

Changes in estrogen receptor (ER), progesterone receptor (PR) and HER-neu status with time – discordance rates between primary and metastatic breast pathology samples

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Background: The occurrence of changes in tumor receptor profile (ER, PR and HER-2/neu) between primary and metastatic tissue is well recognised and may have significant treatment implications. Previous reports on receptor discordance rates have tended to be from sub-studies of clinical trials. We sought to evaluate the degree of ER, PR and HER-2/neu receptor discordance in patients treated at two Canadian cancer centres.

Methods: Archival data was collected for patients for whom tissue from both primary and metastatic sites was available. Patients with recurrences in the breast or axilla were excluded. ER, PR and HER-2/neu status in the primary and metastasis were compared. Additional information including adjuvant therapy and time to metastasis biopsy was gathered.

Results: To date, data is available on 80 patients. Hormone receptor (HR) status was available for 96% of primaries and 56% of metastases. HR status in both the primary and the metastasis was performed in 51% of cases. The discordance rate for ER was 21% (2-sided $p=0.0096$). 12% of patients changed from ER+ to ER- and 9% changed from ER- to ER+. The discordance rate for PR was 37% (2-sided $p\leq 0.0001$), with all of these patients changing from PR+ to PR-. No significant HR discordance was found among different adjuvant hormone therapy subgroups. There was no correlation between HR discordance and time to rebiopsy. No discordance for HER-2/neu was found.

Conclusions: Significant discordance for HR status was observed, 21% for ER and 37% for PR. HER-2/neu discordance was not observed. We are currently exploring the practical implications of these discordance rates on the management of advanced breast cancer patients in a prospective trial.