Lung

Once daily (OD) versus twice-daily (BID) chemoradiation for limited stage small cell lung cancer (LS-SCLC): a meta-analysis of randomised clinical trials

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OBJECTIVES

Assess Once daily (OD) chemoradiation effectiveness for LS-SCLC compared with twice daily (BID) chemoradiation.

METHODS AND MATERIALS

Following the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guideline, eligible randomised clinical trials (RCT) comparing OD and BID were identified on electronic databases. A meta-analysis was performed to compare overall survival (OS), progression-free survival (PFS), and toxicity. A metaregression analysis was conducted to explore the influence of fractionation, biological effective dose (BED), the proportion of patients treated with prophylactic cranial irradiation (PCI), elective nodal irradiation (ENI), and the start of radiotherapy (week 1 or week 4).

RESULTS

Five RCTs with a total of 1941 patients (OD vs. BID) were included. The relative risk (RR) for OS and PFS was 0.97 (CI95% 0.8 - 1.1, p=0.731) and 0.90 (CI95% 0.7 - 1.1, p=0.20) at 3-years. In the metaregression analysis, hypofractionated radiotherapy schedules were associated with an improvement in overall survival (p=0.03). The start of radiotherapy (W1 or W4), BED, and ENI had no significant effect on OS and PFS. The complete response rate partial response and overall response rate for BID vs OD were 40% vs. 33% (p=0.97), 50% vs. 57% (p=0.94), and 89% vs. 93% (p=0.99). The rate of completed planned RT 96% vs. 94%(p=0.66), and the % of ≥ 4 chemotherapy cycles received 74% vs. 74% (p=0.99), did not differ between OD and BID. The local and distant failure rates were not significantly different between OD and BID 40% vs. 33% (p=0.88) and 36% vs. 36% (p=0.99). No difference in grade 2 or grade 3 pneumonitis and esophagitis was observed among the groups (p=NS) CONCLUSION: For LS-SCLC, OD conventional chemoradiation results in similar outcomes to BID chemoradiation. In contrast, hypofractionated radiotherapy was associated with a better OS and PFS than BID. Additional randomised phase III trials exploring hypofractionation with systemic therapy are warranted to validate our findings.