[P6-06-02] Direct comparison of risk classification between MammaPrint®, Oncotype DX® and MammoStrat® assays in patients with early stage breast cancer

Shivers SC, Clark L, Esposito N, Howard N, King J, Acs G, Ellis D, Vrcelj V, Zanchi A, Stork-Sloots L, de Snoo F, Baehner FL, Butler SM, Jamshadian F, Sing AP, Blumencranz PW, Cox CE. University of South Florida, Tampa, FL; Florida Hospital Tampa, Tampa, FL; Morton Plant Hospital, Clearwater, FL; Agendia NV, Amsterdam, Netherlands; Genomic Health Inc., Redwood City, CA

Several genomic tests for the prediction of breast cancer recurrence are commercially available and their clinical use is becoming more common. MammaPrint® (MP, Agendia NV) is a 70-gene microarray assay designed to assess the 10-year risk of recurrence in an untreated population that was not selected for ER/HER2 results. The Oncotype DX® Recurrence Score® (RS, Genomic Health, Inc.) is a 21-gene RT-PCR assay that is clinically validated to predict the 10-year risk of distant recurrence in ER+ patients treated with Tamoxifen. MammoStrat® (MS, Clarient, Inc.) is an IHC assay that uses 5 antibodies and has been validated in a similar population as RS. While the development and validation of these assays are significantly different, they are frequently believed to provide equivalent information. However, several recent reports show that these assays classify patients differently with significant discordances for all risk groups (Denduluri, et al., ASCO Breast 2011; Poulet, et al., SABCS 2012; Schneider, et al., ASCO 2013). The present study is the first to compare the results of all three of these risk-stratifying assays side by side in the same samples.

Methods: Patients with ER+ early-stage breast cancer with an MP result obtained as part of their routine clinical care were identified at the University of South Florida (USF, N=65) and Morton Plant Hospital (N=83). Slides and/or blocks were cut and de-identified at USF and sent to Genomic Health and Clarient for blinded testing. Clinicopathological features were also reviewed by 3 breast pathologists. Descriptive statistics were calculated for cross risk-classification and tumor characteristics.

Results: 148 patients with an MP result had tissue available to send for RS and MS assays. These patients had a median age of 62 years; median tumor size 1.8 cm; 9% low grade, 59% intermediate grade and 32% high grade. Of 148 patients with MP results, 53% were low risk and 47% were high risk. Of 135 samples that yielded enough RNA to produce an RS result, 53% were low risk, 26% were intermediate risk and 21% were high risk. Of 129 samples that yielded an MS result, 44% were low risk, 28% were moderate risk and 28% were high risk. Table 1 shows the distribution of patients with RS and MS risk category by MP risk category and Table 2 shows the RS by MS risk categories. Of 121 patients with results for all 3 assays, only 22% were concordant for low risk and 9% were concordant for high risk across all 3 assays. Overall, 30% of cases showed a major discordance such as low risk for one assay and high risk for another.

Table 1

	MP Risk	
	Low	High
RS Risk (N=135 pts)		
Low	51	21
Intermed.	17	18
High	4	24
MS Risk (N=129 pts)		
Low	38	19
Mod.	17	19
High	14	22

Table 2

	MS Risk		
	Low	Mod.	High
RS Risk (N=121 pts)			
Low	40	15	11
Intermed.	8	10	11
High	3	10	13

Conclusions: This direct comparison demonstrates that the assays classify a large proportion of patients differently. Further analysis is underway to determine whether the observed discordances are associated with routine clinicopathological characteristics. This study has important clinical implications since these assays are used to help make treatment decisions regarding which patients might benefit from chemotherapy.

Saturday, December 14, 2013 7:30 AM

Poster Session 6: Prognosis and Response Prediction: Prognostic and Predictive Factors – General (7:30 AM-9:00 AM)