

Breast cancer patients can safely avoid extensive removal of lymph nodes if they respond well to systemic treatment

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Patients with breast cancer that has started to spread to the lymph nodes in the armpit can safely avoid extensive removal of the lymph nodes if

their treatment is tailored to their response to cancer-killing therapies such as chemotherapy before surgery.

In a presentation to the [14th European Breast Cancer Conference](#) today (Friday) in Milan, Annemiek Van Hemert, a doctor and Ph.D. student in the Surgical Oncology Department of Antoni van Leeuwenhoek-Netherlands Cancer Institute (AVL-NKI) in Amsterdam (The Netherlands), said, "If we are able to predict the response based on the removal of only one lymph node, it means we can safely avoid extensive removal of the lymph nodes if no living tumor cells are left. This will avoid serious complications, such as painful swelling in the arm, known as lymphoedema."

"However, although clinicians use a number of staging techniques to predict the response, until now robust data on cancer outcomes have been lacking, especially in patients whose cancer has spread to more than three lymph nodes."

Dr. Van Hemert and colleagues, led by Professor Marie-Jeanne Vrancken Peeters at the AVL-NKI, carried out a study involving 218 patients between 2014 and 2021 to investigate cancer outcomes of the MARI protocol ("Marking Axillary lymph nodes with Radioactive Iodine seeds").

The protocol was developed at the AVL Hospital in 2014 and is now being used in several Dutch hospitals. Today's presentation gives outcomes after four years for the rate of cancer recurrence in the axillary nodes, patients' overall survival, and disease-free survival.

"We focused on patients with more extensive axillary lymph node disease: the patients where we know there were cancer cells in more than three nodes. We used FDG-PET/CT scans to assess the extent of cancer spread to the lymph nodes," said Dr. Van Hemert.

"We marked the largest axillary lymph node with a radioactive iodine seed. After this, patients underwent primary systemic treatment: either chemotherapy or targeted therapies that find and attack cancer cells. Then, surgery was performed. During the surgery, we only removed the marked lymph node, the MARI node, and examined it for any remaining living tumor cells."

"Whenever the MARI node showed there were no residual tumor cells, in other words, a pathological complete response (pCR) to the primary systemic treatment, then we did not remove any additional lymph nodes. Patients who had residual disease in the MARI node had further lymph nodes removed, known as an axillary lymph node dissection. All patients received radiation treatment."

The MARI procedure had a false negative rate of 7%, which means that it missed living [cancer cells](#) in 7% of cases. After an average of 44 months (with a range of 26-62 months), the rate of cancer recurrence in the axillary nodes was 2.9% in the 103 patients who received radiation alone, with no further lymph node removal—47% of the study's 218 patients.

"In addition, [survival rates](#) after 44 months in these patients were excellent," said Dr. Van Hemert. "The overall survival rate was 95%, and 89% of patients survived without a recurrence of invasive disease. This means that we can safely omit the extensive removal of axillary lymph nodes in patients who achieve a pCR in the MARI node after primary systemic treatment."

The axillary recurrence rate in the 115 patients (53%) who required further lymph node removal was 3.5%, with an overall survival rate of 90% and a disease-free survival rate of 82%.

She said primary systemic treatment had significantly improved in recent

years, and up to 70% of patients treated this way achieved a pCR, but surgeons were still removing all the [axillary lymph nodes](#). "The pathologist would say, 'Nice, you have removed 18 lymph nodes, and none of them contained residual tumor cells.' So this raised the question: did we do the right thing for the patient by removing so many nodes with all the ensuing complications?"

"We hope that other clinicians will think of implementing this de-escalation strategy so that more patients with breast cancer will benefit from what we have shown: surgical removal of axillary nodes can be safely omitted in around 80% of patients treated with primary systemic therapy."

The researchers will be collecting further data on outcomes over a longer period. They have also started the DESCARTES trial to investigate the safety of omitting radiation treatment in a selected group of patients with tumors smaller than two centimeters in diameter and no evidence of cancer spreading to the [lymph nodes](#) and pCR after primary systemic treatment.

The co-chair of the 14th European Breast Cancer Conference is Dr. Fiorita Poulakaki, and she was not involved with this particular research project.

She commented, "When we treat patients for [breast cancer](#), it is important to ensure that treatment itself causes as little harm to the patients as possible. The results from this study suggest a way to help us avoid side effects that affect the quality of life and can sometimes cause considerable long-term distress to patients. Every day, we cure patients, making sure they live long lives, but at the same time, we should also care about survivorship issues. We look forward to further results from this trial."

More information: Abstract no: 14, "Omission of axillary lymph node dissection in cN2-3 breast cancer patients with an excellent response on primary systemic treatment is safe: 4-year oncologic outcome of the MARI protocol", Friday 22 March, oral abstract session, 09:30-11:00 hrs CET, Silver room.

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