Pathological Proliferation Score (PrS) to Predict Genomic Risk Categories in Early Stage Breast Cancer

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Background: Five of the 16 cancer-related genes used to calculate the Recurrence score (RS) are proliferative genes. Appropriate utilization of an expensive test is important especially in areas of limited resources. A relatively inexpensive ‘Pathological Proliferative Score’ of a tumor may help group patients in risk categories correlating with the RS.

Methods: We retrospectively studied 205 patients with lymph node negative breast cancer, negative HER2 expression, HER2-negative expression (ODX) candidates between 1990-2015 treated across three rural community oncology practices. Probabilistic Immunostaining tumor grade, visual mitotic score and Ki67 immunostaining (on a scale of 3, 4, 5) and basal (on a scale of 2, 3, highest score of 5). Log-rank test was used for survival analysis.

Results: PrS correlated with ODX risk recurrence (p < 0.001, Fisher’s Exact test) (Table 1). PrS predicted FFP (p=0.014) at 10 years (Table 4) with PrS > 6% (p=0.08), > 10% (p=0.01), > 15% (p=0.001), > 20% (p=0.002) and FFP (p=0.003). The 10 yr OS (p=0.75), PFS (0.76) and FFP (p=0.88) was not influenced by addition of adjuvant chemotherapy.

Conclusions: PrS which may represent an inexpensive screening approach to identify patients with a low ODX RS (3-4). Rs 3-4) with excellent outcomes despite the type of adjuvant treatment. ODX testing is unlikely to re-classify them. Higher (5-9) PrS was not predictive of chemotherapy benefit, unlike high ODX. Lack of standardization of Ki67 staining, retrospective nature of the study while important should be tested in a prospective setting.