Full dose radiotherapy to whole breast may not be needed in early breast cancer

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Radiotherapy to the whole breast is standard treatment after breast-conserving surgery for women with early breast cancer, even those who have a low risk of the disease returning in the breast (local relapse). However, whole breast radiotherapy can cause changes in the appearance of the breast, which may also be firmer and tender to the touch, resulting in psychological distress.

"So we considered it important to set up a trial to answer the question: is full dose radiotherapy to whole breast needed in patients with low risk early breast cancer?" Dr Charlotte Coles, MD, Consultant Clinical Oncologist at Cambridge University Hospitals NHS Trust, Cambridge, UK, told the 10th European Breast Cancer Conference (EBCC-10) today (Wednesday). "One group of women received standard full dose radiotherapy to the whole breast. A second group received standard full dose to breast tissue closest to where the lump appears and a slightly lower dose further away. A third group received standard full dose radiotherapy to breast tissue closest to where the lump appears but no radiotherapy dose apart from this.

"We found after five years that rates of local relapse (the reappearance of a cancer after treatment in the breast where it was originally detected) were very low in all treatment groups, including those receiving less radiotherapy. Moderate and marked changes in normal breast tissue were also low across all groups. Follow-up is ongoing and ten-year local recurrence rates will be reported at a later stage," she said.

Dr Coles and colleagues from 30 radiotherapy centres across the UK, led by researchers at The Institute of Cancer Research, London, recruited 2018 patients aged over 50 who had had breast conservation surgery for invasive early breast cancer tumours measuring less than 3cm at their largest point. They were randomised into three groups: 675 had whole breast radiotherapy at the standard dose of 40 Gy to the whole breast (the control group), 674 had 40 Gy to the tumour bed and 36 Gy to the rest of the breast, and 669 had 40 Gy to the tumour bed only; the latter two "test" groups being two ways of focusing radiotherapy to the tumour bed and giving lower or no dose to the rest of the breast.

All patients were treated with intensity modulated radiotherapy (IMRT), a technique that can deliver an even dose of radiation, thus minimising the chances of hotspots of unwanted high doses and reducing the cosmetic problems that can occur after breast radiotherapy. The characteristics of the three groups were very similar and the average age was 63 years.

"Five years after treatment, we found very low rates of local recurrence and minimal side effects across all the groups. We also found evidence of benefit to patients in the 'test' groups in terms of satisfaction with overall breast appearance as reported by patients themselves, particularly for those receiving no radiotherapy outside the tumour bed. However, we intend to continue to follow up the trial patients for at least ten years because we know that cancer recurrence can still occur more than five years after completion of treatment. It may be that no dose outside the tumour bed (partial breast radiotherapy) is sufficient for many patients, but some dose at a lower level than that given to the tumour bed is more appropriate for others," said Dr Coles.

The researchers believe that, in addition to minimising hotspots, the use of radiotherapy focused around the tumour bed with IMRT benefits patients because it spares part of the breast from either a full or any dose

to the rest of the breast.

This form of IMRT is a simple, quick and cheap technique, which can be carried out with all standard radiotherapy equipment. It is now standard practice in the majority of radiotherapy centres Europe. "The radiotherapy beams have a glancing orientation that covers the breast but limits the dose to the lung and also the heart in left-sided breast cancers. There is, therefore, no concern about a higher volume of low dose radiation to normal tissue, which is sometimes a worry in more complex types of IMRT," said Dr Coles.

In addition to the ten-year follow-up, the researchers also intend to investigate in more depth the patient-reported outcome measures (PROMS). In addition to specific questions about the patient's breast and related symptoms, where outcomes have already been shown to be at least as good if not better than with whole breast radiotherapy, they also include more general questions about quality of life. "This is another area where we would expect to see better results from the 'test' groups," said Dr Coles.

"We hope that the evidence of benefit we have shown in this trial will bring about a change in practice worldwide, and enable very many more women with early breast cancer to undergo this treatment. At a time when breast cancer mortality rates are falling and more women are surviving their cancer, we believe it is particularly important to keep any treatment toxicity to the absolute minimum," she concluded.

Chair of the conference, Professor Fatima Cardoso, Director of the Breast Unit of the Champalimaud Clinical Centre in Lisbon, Portugal, said: "Over-treatment is a problem in cancers with a low risk of recurrence. This important study shows that, at least at five years follow-up, radiotherapy focused around the tumour bed with the IMRT technique provides as good local control as whole breast radiation and is

associated with fewer side effects. This may, indeed, lead to a change in practice with benefits for patients and society, since it will also reduce costs. Longer follow-up is needed, however, since low-risk breast cancer has a long natural history."

More information: Abstract no: 4 LBA. "Partial breast radiotherapy for women with early breast cancer: First results of local recurrence data for IMPORT LOW (CRUK/06/003) Wednesday, 14.45hrs, Keynote Lecture and Late Breaking Abstracts, Elicium.

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