

Learning Objectives

By the conclusion of this session, participants should be able to:

- Describe the survival effects of brain metastases in non-small cell lung cancer
- Describe the treatment options for brain metastases
- Identify patients who may benefit from aggressive treatment of CNS disease.

Introduction

Patients with non-small cell lung cancer (NSCLC) diagnosed with brain metastasis (BM) at initial NSCLC diagnosis (synchronous BM) often have significant systemic disease burden. Those with extracranial metastases are presumed to carry a poorer prognosis and may be deemed ineligible for aggressive treatment including surgical management of their brain metastases or systemic clinical trials. This study aimed to clarify the survival benefit of aggressive surgical and stereotactic radiosurgical (SRS) management of synchronous NSCLC BM in these patients.

Methods

A retrospective single-center review identified 300 patients with synchronous NSCLC BM between 2008 and 2016. The median overall survival (OS) after BM development was evaluated and compared based on status of extracranial metastases and CNS disease treatment modalities.

Results

Among all 300 patients, 134 patients had metastatic disease confined to the brain at diagnosis. There was no difference in median KPS between patients with and without extracranial metastases (80 vs. 80, $p=0.78$). Overall, extracranial metastases at diagnosis was associated with poorer OS (21 vs. 45 weeks, HR 1.75, 95% CI 1.36-2.26, $p<0.0001$, Fig. A). However, patients with extracranial metastases still benefited from aggressive BM management with surgery and SRS compared to those who received SRS or surgery alone or no targeted CNS treatment (OS 56 vs. 18 weeks, HR 0.49, 95% CI 0.23-0.91, $p=0.02$). Among all patients who received surgery and SRS for BM, extracranial metastasis status was not associated with worse OS (56 vs. 64 weeks, HR 1.47, 95% CI 0.65-3.06, $p=0.34$, Fig. B).

Conclusions

Extracranial metastases in synchronous NSCLC BM patients is associated with worse OS. However, patients who received surgery and adjuvant SRS for their BM had similar OS regardless of the status of extracranial metastases. Thus, these patients could potentially be considered together in one prognostic group and may continue to benefit from aggressive systemic therapies following treatment of their BM.

References

Ojerholm E, Lee JY, Thawani JP, Miller D, O'Rourke DM, Dorsey JF, Geiger GA, Nagda S, Kolker JD, Lustig RA, Alonso-Basanta M. Stereotactic radiosurgery to the resection bed for intracranial metastases and risk of leptomeningeal carcinomatosis. *J Neurosurg.* (2014) 121 Suppl:75-83. doi:10.3171/2014.6.GKS14708

