Partial breast irradiation or whole breast radiotherapy for early breast cancer: a meta-analysis of randomized controlled trials
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CRD summary
This review concluded that partial breast irradiation did not appear to jeopardise survival and may be used as an alternative to whole breast-radiation for treatment of breast cancer patients after breast-conserving surgery. Given the small number of included studies and the possibility of publication bias, a degree of caution might be required in interpreting these conclusions.

Authors’ objectives
To compare partial breast irradiation with whole breast radiation therapy for the treatment of early operable breast cancer.

Searching
PubMed, Cochrane Central Register of Controlled Trials (CENTRAL) and Web of Science were searched up to June 2008 without language restrictions. Search terms were reported. Reference lists of eligible trials were screened. Cross-searches were conducted in MEDLINE using the names of investigators who were lead authors in at least one eligible trial. Abstracts were excluded.

Study selection
Randomised controlled trials (RCTs) that compared whole breast radiation therapy versus limited field or partial radiation therapy after breast-conserving surgery in patients with breast cancer were eligible for inclusion. Trials that compared two different partial irradiation techniques were excluded. Trials that compared two different schedules or doses of the same radiation technique were excluded. Pseudo-randomised trials were excluded. The primary outcome was overall survival rate. Secondary outcomes included incidence of local recurrences, true and elsewhere breast recurrences, axillary recurrences, supraclavicular recurrences and distant recurrences.

Where reported, the median age of patients in most of the included studies ranged from 51.5 to 53 years and in the other studies ranged from 58 to 59 years. The included studies were published between 1993 and 2007.

The authors did not state how many reviewers assessed studies for inclusion.

Assessment of study quality
Study quality was assessed using criteria of randomisation, allocation concealment, withdrawals and intention-to-treat analysis.

The authors did not state how many reviewers performed validity assessment.

Data extraction
Data were extracted to construct 2x2 tables to enable calculation of odds ratios (ORs) with 95% confidence intervals (CIs). Study authors were contacted for missing data where necessary.

The authors did not state how many reviewers performed data extraction.

Methods of synthesis
The studies were combined in meta-analyses. Pooled odds ratios with 95% CIs were calculated using the fixed-effect Mantel-Haenszel method when there was no significant heterogeneity. Statistical heterogeneity was assessed using $X^2$. 
Results of the review
Three RCTs were included in the review (n=1,140 participants, range 174 to 708). Only two trials described the reasons for withdrawals and used intention-to-treat analyses. Randomisation and allocation concealment were adequate in two trials. Median duration of follow-up ranged from 65 to 96 months.

There were no significant differences in the rates of overall survival, distant metastasis and supraclavicular recurrences between partial and whole breast radiation arms. Compared with whole breast radiation, partial breast irradiation was significantly associated with an increased rate of local recurrences (OR 2.150, 95% CI 1.396 to 3.312; three RCTs) and axillary recurrences (OR 3.430, 95% CI, 2.058 to 5.715; three RCTs).

No significant heterogeneity was observed for any of these outcomes.

Authors’ conclusions
Partial breast irradiation did not appear to jeopardize survival and may be used as an alternative to whole breast radiation for treatment of breast cancer patients after breast-conserving surgery.

CRD commentary
This review’s inclusion criteria were clear. Relevant databases were searched. The decision to restrict the review to published data may have increased the potential for publication bias. No language restrictions were applied in the search, which minimised the risk of language bias. Details on the review process were not reported, so it was unclear whether sufficient attempts were made to minimise reviewer biases and errors. Appropriate criteria were used to assess study quality, but blinding of outcome assessors was not assessed. Statistical heterogeneity was assessed and appropriate methods were employed to pool the results.

The authors’ conclusions reflect the evidence presented. Caution might be required in interpreting these conclusions given the small number of included studies and the possibility of publication bias.

Implications of the review for practice and research
Practice: The authors stated that partial breast irradiation may be used as an alternative to whole breast-radiation for treatment of breast cancer patients after breast-conserving surgery.

Research: The authors stated that the issue of locoregional recurrence needed to be addressed further in future trials. Some ongoing phase III RCTs would further clarify whether partial breast irradiation offered high efficacy with better cosmetic outcomes and may finally define the role of different partial breast irradiation techniques for the treatment of early operable breast cancer.

Funding
Not stated.

Bibliographic details

PubMedID
20210799

DOI
10.1111/j.1524-4741.2010.00905.x

Original Paper URL
Indexing Status
Subject indexing assigned by NLM

MeSH
Breast /radiation effects; Breast Neoplasms /mortality /radiotherapy; Female; Humans; Randomized Controlled Trials as Topic

AccessionNumber
12010004655

Date bibliographic record published
06/10/2010

Date abstract record published
21/09/2011

Record Status
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.