In the era of genomics should tumor size be reconsidered as a criterion for neoadjuvant chemotherapy?

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**Background:** The Oncotype DX Recurrence Score (RS) assay has been validated for prediction of 10-year risk of distant recurrence and likelihood of benefit from chemotherapy in patients with ER-positive, HER2-negative early breast cancer. Patients with high RS tumours have substantial benefit, and patients with low RS tumours have minimal if any benefit from chemotherapy. Tumour size is used as a key parameter when selecting patients for neo-adjuvant chemotherapy. The aim of this study was to assess the distribution of RS in patients selected for neo-adjuvant chemotherapy primarily due to tumour size. **Methods:** Patients with ER-positive and HER2-negative tumours, with node negative or no more than 1 positive node from three trials were included in this study. Oncotype DX was performed at Genomic Health blinded to the clinical data. Descriptive statistics were calculated for distribution of RS for all cases. **Results:** Of 277 patients, 96 met eligibility criteria and 81 had sufficient material for analysis. Median tumour size was 40 mm (IQR 30-50 mm). Grade I, II and III were observed in 13, 49 and 17 cases, respectively. There was a wide distribution of RS with a median of 21.4 (IQR 16.05-26.75). In total, 23(28.3%) had high, 28(34.6%) intermediate and 30 (37%) low RS results. **Conclusions:** The RS may provide relevant information for neo-adjuvant treatment decisions in select patients both in clinical practice but also in studies. Inclusion of low RS disease patients in neo-adjuvant trials will likely only dilute the ability to look at treatment effects.