Effect of thoracic radiotherapy on mortality in limited small cell lung cancer: a meta-analysis of 13 randomized trials among 2,140 patients


Authors' objectives
To assess the effect of thoracic radiotherapy on mortality in limited small-cell lung cancer.

Searching
The authors do not provide details of the sources searched, or the strategies used.

Study selection
Study designs of evaluations included in the review
Randomised controlled trials (RCTs) in which accrual was complete by 31 December 1988, and from which data were available on individual patients, were included.

Specific interventions included in the review
Thoracic radiotherapy plus chemotherapy (n=1,111); chemotherapy alone (n=992).

Participants included in the review
Patients with limited small-cell lung carcinoma were included.

Outcomes assessed in the review
Mortality was assessed.

How were decisions on the relevance of primary studies made?
The authors do not state how the papers were selected for the review, or how many of the authors performed the selection.

Assessment of study quality
The authors do not state that they assessed validity.

Data extraction
Data were collected on each individual patient ever randomised in the included trials. Information obtained included extent of disease, treatment, dates of randomisation and last follow-up, vital status at that time, age, gender and performance status.

Methods of synthesis
How were the studies combined?
The effect of treatment was tested using an intention-to-treat analysis, the log-rank test stratified by trial, and the Peto method (see Other Publications of Related Interest no.1). Subgroup analyses were carried out for early and late radiotherapy, and sequential or non-sequential radiotherapy; the treatment effect was investigated in relation to patient age.

How were differences between studies investigated?
The authors do not state how differences between the studies were investigated.
Results of the review
Thirteen studies were included.

In the radiotherapy plus chemotherapy group, 972 of the 1,111 patients died, compared with 890 out of 992 in the chemotherapy alone group. The overall relative risk of death was 0.86 (95% confidence interval: 0.78, 0.94, \( p=0.001 \)), corresponding to a 14% relative reduction in risk of death when radiotherapy was used. The benefit in terms of overall survival at 3 years was 5.4% (standard deviation 1.4). When patients in the same trials who had extensive disease were included in the analysis, this did not significantly change the result. Timing of radiotherapy (early versus late) and sequential radiotherapy did not make any significant difference. A significant trend showing greater benefit of radiotherapy among younger patients (\( p=0.01 \)) was found.

Authors' conclusions
A meta-analysis of the 13 largest trials shows that thoracic radiotherapy leads to a 14% reduction in the mortality rate (\( p=0.001 \)), corresponding to a 5% improvement in 3-year survival.

CRD commentary
Little detail is given in this paper, although the authors refer to previous work (see Other Publications of Related Interest no.2) that contains further information. The authors appear to have taken some trouble to update published information and minimise bias.

Implications of the review for practice and research
Radiotherapy given in combination with chemotherapy appears to lead to better outcomes for patients with small-cell lung cancer, particularly younger patients.

Bibliographic details

PubMedID
8166478

Other publications of related interest

Indexing Status
Subject indexing assigned by NLM

MeSH
Age Factors; Aged; Antineoplastic Combined Chemotherapy Protocols /therapeutic use; Carcinoma, Small Cell /drug therapy /mortality /radiotherapy; Combined Modality Therapy; Female; Humans; Lung Neoplasms /drug therapy /mortality /radiotherapy; Male; Middle Aged; Randomized Controlled Trials as Topic

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This is a critical abstract of a systematic review that meets the criteria for inclusion on DARE. Each critical abstract contains a brief summary of the review methods, results and conclusions followed by a detailed critical assessment on the reliability of the review and the conclusions drawn.