

Brainstem Metastases: Management Using Gamma Knife Radiosurgery.

Clinical Studies

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Abstract:

OBJECTIVE: Brainstem metastasis is an uncommon complication of systemic cancer, generally considered to have a highly unfavorable prognosis. Surgical risks are high and standard radiation or chemotherapy have little effect. The purpose of this study is to evaluate our experience using Gamma Knife radiosurgery (GKRS) for the management of brainstem metastasis.

METHODS: Between July 1992 and March 2001, we treated 28 patients with brainstem metastasis using GKRS. Lesions were located in the pons in 17 patients, midbrain in nine, and medulla oblongata in two. At time of the radiosurgery, eight patients presented with another supratentorial metastasis. The most frequent primary tumor site was the lung (13 cases) followed by the melanoma in four cases, the kidney in two, and other locations in six. Only six patients underwent fractionated whole-brain radiation therapy. Mean marginal radiation dose for GKRS was 19.6 Gy (range, 11-30). Mean maximum diameter was 17.2 mm (range, 10-30).

RESULTS: No GKRS-related morbidity was observed. Local tumor control was achieved in 92% of patients. Twenty-six patients have died. Death was related to the progression of the brainstem lesion in two cases. Mean and median survival after GKRS were 10.2 and 12 months, respectively. Follow-up periods in the two surviving patients were 12 and 13 months.

CONCLUSION: The results of this small series demonstrate that GKRS can be a valuable modality for safe and effective management of brain stem metastasis. Owing to the high risk of surgical resection and low efficacy of medical treatment, radiosurgery can be proposed upfront.