

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Abstract

Objectives: Surgery is considered the treatment of choice for patients with large, symptomatic brain metastases. This report describes a series of patients treated with upfront two-session radiosurgery rather than surgery for large brain metastases from breast and lung histology.

Methods: From October 2016 to January 2019, 10 consecutive patients with neurologic symptoms from large brain metastases producing mass effects underwent two sessions of radiosurgical treatments 30 days apart. The response was assessed by imaging and clinical evaluations.

Results: Ten patients had a total of 36 tumors; of these, 22 lesions with a mean volume of 12.3 ml (range, 7-78.4 ml) underwent two-session radiosurgery. The mean prescription dose for the first treatment was 13 Gy (range, 9-18 Gy) to the 50% isodose line, and the intratumoral mean dose was 17.9 Gy (12-22.9). All 10 patients had neurological symptoms, with a mean Karnofsky physical score (KPS) of 60 (range, 50-70) on the day of treatment. None of these patients required neurosurgical or emergency consultation related to worsening of neurological symptoms between the first and second treatments. At 30 days, the mean KPS was 80 and maintained at 80 at the last follow-up (range, 60-100; P=0.002), and mean lesion volume was 4.1 ml (range, 1.3-70 ml). The mean prescription dose for the second treatment was 12 Gy (range, 9-18 Gy) to the 50% isodose line, and the intratumoral mean dose was 17.9 Gy (11-22.4). The mean overall survival was 24 months (range, 3-32 months). At last follow-up, three patients (30%) had died, two of systemic progression and one of tumor progression, and at one year, local tumor control was 91% and 19 (86%) lesions showed documented local control at last follow up. In those tumors that progressed, the mean time to progression was eight months (range, 5-20 months), and the mean time to surgery was nine months (range, 5-32 months).

Conclusions: Two-session radiosurgery proved to be a safe treatment for patients with large, symptomatic metastases in this series. Neurological worsening after radiosurgery for large lesions of breast and lung histology may be an infrequent event. This strategy in radiosurgery may have neurological benefits for these patients providing adequate local tumor control while reducing the need of upfront surgery at diagnosis.

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