Triple-negative breast cancer

**EXPRESSION OF THE 4Q12 CHROMOSOMAL GENES KIT, VEGFR2 AND PDGFRα IN TRIPLE-NEGATIVE BREAST CANCER**

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**Introduction:** Triple-negative breast cancer (TNBC) is a subgroup characterised by bad prognosis caused partly by the lack of receptor expression for oestrogen (ER), progesterone (PR) and human epidermal growth factor-2 (HER2). Today, no targeted therapy is available for TNBC but potential target molecules are being evaluated. In this study three such targets are investigated, namely the tyrosine kinase receptors KIT, vascular endothelial cell growth factor receptor-2 (VEGFR2) and platelet derived growth factor receptor-alpha (PDGFRα). The goal of the study is to see if there is a correlation between the expression of the three receptors, their gene copy number, and the prognosis of breast cancer, mainly in the TNBC subgroup of patients.

**Methods:** Patients diagnosed with primary breast cancer in the South Swedish Health Care Region between 1999 and 2003 were included in this study. The tumours were evaluated with immunohistochemistry (IHC) for protein expression, and with fluorescence in situ hybridization (FISH) for gene copy number. Breast cancer specific survival (BCSS), measured from the month of surgery to the last clinical follow-up or any breast cancer-related event, was used as endpoint.

**Results:** 464 patients with known breast cancer subtype were included in the study and 34 (7.3 %) of these were diagnosed with TNBC. TNBC tumours were found to be KIT positive in 16 (49 %) cases compared to 41 (10 %) of non-TNBC cases (p < 0.001). VEGFR2 was positive in 11 (32 %) of TNBC cases and 32 (6 %) of non-TNBC cases (p < 0.001). No statistically significant difference was seen for PDGFRα. Survival analysis showed a tendency towards decreased BCSS in the PDGFRα positive TNBC patients, but no notable difference in BCSS was seen for the other markers. 203 patient tissue samples were evaluated with FISH for all three markers but no relation was seen between FISH positivity and TNBC. Nor was any correlation seen between positive IHC and positive FISH results.

**Conclusion:** KIT and VEGFR2 are expressed more often in TNBC patients than in non-TNBC patients. The involvement of these tyrosin kinase receptors in TNBC should be further evaluated in larger patient cohorts as they have the potential to serve as targets for anti-cancer therapy in the future.

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