A multi-institutional, prospective study of incorporating the genomic platform breast cancer index as a tool for decision-making regarding adjuvant endocrine therapy

Tara Sanft, Alyssa Berkowitz, Brock Schroeder, Christos Hatzis, Catherine A. Schnabel, Bilge Aktas, Adam Brufsky, Lajos Pusztai, G. J. van Londer

INTRODUCTION

1. Early-stage, hormone-receptor-positive breast cancer patients have a continued risk of recurrence with more than 50% of recurrences occurring after year 5.1
2. While several trials (eg, MA-17, ATLAS, AllTrios) have demonstrated that providing extended adjuvant endocrine therapy (EET) for HR+ patients from 5 to 10 years is beneficial in preventing relapse, the absolute benefit is modest and there is increased toxicity with longer duration of therapy.2,3
3. Current decisions regarding treatment extension relies on a decision-making process that weights non-personalized recurrence risks against benefits of EET.
4. Breast Cancer Index (BCI, Biotheranostics, Inc.) has been validated to quantify the risk of late recurrence and to predict likelihood of benefit from EET based on an individual’s tumor genomic profile.4,5
5. The purpose of this prospective, multi-institutional study was to assess the impact of BCI on: 1) Physician’s recommendation for EET 2) Physician decision with confidence-making 3) Patient’s satisfaction regarding EET

MATERIALS AND METHODS

1. Patients with stage I-III HR+ breast cancer treated at the Yale Cancer Center and at the University of Pittsburgh Medical Center (UPMC), who had completed at least 3.5 years of endocrine therapy were eligible.
2. The BCI test was performed on FFPE samples from the original tumor. The BCI RT-PCR assay yields two results; an individualized % risk of late distant recurrence (post-5 years) (BCI Prognostic) and a categorical (high vs low) likelihood of benefit from EET (BCI Predictive).
3. Patients and physicians completed standardized pre- and post-test questionnaires examining preferences for EET. Patients also completed the State Trait Anxiety Index (STAI), which captures both transient and more long-standing anxiety and the decision conflict scale (DCS) survey that measures personal perceptions of uncertainty when choosing between options. Patients were also queried for concerns of cost, side effects, urgency and benefit, level of comfort with the choice of EET before and after BCI results, and the impact of BCI on compliance to recommended therapy.
4. Pre-and-post test DCS and STAI were compared using paired t-test. Paired rank tests were used for pre- and post-test concerns comparisons. Odds ratio was calculated to determine physician confidence in post-test recommendation.

RESULTS

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Overall, there was a significant decrease in mean anxiety (DCS) scores following testing (p<0.0001).
2. At individual patient level: anxiety level decreased in 75 patients, remained stable in 19 patients, and increased in 44 patients (3 patients were not included due to lack of data).
3. Mean decision anxiety (DCS) scores significantly decreased following BCI testing (p=0.0001).

CONCLUSIONS

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Intended Uses and Limitations

The Breast Cancer Index (BCI) Risk of Recurrence & Extended Endocrine Benefit Test is intended for use in patients diagnosed with estrogen receptor positive (ER+), lymph node negative (LN-) or lymph node positive (LN+) with 1-3 positive nodes early-stage, invasive breast cancer, who are distant recurrence free. BCI provides 1) a quantitative assessment of the likelihood of both late (post 5 years) and overall (0-10 year) distant recurrence following an initial 5 years of endocrine therapy (LN- patients) or 5 years of endocrine therapy plus adjuvant chemotherapy (LN+ patients), and 2) prediction of likelihood of benefit from extended (5 years) endocrine therapy. BCI results are adjunctive to the ordering physician's work-up; treatment decisions require correlation with all other clinical findings. This test was developed and its performance characteristics determined by Biotheranostics, Inc. It has not been cleared or approved by the U.S. Food and Drug Administration. This test is used for clinical purposes. It should not be regarded as investigational or for research. How this information is used to guide patient care is the responsibility of the physician. Biotheranostics is certified under the Clinical Laboratory Improvement Amendments of 1988 to perform high complexity clinical laboratory testing.

For Questions, Visit www.BreastCancerIndex.com
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Call: 1-877-886-6739

A Multi-institutional, Prospective Study of Incorporating the Genomic Platform Breast Cancer Index as a Tool for Decision-making Regarding Extension of Adjuvant Endocrine Therapy

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Highlights:

• Patients and physicians completed pre- and post-test questionnaires examining preferences for EET. Patients also completed anxiety (State Trait Anxiety Index; STAI) and decision conflict scale (DCS) surveys, and were queried for concerns of cost, side effects, safety and benefit, level of comfort with the choice of EET before and after BCI results, and about the impact of BCI on compliance to recommended therapy.

• Integration of BCI test results led to a change in physician treatment recommendation of EET in 30% of patients (42/141).

• Of cases in which physicians changed their recommendation following BCI testing from a Yes recommendation to a No recommendation for EET, 97% of cases were BCI Prognostic Low Risk or BCI Predictive Low Likelihood of Benefit from EET (29/30).

• Of cases in which physicians changed their recommendation from a No recommendation to a Yes recommendation for EET, 92% of cases were BCI Prognostic High Risk or BCI Predictive High Likelihood to Benefit from EET (11/12).

• More physicians felt strongly confident in their recommendation after the BCI test result (27%) than before (9%), (OR=3.61; 95% CI 0.96–14.08; p=0.043).

• Of those patients recommended for EET by their physician following BCI testing, 81% (N=61) of patients stated they would be more likely to be compliant to extended endocrine therapy based on the BCI results.

• There was a significant decrease in patient-reported concerns regarding cost, safety and benefit of EET.