

Toxicity of patients with ultra-central thoracic tumors treated with stereotactic body radiotherapy (SBRT) with dose of 50Gy in 5 fractions

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Introduction

The ideal regimen for stereotactic body radiotherapy (SBRT) in ultra-central lung tumours is still to be defined, mostly due to the risk of unacceptable or fatal toxicity. There is not much information on outcomes after SBRT for this group of patients. We summarize here our experience with ultra-central lung cancer patients treated with the dose of 50Gy delivered in 5 fractions.

Material and Methods

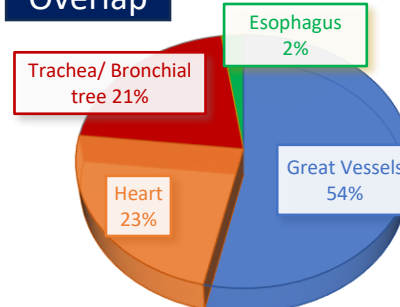
This study is a retrospective review of all cases of ultra-central thoracic tumours treated with SBRT with the dose of 50Gy in 5 fractions, delivered every other day, at our institution. In all cases, as we defined ultra-central lung tumour, the PTV overlapped or touched one or more of the following structures: bronchial tree, trachea, great vessels, heart, and esophagus. Metastatic and primary lung lesions were included. The volumes of treatment were defined by 4D-CT to consider breathing motion. Normal organs constraints followed the recommendations of the RTOG 0813 trial.

OAR constraints	Maximum
Spinal cord	30Gy
Esophagus / Heart/ Great vessels/ Trachea + bronchus	52Gy
Non-adjacent trachea + bronchus	V18Gy [cc] < 4
Non- adjacent great vessels	V47Gy [cc] < 10

Results

Between December 2015 and February 2022, 86 patients were eligible for this review. Median follow-up was 17 months (range: 1–76 months); the median age was 74 years (range: 37–98 years).

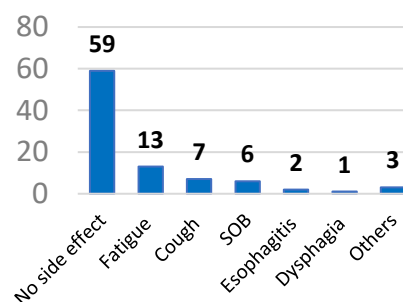
Overlap



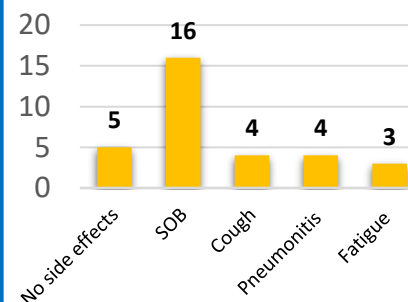
Toxicity

Overall, 68.6% did not report acute toxicity. No grade 3 or more significant toxicity was described. Pneumonitis was found as a late side effect in four cases. There were no deaths attributed to the SBRT treatment.

Acute side effects

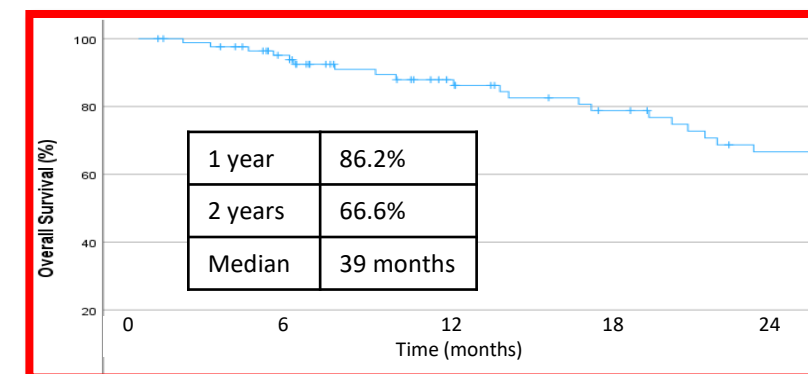


Late side effects



Overall Survival

The clinical outcomes demonstrated that 67.5% of 86 patients were alive at the time of the review; 87.2% had local control, and 65.1% had metastases-free survival.



Conclusion

In this cohort of patients, no death or even severe acute or chronic toxicity was attributed to SBRT. SBRT seems safe for ultra-central lesions using the regimen of 50Gy in 5 fractions with the constraints of the RTOG 0813 trial.