CHEMOTHERAPY

Biomarkers of chemotherapy response in breast cancer

Profiling tumors for two important target-based biomarkers can help to accurately predict the response to anthracycline-containing chemotherapy in patients with breast cancer, according to a recent study. Lead investigator Bent Ejlertsen commented that by combining the biomarkers topoisomerase II alpha (*TOP2A*) and tissue inhibitor of matrix metalloproteinases 1 (TIMP-1), “we were able to construct a profile identifying a larger proportion of patients as anthracycline-responsive than these markers did individually.”

Human EGFR2 (HER2), *TOP2A* and TIMP-1 have all been identified as biomarkers that can predict the treatment outcome associated with anthracycline-containing chemotherapy. In the present study, Ejlertsen and colleagues compared the predictive value of these biomarkers individually and in combination (HER2 with TIMP-1 or *TOP2A* with TIMP-1) in patients enrolled

in the Danish Breast Cancer Cooperative Group 89D trial.

Patients received one of two chemotherapy regimens (one of which contained the anthracycline epirubicin). 623 tumors were assessed, of which 188 were HER2-positive, 154 were TIMP-1-negative, and 139 had a *TOP2A* abnormality. By screening for *TOP2A* and TIMP-1 in combination, nearly twice as many patients classified as anthracycline-responsive were identified compared with the use of these biomarkers individually. Ejlertsen notes that “patients with anthracycline-responsive breast cancer might not have been offered an anthracycline if the judgment was guided by a single marker.”

Lisa Richards

Original article Ejlertsen, B. *et al.* HER2, *TOP2A*, and TIMP-1 and responsiveness to adjuvant anthracycline-containing chemotherapy in high-risk breast cancer patients. *J. Clin. Oncol.* **28**, 984–990 (2010)