# Irradiating chest lymph nodes in patients with early stage breast cancer improves survival

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Irradiating chest lymph nodes in patients with early stage breast cancer improves survival without increasing side effects. Credit: EORTC

Administering radiation therapy to the lymph nodes located behind the breast bone and above the collar bone to patients with early stage breast cancer improves overall survival without increasing side effects, and this effect lasts for 15 years, researchers have found. Professor Philip Poortmans, head of the department of radiation oncology at the Institut Curie, Paris, France, will tell participants at the annual American Society for Clinical Oncology (ASCO) congress next week (Monday, 4 June 2018) that these findings settle once and for all the question of whether radiation therapy is beneficial for these patients.

Results from the international randomised trial, carried out by the European Organisation for the Research and Treatment of Cancer (EORTC) and which involved 4004 patients with stage I to III breast cancer from 43 centres, are convincing, he says. "Our results make it clear that irradiating these lymph nodes gives a better patient outcome than giving radiation therapy to the breast/thoracic wall alone. Not only have we shown that such treatment has a beneficial effect on disease control, but it also improves breast-cancer related survival," he says.

Lymphatic drainage from breast cancer to the regional lymph nodes means that the cancer is more likely to spread to other parts of the body. This drainage follows two pathways. The best known is to the axilla (armpit), and these lymph nodes are usually treated by surgery and/or radiation therapy. The second pathway drains to the internal mammary (IM) lymph nodes behind the breast bone, and probably from there to those just above the collar bone, the medial supraclavicular (MS) nodes. Because of uncertainty about the effects of treatment in this area, and particularly concerns about the increased toxicity that might be caused by the irradiation of a larger area, until recently only about half of radiation oncology centres treated the IM-MS lymph nodes.

After a median follow-up of 15.7 years, the researchers found a significant reduction in deaths from breast cancer (16.0 percent in the treatment group vs. 19.8 percent in the control group), and in the return of breast cancer in patients who had received radiation to the IM-MS nodes (24.5 percent vs. 27.1 percent). A total of 1117 patients had died during the time. Overall survival was 73.2 percent in the IM-MS group and 70.8 percent in the control group. There was no increase in non-breast cancer related mortality in the first group and to date there has been no increased level of serious complications related to the treatment. There was no difference in the incidence of second cancers, cancer in the other breast, or deaths from cardiovascular disease between the two groups.

Patients at low risk of their cancer spreading outside the breast may be given less intensive systemic therapy in order to spare them side effects. In these cases, using IM-MS radiation therapy can improve their outcome by eradicating residual tumour cells in the breast/thoracic wall. For patients at high risk of metastases, who receive systemic therapy, the prospect of cure is also related to the chance of leaving residual tumour cells behind throughout the body. In these cases too, the ultimate outcome can be improved by using effective locoregional treatment to eradicate disease at the site where it is most likely to be present, the researchers say.

"The results of our trial, in which the patients received appropriate systemic treatments, contradict the existence of a competition between locoregional and systemic treatments," says Prof. Poortmans. "Because there is a rather positive interaction between these treatments, in many patients their combination will result in an enhancement of the combined benefits; in other words, one plus one can equal more than two."

The researchers intend to continue to follow these patients in the long term and are planning an average follow-up of 20 years. "We want to look further at which patients are most likely to benefit from this treatment, and to identify the best techniques for doing it efficiently and safely," says Prof Poortmans.

The researchers say that the rate of side effects was low, the vast majority were of low grade, and many of them were only temporary. "It is very important that we record all possible events, including recurrence and toxicity, and an even longer follow-up will also give us the opportunity to continue evaluating our patients in other areas, for example quality of life and wellbeing," say Prof. Poortmans

"Advances in radiation therapy techniques and new therapies, and earlier diagnosis may increase the benefit from IM-MS radiation treatment. But

we believe that our trial has already given solid evidence of the benefits of radiation treatment of the IM-MS lymph nodes, and we hope that such treatment will stay where it is and become where it isn't standard clinical practice for selected patients with early stage breast cancer," he says.

Provided by European Organisation for Research and Treatment of Cancer