

Evidence Assessment: Summary of a Systematic Review

Who is this summary for?

Policy makers or clinicians who have to make decisions about the treatment and care of patients with breast cancer.

Partial breast irradiation for early breast cancer

Key findings

- When partial breast irradiation (PBI) or accelerated partial breast irradiation (APBI) was compared with whole breast radiation therapy (WBRT) the rates of overall survival were similar.
- There was no difference on the effects of PBI/APBI on survival, or subsequent mastectomy rate when PBI/APBI was compared with WBRT.

Background

Breast conserving therapy for women with breast cancer consists of local excision of the tumour (achieving clear margins) followed by radiation therapy (RT). RT is given to sterilize tumour cells that may remain after surgery to decrease the risk of local tumour recurrence. Most true recurrences occur in the same quadrant as the original tumour. Whole breast RT may not protect against the development of a new primary cancer developing in other quadrants of the breast.

Question

Is partial breast irradiation or accelerated partial breast irradiation as good as conventional or hypofractionated whole breast radiation therapy after breast conservation therapy for early-stage breast cancer?

The use of partial breast irradiation for early breast cancer in Cameroon : Breast cancer is the most common cancer diagnosed on women in Cameroon with a mortality rate of 23.5%. The number of new cancer cases reported in 2014 was 2625. Partial breast irradiation for early breast cancer is not systematically used in Cameroon. This intervention may improve the management of patients with breast cancer in Cameroon.

Table 1: Summary of the systematic review

	What the review authors searched for	What the review authors found
Studies	Randomized controlled trials	Three randomized controlled trials were included
Participants	Women with histologically confirmed early-stage breast cancer who had conservative surgery	Women with invasive breast cancer after wide local excision of tumour and negative pathological margins, T1N0-N1miM0, grade I or II.
Interventions	Radiation delivered to the partial breast (PBI) and PBI using larger than standard radiation dose per fraction such that the overall treatment time is reduced (APBI).	High-dose rate (HDR) brachytherapy: 7 increase 5.2 Gray high-dose rate. One study used High-dose rate (HDR) multi-catheter brachytherapy for 88/128 women. Two studies used conventional external beam radiation therapy (EBRT) to partial breast. PBI delivered via EBRT was delivered in conventional fractionation (2 Gy per fraction) in 50 Gy/25 fraction electron beam RT to partial breast for 40/128 women, or at greater than 2 Gy per fraction (55 Gy/20 fractions) or 40 to 42 Gy/8 fractions.
Controls	Treatment given must differ only in relation to the volume of the breast radiated.	Whole breast radiation therapy using either conventional fractionation: 50 Gy/25 fractions whole breast irradiation, or at greater than 2Gy per fraction (40Gy/15 fractions).
Outcomes	<p>Primary outcomes</p> <ul style="list-style-type: none"> Local recurrence in the ipsilateral breast. We defined local recurrence as a recurrence of the same histological type of cancer within the same quadrant of the breast as the primary cancer; Cosmesis (cosmetic outcome or breast appearance). <p>Secondary outcomes</p> <ul style="list-style-type: none"> Overall survival (time from date of randomisation to death from any cause, or number of deaths from any cause); Toxicity (including acute and late effects of RT, chemotherapy-related toxicity and surgical toxicity; individual protocol-based definitions); New primary tumours in ipsilateral breast. We defined a new primary as a lesion arising in a quadrant of the breast that is different from the original cancer or a tumour of a different histological subtype occurring anywhere within the breast; Cause-specific survival (deaths due to breast cancer at five years); Distant metastases, in isolation or at the same time as local recurrence (the occurrence of metastases at five years); Relapse-free survival (length of time after treatment during which no recurrence is found). Recurrence referred to breast cancer in the ipsilateral breast or elsewhere in the body, excluding a new breast cancer in the contralateral breast; Locoregional control; Subsequent mastectomy (ipsilateral partial mastectomy, modified radical mastectomy or radical mastectomy); Compliance, defined as the number of women who commenced treatment with PBI/APBI or conventional external beam RT (EBRT) and completed the treatment course. 	<p>The outcomes reported were:</p> <ul style="list-style-type: none"> Overall survival; Toxicity; New primary tumours; Cause-specific survival; Distant metastases; Relapse-free survival; Subsequent mastectomy; Compliance with RT; Costs; Quality of life; Consumer preference.
Date of the most recent search: 11 April 2014		
Limitations: This is a moderate quality systematic review, AMSTAR =09/11		
Citation: Lehman M, Hickey BE, Francis DP, See AM. Partial breast irradiation for early breast cancer. Cochrane Database of Systematic Reviews 2014, Issue 6. Art. No.: CD007077. DOI: 10.1002/14651858.CD007077.pub2.		

Table 2: Summary of findings

Partial breast irradiation or accelerated partial breast irradiation for early breast cancer			
Patient or population: patients with early breast cancer			
Settings: district hospitals or cancer centres			
Intervention: partial breast irradiation or accelerated partial breast irradiation			
Outcomes	Relative effect (95% CI)	No of Participants (studies)	Quality of the evidence (GRADE)
Local recurrence-free survival Determined using mammography and clinical examination Follow-up: median 66 to 122.4 months	1.74 [1.23-2.45]	1140 (3)	Very low
Cosmesis Global cosmetic score Follow-up: median 122.4 months	0.4 [0.23-0.72]	241 (1)	Very low
Overall survival Follow-up: median 66 to 122.4 months	0.99 [0.83-1.18]	1140 (3)	Very low
Late toxicity - Subcutaneous breast fibrosis. Unvalidated three point scale Follow-up: median 122.4 Months	4.27 [3.04-6.01]	110 (1)	Very low
Subsequent mastectomy Follow-up: median 122.4 Months	0.20 [0.01-4.21]	258 (1)	Very low
Cause-specific survival Follow-up: median 8.4 to 10 years	0.95 [0.74-1.22]	966 (2)	Low
Distant metastasis-free Survival Follow-up: median 66 to 122.4 months	1.02 [0.81-1.28]	1140 (3)	Low

Applicability

All three included trials were single institution trials from tertiary institutions: two in the United Kingdom and one in Hungary. Since none of these trials was conducted in a low resources setting, and considering the technical requirements for radiotherapy, it is unclear how applicable this intervention is.

Conclusions

There is moderate quality evidence suggesting that partial breast irradiation or accelerated partial breast irradiation is no better than conventional treatment.

Prepared by

M. Vouking, C.D. Evina, L. Mbuagbaw, P. Ongolo-Zogo: Centre for the Development of Best Practices in Health, Yaoundé, Cameroon. Available at www.cdbph.org

February 2015