

Androgen receptor expression and response to chemotherapy in breast cancer patients treated in the neoadjuvant TECHNO and PREPARE trial

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BACKGROUND

The androgen receptor (AR) is discussed as a prognostic and/or predictive marker in breast cancer patients.

METHODS

AR mRNA expression was analysed by RT-qPCR in breast cancer patients treated in the neoadjuvant TECHNO (n = 118, HER2-positive) and PREPARE trial (n = 321, HER2-positive and -negative). In addition, mRNA expression of the AR transcript variants 1 (AR1) and 2 (AR2) was measured.

RESULTS

Regarding subtypes, high AR mRNA levels were frequent in HER2-positive (61.3%, 92/150) and luminal tumours (60.0%, 96/160) but almost absent in triple-negative tumours (4.3%, 3/69) ($p < 0.0001$). Overall, high AR mRNA levels were found to be associated with lower pathological complete remission (pCR) rates (OR 0.77 per unit, 95% CI 0.67-0.88, $p = 0.0002$) but also with better prognosis in terms of longer disease-free survival (DFS) (HR 0.57, 95% CI 0.39-0.85, $p = 0.0054$) and overall survival (OS) (HR 0.43, 95% CI, 0.26-0.71, $p = 0.0011$). In the PREPARE trial, a survival difference for patients with high and low AR1 mRNA levels could only be seen in the standard chemotherapy arm but not in the dose-dense treatment arm (OS: HR 0.41; 95% CI 0.22-0.74 vs. HR 1.05; 95% CI 0.52-2.13; $p = 0.0459$).

CONCLUSIONS

We provide evidence that AR mRNA predicts response to chemotherapy in breast cancer patients.

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