Partial breast irradiation and the GEC-ESTRO trial

The findings from the GEC-ESTRO randomised trial[1] provide further support for partial breast irradiation (PBI) in women undergoing lumpectomy for breast cancer. The results of the TARGIT-A trial[2,3] (n=3451, 2000–12) and those of the GEC-ESTRO trial[1] (n=1184, 2004–09) have more in common than suggested by the authors.[1]

First, the non-inferiority margins were similar in both studies (TARGIT-A: 2·5%, GEC-ESTRO: 3%). Second, the follow-up of the first 1222 patients in the TARGIT-A trial was 5 years and their results were no different from those of the whole trial.[2,3] Thus, the follow-up data were similar to the GEC-ESTRO trial[1] (n=1184, median follow-up of 6·6 years). Third, both the TARGIT-A and the GEC-ESTRO trials showed no significant difference in local recurrence between the two randomised groups, and both trials established non-inferiority between the two randomised groups. Finally, both trials showed a trend in improved overall survival with PBI. In the TARGIT-A trial, overall survival was 96·0% (95% CI 94·2–97·2) with targeted intraoperative radiotherapy (TARGIT) versus 94·7% (92·7–96·1) with fractionated external beam radiotherapy (EBRT; p=0·10); and in the GEC-ESTRO trial, it was 97·3% (96·0–98·6) with PBI versus 95·6% (93·8–97·3) with whole breast irradiation (WBI; p=0·11).

We did a meta-analysis of local recurrence and non-breast-cancer deaths. We used the data from the earliest cohort of the first 1222 patients randomly assigned to treatment groups in the TARGIT-A trial so the median follow-up times were similar between the two trials. There was no heterogeneity between the trials (p=0·52). We used Stata version 14.0 command metan to perform the meta-analysis. Local recurrence did not differ between PBI and WBI, but non-breast-cancer mortality was significantly different between groups (figure) favouring PBI.

The title of the Comment[4] that accompanied the first TARGIT-A trial publication[5] ("Partial breast irradiation: a new standard for selected patients") remains apt.

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Figure 1: Meta-analysis of the outcomes of local recurrence (above) and non-breast-cancer mortality (below). Note that these values are not hazard ratios or odds ratios. They are the absolute difference in the proportion of patients who had an event in each of the randomised arms. The pink shaded area shows the more stringent non-inferiority margin (2.5%) for the TARGIT-A trial rather than the GEC-ESTRO trial (3%).
There was no heterogeneity between the TARGIT-A and GEC-ESTRO trial results (p=0.521 for LRCB and p=0.515 for non-breast-cancer mortality).
The difference between PBI is not statistically significant for local recurrence (p=0.12) but it was significantly different for non-breast-cancer morality (p=0.01).
TARGIT-A represents the earliest cohort of the first 1222 patients in the TARGIT-A trial with a median follow up of 5 years.