Low Recurrence Score by the Oncotype DX® Breast Cancer Assay Rarely Results in Recommendation for or Administration of Chemotherapy: A Pooled Analysis

**Abstract**

The Oncotype DX® (Oncotype DX®; Genomic Health, Inc.) assay is a genomic test that measures 16 genes to predict the risk of distant recurrence over 10 years in early-stage estrogen receptor-positive, lymph node-negative breast cancer patients. The Recurrence Score (RS) ranges from 0 to 100 and is divided into three categories: low (< 18), intermediate (18-30), and high (> 31). A low RS is associated with a low risk of distant recurrence over 10 years, whereas an intermediate or high RS is associated with an increasing risk of distant recurrence. Despite these findings, the assay was initially met with controversy because some studies recommended chemotherapy for patients with low RS results, which was in contrast to the recommendations of the National Comprehensive Cancer Network (NCCN). The present analysis aimed to determine the impact of low RSs (< 18) on the recommendation for and use of chemotherapy across multiple studies.

**Introduction and Background**

Several studies have shown a strong association between gene expression and patient outcomes. For example, the Oncotype DX® assay measures gene expression levels of 16 genes and assigns a RS to each patient. A low RS (≤ 18) is associated with a low risk of distant recurrence over 10 years, whereas an intermediate or high RS is associated with an increasing risk of distant recurrence. Despite these findings, the assay was initially met with controversy because some studies recommended chemotherapy for patients with low RS results, which was in contrast to the recommendations of the NCCN. The present analysis aimed to determine the impact of low RSs (< 18) on the recommendation for and use of chemotherapy across multiple studies.

**Methods**

The study included patients with early-stage breast cancer who had a RS of < 18 or ≥ 31. The authors examined the impact of low RSs on the recommendation for and use of chemotherapy across multiple studies. The authors also assessed the impact of low RSs on distant recurrence-free survival (DRFS) in these studies.

**Results**

Of 725 patients total in these studies, 323 (44.7%) had low RSs. Of 190 patients with low RSs where the recommendation for or against chemotherapy was tabulated, 270 patients (95%) received no chemotherapy. (Some studies looked at both recommendation and use.) A more quantitative approach is needed for identifying individual risk for recurrence and benefits from therapy.

**Conclusion**

Low RSs (< 18) have a low risk of distant recurrence at 10 years. The actual use of chemotherapy was tabulated, 270 patients (95%) received no chemotherapy. (Some studies looked at both recommendation and use.) A more quantitative approach is needed for identifying individual risk for recurrence and benefits from therapy.

**References**