Purpose/Objective(s): Patients with brain metastases are often treated with whole brain radiation therapy (WBRT). Management of those who experience subsequent intracranial disease progression can include a second course of WBRT, although there is controversy surrounding its safety and efficacy. This study examines outcomes of patients at Massachusetts General Hospital who underwent whole brain reirradiation.

Materials/Methods: We examined the medical records of 16 patients from MGH with brain metastases who were treated with WBRT between 2003 and 2009 and were subsequently retreated with a second course of WBRT in that time period. The median age at initial diagnosis was 57 (range: 42-76). Primary sites were lung (12 patients), breast (3), and colon (1). Median dose for the first course of WBRT was 35 Gy (range: 28-40 Gy). Median dose for the second course was 21.3 Gy (range: 14-30 Gy). Average KPS before initial WBRT was 88. Five patients received their initial course of therapy prophylactically.

Results: The second course of WBRT was administered upon radiographic disease progression, and 13 patients suffered from symptoms. Average KPS prior to reirradiation was 82. Four patients had also received additional intracranial radiation therapy after initial WBRT. Seven patients experienced complete or partial symptom resolution, while 2 did not show clinical improvement. At 3-month follow-up, 8 patients had died, 3 had a worsened performance status, and 5 had stable KPS. Average KPS in those still living was 85. Time to radiographic progression was 5.5 months in 10 patients who were scanned before death. Six patients received additional SRS after retreatment. Median overall survival was 30 months. Median survival time after initiation of the second course of WBRT was 4 months (mean: 8.4, range: 1-27). In 5 patients with stable extracranial disease, median survival time after retreatment was 20 months (mean: 16, range: 3-27), with 1 patient still living (27 months post-RT), while those with systemic disease progression had a median survival of 3 months (mean: 5, range: 1-26). Adverse reactions that may be attributable to WBRT occurred in 3 patients and included short-term memory difficulty, cognitive impairment, weakness, and fatigue. One patient suffered from side effects secondary to additional SRS treatment.

Conclusions: In select patients and especially those with stable extracranial disease, a second course of WBRT may be an appropriate and effective intervention to provide symptomatic relief and slow intracranial disease progression. Side effects were minimal and did not cause substantial changes in quality of life.

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