Study on the Rationale of Postoperative Radiation Therapy Target Volumes in Completely Resected Stage IIIa (N2) Non-Small-Cell Lung Cancer

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Methods

Purpose

Recent retrospective and non-randomized studies provide evidence of the benefit of postoperative radiotherapy (PORT) in patients of stage IIIa non-small-cell lung cancer (NSCLC) with mediastinal nodal involvement (N2 stage). However, the clinical target volume (CTV) of PORT in patients with completely resected stage IIIa (N2) NSCLC has not been reached the consensus. The CTV contouring guideline for PORT was developed in 2004. The rationale of the CTV was evaluated in this study.

Methods

From 2005 to 2010, 50 patients with pathological stage IIIa(N2) NSCLC who underwent complete resection and received postoperative adjuvant radiotherapy in accordance with the CTV contouring guideline at our hospital were included in this retrospective study. The patterns of first failure after PORT were evaluated in order to help determine whether or not the contouring protocol of PORT CTV is appropriate.

Results

Of the 50 patients in this study, 54% were males and 46% were females. The median radiation dose was 50.4Gy at 1.8Gy per fraction. No patient received preoperative chemotherapy or radiotherapy. All patients underwent postoperative adjuvant chemotherapy in this study. The median follow-up time for the 26 living patients was 41.3 months (range, 20.3-80.6). The median survival time (MST) was 53.6 months. Up to the last follow-up, 47 patients had the reliable follow-up data. The first treatment failures were observed in 37 patients, including 7 (18.9%) with loco-regional recurrence alone, 29 (78.4%) with distant metastases, and 1 with both. Among the 7 patients with loco-regional recurrence alone, the site of the local recurrence was the supraclavicular lymph nodes in 4 patients, the mediastinal lymph nodes in 2 patients, multiple local recurrence sites (both mediastinal LN and supraclavicular LN) in 1 patient. Out of the 3 patients presented with the mediastinal LN relapses, all patients had the in-field recurrence sites within the irradiated field of the postoperative radiotherapy.

Conclusions

Basing on the available information, the CTV delineation protocol for completely resected stage IIIa(N2) patients is relatively adequate and appropriate.