Women with luminal A subtype of breast cancer did not benefit from adjuvant chemotherapy

9 December 2015

Premenopausal women whose invasive breast cancers were of the luminal A subtype had comparable 10-year disease-free survival rates regardless of whether or not they received adjuvant chemotherapy, according to data from the phase III DBCG77B clinical trial presented at the 2015 San Antonio Breast Cancer Symposium, held Dec. 8-12.

"Luminal A is a relatively common subtype of breast cancer, and is defined by high expression of hormone receptors [estrogen receptor (ER) and progesterone receptor (PR)], and low expression of the cell-growth marker Ki67 and the oncoprotein HER2. It is the form of breast cancer with the best prognosis," said Torsten Nielsen, MD, PhD, professor of pathology at the University of British Columbia in Vancouver, Canada.

"We wanted to address the clinical question of whether or not women with molecularly low-risk luminal A breast cancer actually benefit from chemotherapy," added Nielsen. "Instead of starting a new trial and waiting for 10 years to find answers, we used an older, completed trial that had saved tissue samples for future studies."

Between 1977 and 1983, 1,146 premenopausal women who had lymph node-positive invasive breast cancer that was larger than 5 cm were randomized to two chemotherapy arms and two no- chemotherapy arms in the Dutch Breast Cancer Cooperative Group 77B trial. Women in the chemotherapy arms received either cyclophosphamide or a combination of cyclophosphamide, methotrexate, and fluorouracil. All women received radiotherapy but no endocrine therapy.

Nielsen and colleagues analyzed the tissue samples that were available from 709 patients for the presence of ER, PR, HER2, and Ki67, and identified 165 of them as having had the luminal A subtype.

The researchers found that there was no difference in 10-year invasive disease-free survival rates between women with luminal A disease who did and did not receive chemotherapy. Patients with nonluminal A disease (which included the luminal B, HER2E, and triple-negative subtypes) who received chemotherapy were 50 percent less likely to have their disease recur in 10 years, compared with women with nonluminal A disease who did not receive chemotherapy.

Nielsen explained that none of the women in this trial received hormone therapy as adjuvant treatment. In that respect, the trial used in this study may not mirror the current standard of care. However, endocrine therapies are known to decrease the tumors' sensitivity to chemotherapy. "Given that women with luminal A subtype of breast cancer did not benefit from chemotherapy in our study, it would certainly be expected that women with similar tumor characteristics getting endocrine therapy would also receive no benefit from chemotherapy," he said.

"The trial was positive for chemotherapy benefit because women who had the luminal B and basal subtypes, in contrast to those who had luminal A, greatly benefited from cyclophosphamide-based adjuvant chemotherapy," Nielsen said. "We would like to thank the women of Denmark who agreed to sign up to be randomized to different treatments. Even decades later, they are contributing to our scientific understanding of breast cancer and have helped a new generation of women make better-informed decisions about what treatments they need, or do not need," he added.