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Repeat stereotactic body radiotherapy (SBRT) for local recurrence of non-small cell lung cancer and lung metastasis after first SBRT.

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Abstract

Background

Recent investigations have revealed that re-irradiation could be relatively safely applied to tumors at various sites, especially when the treatment volume could be limited to a small one. This study evaluated the safety and efficacy of repeat SBRT for local recurrence of stage I non-small-cell lung cancer (NSCLC) and solitary lung metastasis.

Methods

Thirty-one patients with in-field local relapse of NSCLC (n = 23) or lung metastasis (n = 8) underwent repeat SBRT. All patients had grade 2 or lower radiation pneumonitis after the first SBRT. Local recurrence was diagnosed with CT and FDG-PET in 17 patients and by biopsy in 14. The median interval between the first and second SBRT was 18 months (range, 4–80). The first SBRT dose was mainly 48–52 Gy in 4 fractions (n = 25) according to the institutional protocols. Second SBRT doses were determined based on the tumor size and distance to organs at risk, and were mostly 48–52 Gy in 4 fractions (n = 13) or 60 Gy in 8 fractions (n = 13).

Results

At 3 years, overall survival and local control rates were 36 and 53%, respectively, for all 31 patients. Four patients showed no further recurrence for > 5 years (63–111 months) after the second SBRT. Radiation pneumonitis after the second SBRT was grade 2 in 4 patients, and no grade 3 pneumonitis was observed.

Conclusion

Repeat SBRT was safe. Local control and survival rates were higher than expected. SBRT should be an important treatment option for local recurrence of NSCLC or lung metastasis after previous local SBRT.

TRIAL REGISTRATION:

This retrospective study was approved by the ethics committee of our institution (September, 2017; approval number: 27-10).