Lung

Accelerated Hypofractionated Image-Guided vs Conventional Radiotherapy for Patients With Stage II/III Non-Small Cell Lung Cancer and Poor Performance Status: A Randomised Clinical Trial.

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IMPORTANCE

A significant subset of patients with stage II/III non-small cell lung cancer (NSCLC) cannot receive standard concurrent chemoradiotherapy owing to the risk of toxic effects outweighing potential benefits. Without concurrent chemotherapy, however, the efficacy of conventional radiotherapy is reduced.

OBJECTIVE

To determine whether hypofractionated image-guided radiotherapy (IGRT) would improve overall survival in patients with stage II/III NSCLC who could not receive concurrent chemoradiotherapy and therefore were traditionally relegated to receiving only conventionally fractionated radiotherapy (CFRT).

DESIGN, SETTING, AND PARTICIPANTS

This nonblinded, phase III randomised clinical study enrolled 103 patients and analysed 96 patients with stage II/III NSCLC and Zubrod performance status of at least two, with greater than 10% weight loss in the previous six months, and/or who were ineligible for concurrent chemoradiotherapy after oncology consultation. Enrollment occurred at multiple US institutions. Patients were enrolled from 13 November 2012, to 28 August 2018, with a median follow-up of 8.7 (3.6-19.9) months. Data were analysed from 14 September 2018, to 11 April 2021.

INTERVENTIONS

Eligible patients were randomised to hypofractionated IGRT (60 Gy in 15 fractions) vs CFRT (60 Gy in 30 fractions).

MAIN OUTCOMES AND MEASURES

The primary end point was one-year overall survival.

RESULTS

A total of 103 patients (96 of whom were analysed [63 men (65.6%); mean (SD) age, 71.0 (10.2) years (range, 50-90 years)]) were randomised to hypofractionated IGRT (n = 50) or CFRT (n = 46) when a planned interim analysis suggested futility in reaching the primary end point, and the study was closed to further accrual. There was no statistically significant difference between the treatment groups for one-year overall survival (37.7% [95% CI, 24.2%-51.0%] for hypofractionated IGRT vs 44.6% [95% CI, 29.9%-

58.3%] for CFRT; P = .29). There were also no significant differences in median overall survival, progression-free survival, time to local failure, time to distant metastasis, and toxic effects of grade three or greater between the two treatment groups.

CONCLUSIONS AND RELEVANCE

This phase III randomised clinical trial found that hypofractionated IGRT (60 Gy in 15 fractions) was not superior to CFRT (60 Gy in 30 fractions) for patients with stage II/III NSCLC ineligible for concurrent chemoradiotherapy. Further studies are needed to verify equivalence between these radiotherapy regimens. Regardless, for well-selected patients with NSCLC (ie, peripheral primary tumours and limited mediastinal/hilar adenopathy), the convenience of hypofractionated radiotherapy regimens may offer an appropriate treatment option.