CNS 2018 ANNUAL MEETING
HOUSTON, TEXAS
OCTOBER 6-10, 2018

Timing of Radiation Therapy after Surgical Resection of Intracranial Non-Small Cell Lung Cancer Metastases: A Retrospective Analysis in 28 Patients

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Introduction

Currently, there is no evidence-based guideline that describes the ideal time from surgery to adjuvant radiotherapy in patients with brain metastases from the lung.

Methods

We retrospectively analyzed 28 patients (median age 62 years, 29% male) who had a craniotomy for cerebral metastases followed by adjuvant radiotherapy at our institution from 2001 to 2016. We categorized patients into one of two groups: 1) early adjuvant radiotherapy (< 6 weeks after surgery) or delayed adjuvant radiotherapy (= 6 weeks after surgery). Our main outcome measures included overall survival and progression-free survival.

Results

Twenty patients had early adjuvant radiotherapy (median time 3.71 weeks). Eight patients had delayed adjuvant radiotherapy (median time 8.57 weeks). The most common reasons for a delay in adjuvant radiation included a complicated postoperative course (n = 3, 38%) and poor postoperative functional status (n = 2, 25%). However, there were no significant differences between groups in the rate of postoperative complications or functional statuses. Overall survival was greater for patients in the early versus delayed adjuvant radiotherapy groups (28 months vs 7 months, P = 0.01). The median clinical follow-up duration was 8 months.

Learning Objectives

To investigate if early adjuvant radiotherapy, after surgical resection of cerebral metastases, affects survival outcomes in patients with lung cancer.

Conclusions

Our results suggest that early adjuvant radiotherapy (less than 6 weeks after surgery for brain metastases) in patients with lung cancer is associated with improved survival. Delayed adjuvant RT with SRI 6 weeks is associated with shorter expected survival of up to 21 post-operative months. However, our study is limited by its retrospective nature, limited sample size, and limited follow-up. Refined studies are needed to more conclusively delineate optimal timing of adjuvant RT after surgical resection of intracranial lung cancer metastases, ideally involving well-powered randomized trials