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Long-Term Survival in Patients with Synchronous, Solitary Brain Metastasis from Non-Small-Cell Lung Cancer Treated with Radiosurgery

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Corrected Proof

Purpose
To report the outcome of patients with synchronous, solitary brain metastasis from non-small-cell lung cancer (NSCLC) treated with gamma knife stereotactic radiosurgery (GKSRS).

Patients and Methods
Forty-two patients diagnosed with synchronous, solitary brain metastasis from NSCLC were treated with GKSRS between 1993 and 2006. The median Karnofsky performance status (KPS) was 90. Patients had thoracic Stage I-III disease (American Joint Committee on Cancer 2002 guidelines). Definitive thoracic therapy was delivered to 26/42 (62%) patients; 9 patients underwent chemotherapy and radiation, 12 patients had surgical resection, and 5 patients underwent preoperative chemoradiation and surgical resection.

Results
The median overall survival (OS) was 18 months. The 1-, 2-, and 5-year actuarial OS rates were 71.3%, 34.1%, and 21%, respectively. For patients who underwent definitive thoracic therapy, the median OS was 26.4 months compared with 13.1 months for those who had nondefinitive therapy, and the 5-year actuarial OS was 34.6% vs. 0% ($p < 0.0001$). Median OS was significantly longer for patients with a KPS ≥ 90 vs. KPS < 90 (27.8 months vs. 13.1 months, $p < 0.0001$). The prognostic factors significant on multivariate analysis were definitive thoracic therapy ($p = 0.020$) and KPS ($p = 0.001$).

Conclusions
This is one of the largest series of patients diagnosed with synchronous, solitary brain metastasis from NSCLC treated with GKSRS. Definitive thoracic therapy and KPS significantly impacted OS. The 5-year OS of 21% demonstrates the potential for long-term survival in patients treated with GKSRS; therefore, patients with good KPS should be considered for definitive thoracic therapy.

[Synchronous brain metastasis](#), [Solitary brain metastasis](#), [Non-small cell lung cancer](#), [gamma knife radiosurgery](#)

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Conflict of interest: none.

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