

# Breast cancer tumor make-up changes through the course of disease

September 25 2011

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New research has found that breast cancer tumours change their hormonal status throughout the course of disease, whereas the decision about the most effective treatment for the patient is usually only based on one biopsy of the primary tumour. For some patients, biopsy verifications of any relapse will be very important because it may completely change their clinical management, a Swedish researcher will tell the 2011 European Multidisciplinary Cancer Congress today (Monday 26 September). Dr. Linda Lindström, from the Karolinska Institutet Department of Oncology-Pathology, Solna, Stockholm, will say that her group's research is the first sizeable study to look at changes in tumours in multiple relapses in breast cancer patients.

"Our study demonstrates [tumour](#) instability in clinically used markers throughout tumour progression. We saw, for example, that one in three [breast cancer](#) patients alter oestrogen (ER) or progesterone (PR) hormone receptor status, and 15% of patients change human epidermal growth factor receptor 2, or HER2, status during the course of disease," she will say.

ER and PR receptor status tests show whether one or both of these hormones is helping to grow the cancer. Cancer that is hormone positive can be treated by hormone-suppressing drugs, whereas hormone negative cancers may respond to other types of treatment. Hormone negative patients are normally tested for HER2. If this test is positive, treatment such as Herceptin will usually be given.

The researchers studied breast [cancer patients](#) in the Stockholm healthcare region who had a recurrence of the disease between January 1, 1997 and December 31, 2007. Information on ER status in several relapses from the same individual was assessed in 119 patients: 33.6% of patients had changes in tumour status between the different sites of relapse (local, loco-regional and metastases) whereas 36.1% of the patients were stable ER positive, and 30.3% were stable ER negative. Sixteen percent of patients changed from ER positive to negative during the course of their disease, 12.6% changed from negative to positive, and 5% altered back and forth throughout tumour progression.

In the PR group, 30.2% of patients altered their hormone receptor status, with the majority changing from positive to negative. "Until now we thought that these predictive markers remained stable during the course of the cancer. But it is now apparent that these breast tumours markers, which are used to decide the best treatment for the patient, change as the tumour progresses and this significantly affects the way patients respond to particular therapies. This has important implications for the future management of the disease," says Dr. Lindström.

The researchers now intend to carry out a prospective study in which they will follow a group of breast cancer patients and examine the standard clinical markers throughout their tumour progression. "With cancer treatments becoming more and more efficacious and targeted to specific groups, it is particularly important that the correct treatment is given throughout the disease," says Dr. Lindström. "An additional advantage of carrying out regular biopsies would be that they could detect other primary cancers, or benign lesions, which could spare patients inappropriate or unnecessary therapies."

Dr. Lindström and colleagues think that their findings could possibly be applied to cancers other than breast. "We believe that tumour instability may be due to many different factors, for instance the choice of therapy

and other host (patient) characteristics, and that some inherent tumour behaviour may well be shared by different tumour types. This is a promising area of research with important implications for patient management," she will conclude.

"This finding is of major clinical importance because it shows that many cancer patients who relapse do not receive optimal treatment for their disease. While the price of regular biopsies may seem high for both patients and healthcare systems, in the long run they may avoid inappropriate and costly treatments and, even more importantly, may be the basis for selecting more effective treatments for individual patients," said Professor Michael Baumann, ECCO President.

ESMO spokesman Professor Fabrice André, from the Institut Gustave-Roussy, Villejuif, France, said: "In this study of a large series of patients whose cancer recurred, the investigators have shown molecular changes in the tumours of more than one third. This further underlines the importance of taking regular biopsies in patients who [relapse](#) so that they can be sure of getting the most appropriate treatment, and of running trials looking at the relationship between the profiles of metastatic lesions and new agents specifically targeted at them."

Provided by ECCO-the European CanCer Organisation

Citation: Breast cancer tumor make-up changes through the course of disease (2011, September 25) retrieved 9 April 2024 from

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