Surgical Resection and Adjuvant Stereotactic Radiosurgery in EGFR Wild-Type Synchronous Brain Metastasis from Non-Small Cell Lung Cancer is Associated with Similar Overall Survival Compared to EGFR Mutants Treated with EGFR Trosine Kinase Inhibitors

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Learning Objectives

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

- Describe pertinent prognostic factors in brain metastases from NSCLC
- Describe the treatment options for brain metastases
- Identify patients who may benefit from aggressive treatment of CNS disease.

Introduction

Epidermal growth factor receptor (EGFR) mutation is a positive prognostic factor in brain metastasis (BM) from non-small cell lung cancer (NSCLC)[1] and predicts improved median overall survival (OS) following treatment with EGFR tyrosine kinase inhibitors (TKI)[2]. Patients with EGFR wild-type (EGFRwt) BM at initial NSCLC diagnosis (synchronous BM) may not be candidates for molecular targeted systemic therapy and are considered to have poorer prognosis. As a result, these patients may not be considered for aggressive management for their BM, including surgery and/or stereotactic radiosurgery (SRS), or systemic clinical trials. This study aimed to clarify the survival benefit of surgery and SRS for synchronous NSCLC BM in EGFRwt patients.

Methods

A retrospective single-center review identified 300 patients with synchronous NSCLC BM between 2008 and 2016. OS after BM development was evaluated and compared based on EGFR mutation status and BM treatment modalities.

Results

Among all 300 patients, 228 had tumor tested for EGFR mutations. 29 patients had EGFR mutations, and 199 were EGFRwt. There was a trend towards higher KPS in EGFRwt patients (80 vs. 70, p=0.09). Among all patients, EGFR mutation was associated with improved OS (120 vs. 35 weeks, HR 0.62, 95% CI 0.40-0.93, p=0.02, Fig. A). Of the 29 EGFR mutant patients, 26 (90%) received systemic treatment with EGFR inhibitors. EGFRwt patients receiving surgical resection and adjuvant SRS (n=96; 48%) had similar OS compared to all EGFR mutant patients (61 vs. 120 weeks, HR 1.18, 95% CI 0.69-2.04, p=0.84, Fig. B).

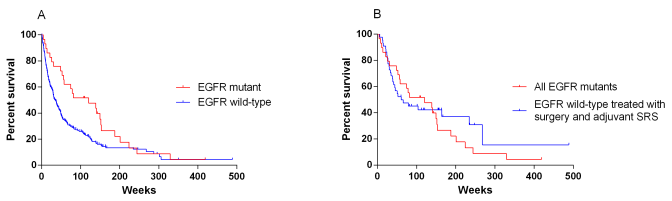

Figure A: Kaplan-Meier survival curve of all synchronous NSCLC BM patients, grouped by EGFR mutation status.

Figure B: Kaplan-Meier survival curve of synchronous NSCLC BM patients, comparing EGFR wild-type patients who received surgery and adjuvant SRS for BM to EGFR mutants.

Conclusions

Patients with EGFRwt BM who received surgery and adjuvant SRS had similar OS compared to EGFR mutant patients who were eligible for molecular targeted therapy. Thus, although EGFR wild-type generally portends worse prognosis, this disadvantage may in part be overcome with aggressive CNS management in patients with synchronous BM, potentially providing opportunities for patients to receive further systemic therapies.

References

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