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A major UK trial led by the University has produced firm evidence that giving radiotherapy between or during chemotherapy cycles to women with early breast cancer significantly reduces the risk of the cancer recurring in the breast or chest wall. The treatment, known as synchronous chemoradiation, has minimal adverse side-effects and no detrimental effect on the patients' quality of life.

Findings from the SEquencing of Chemotherapy and Radiotherapy in Adjuvant Breast cancer (SECRAB) study, which was carried out at 48 centres in the UK and is the largest study to investigate the treatment, were presented in Stockholm, to delegates at the 2011 European Multidisciplinary Cancer Congress.

"The results show that synchronous chemoradiation reduces the risk of local cancer recurrence by 35 per cent in women with early breast cancer. After a follow-up of over eight years, only 41 patients in the synchronous chemoradiation group had suffered a recurrence compared with 63 patients in the sequential chemoradiation group," said Dr Indrajit Fernando, a Consultant Clinical Oncologist at University Hospitals Birmingham NHS Foundation Trust and Honorary Senior Lecturer at the University.

Radiotherapy and chemotherapy are usually given after breast cancer surgery to destroy any remaining cancer cells in the breast, chest wall or underarm area, in order to reduce the risk of a local cancer recurrence. Sequential chemoradiation is the standard treatment schedule where chemotherapy is given first followed by radiotherapy.

Dr Fernando, the principal investigator of the study, said: "The five-year local recurrence rates were 2.8 per cent and 5.1 per cent in the synchronous and sequential chemoradiation groups, respectively. This difference of 2.3% between treatment groups was statistically significant."

He added: "According to the Early Breast Cancer Trialists' Collaborative Group (EBCTCG), one breast cancer death can be avoided for every four local recurrences prevented. Therefore, even a 2.3 per cent reduction in local recurrence rates will have an impact worldwide when we consider that this is a very common cancer."

The optimal timing of radiotherapy with chemotherapy has been a subject of debate among cancer experts. The aim of this trial was to determine the best schedule for giving radiotherapy with cyclophosphamide/methotrexate/fluorouracil (CMF) or anthracycline–CMF chemotherapy after surgery to women with early breast cancer.

This randomised Phase III trial enrolled 2296 women who had undergone breast conserving surgery (1285 women) or mastectomy (1011 women) to remove their tumour. All the patients received chemoradiation after surgery, either sequential (1146 patients) or synchronous, where the radiotherapy was given in the gaps between chemotherapy cycles (1150 patients). More than 60% of patients received 40Gy in 15 fractions over three weeks.

Dr Fernando also presented results from research into the quality of life of patients in the SECRAB study today. These focused on skin reactions caused by the radiotherapy, breast and arm symptoms and overall quality of life.

A total of 565 patients contributed to the quality of life analysis. Overall, the results showed that there were no observed differences in quality of life between the synchronous and sequential chemoradiation groups.

"Although the results of the main study showed that patients in the synchronous chemoradiation group had a significantly worse skin reaction, only four percent of patients in the synchronous arm had a severe reaction which would have taken several weeks to heal and subsequently affect quality of life. The majority of women had a moderate skin reaction which would have settled in a very short period of time and this had no detrimental effect on their quality of life," he said.

"Our data have shown that the acute skin toxicity of radiotherapy treatment was significantly less in patients being treated with three weeks of synchronous radiotherapy (40Gy radiation in 15 fractions) compared to those with schedules of a longer duration (45Gy in 20 fractions over four weeks or 50Gy in 25 fractions over five weeks). Importantly, the clinical benefit of synchronous chemoradiation treatment was seen in both patient groups."

Dr Fernando said that the trial could be important for economic reasons. "Shortening the overall treatment time may mean that when patients have finished their last chemotherapy course they can return to their normal life without having to then complete their radiotherapy. This may also have economic benefits in terms of when patients can return to work."

"Clinical practice needs to be reviewed for patients who are being treated with a CMF or an anthracycline/CMF chemotherapy schedule. The data will be forwarded to the National Institute of Clinical Excellence (NICE) in the UK but the results have implications worldwide," Dr Fernando added.

Professor Michael Baumann, president of ECCO said: "This trial raises the important issue of how radiotherapy and chemotherapy after surgery should be sequenced or integrated to obtain the best outcome in breast cancer. In today's modern multidisciplinary oncology, not only each single component of treatment needs to be optimised, but also the combination thereof. This requires close interaction of specialists from different specialties in clinical research as well as in everyday patient care. The SECRAB trial suggests that the risk of loco-regional recurrences could be reduced by applying radiotherapy simultaneous with chemotherapy. Long term follow-up will still be necessary to assess potential late side-effects and the benefits versus the risks of this approach, but I am convinced that this trial will spur a lot of discussion on optimizing adjuvant treatment in this common disease."

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