High CTC Levels Predicted Poor Outcome in Metastatic Breast Cancer

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Predictive value independent of serum tumor markers.
CTCs are independent prognostic marker for metastatic disease.

SAN ANTONIO - A high level of circulating tumor cells (CTCs) - cells that have detached from a tumor and are circulating in the body through the blood - are an independent prognostic marker in metastatic breast cancer as first-line therapy. In addition, persistence of high CTC level during therapy was found to be an early marker of poor outcome.

"This is the largest, prospective series validating the prognostic value of CTCs in first-line chemotherapy metastatic breast cancer, independently from serum tumor markers for overall survival," said Jean-Yves Pierga, M.D., Ph.D., professor of the medical oncology department, Institut Curie and Université Paris Descartes, France. "Persistence of a high level of CTCs before the second cycle of chemotherapy was a strong and early predictive marker of poor outcome."

Pierga presented results of this study at the 33rd Annual CTRC-AACR San Antonio Breast Cancer Symposium, held here Dec. 8-12, 2010.

Breast cancer can metastasize from a primary tumor in the breast to distant organs, such as the liver, lungs or bone, through the blood. New techniques have allowed for the detection of metastasis by testing blood for CTCs.

Previous research has not established that routine use of CTC measurements can improve patient outcomes, therefore, it is not currently a recommended practice, said Pierga.

The researchers prospectively tested CTCs as an outcome predictor compared with serum tumor markers in metastatic breast cancer patients treated by first-line chemotherapy. Serum tumor markers are proteins or glycoproteins released into the blood; however, tumor markers only indirectly reflect the presence of cancer and can be associated with dead cells, according to Pierga. In fact, some breast cancers can metastasize without any increase in tumor serum markers.

This study included 267 patients with metastatic breast cancer who were receiving first-line chemotherapy and had undergone assessment for three tumor markers: CA 15.3, CEA and LDH. Patients were enrolled in one of five cancer centers in France between June 2007 and Sept. 2009, and were followed for a median of 16 months.

Sixty-five percent of the patients had one or more CTCs; 44 percent had five or

more CTCs. Of the measured tumor markers, 64 percent of patients had high CA 15.3, 51 percent had high CEA and 45 percent had high LDH.

High CTC levels were predictive of poor progression-free survival and overall survival, independent of serum tumor markers.

Evaluation of serum tumor markers showed that baseline levels of CA 15.3, CEA and LDH were prognostic for poor progression-free survival, but only LDH was prognostic for overall survival. CTCs were highly associated with tumor markers, tumor burden, performance status, and number of metastatic sites, but were also independent of tumor biology, such as HER2 status, or grade of cancer.

"CTCs add an independent prognostic marker in metastatic breast cancer at first-line chemotherapy, and an early predictive marker of clinical benefit after one cycle of chemotherapy," Pierga said.

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