A Non-randomized, Observational Trial of Short-term Pre-operative Endocrine Therapy in ER Positive Breast Cancer to Investigate Changes in Genomic Expression Using the Oncotype DX® Recurrence Score®

Aaron D. Bleznak MD, FACS
Lehigh Valley Health Network

Elizabeth A. Dellers MD
Lehigh Valley Health Network, Elizabeth.Dellers@lvhn.org

B G. Porter
Lehigh Valley Health Network, Bernadette.GI-Porter@lvhn.org

Sharon R. Kimmel PhD, MHA
Lehigh Valley Health Network, Sharon.Kimmel@lvhn.org

Heiwon Chung MD, FACS
Lehigh Valley Health Network, heiwon.chung@lvhn.org

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Authors
Aaron D. Bleznak MD, FACS; Elizabeth A. Dellers MD; B G. Porter; Sharon R. Kimmel PhD, MHA; Heiwon Chung MD, FACS; Carl N. Yoshizawa; Emily Burke; D S. Davison; and Calvin Chao

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Not all changes in genomic expression were consistent across ER, PR, and HER2.

Table 1: Eligibility Criteria

<table>
<thead>
<tr>
<th>Criteria/Description</th>
<th>Eligibility Values</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>30–85 years</td>
</tr>
<tr>
<td>1100/200 Performance Status (PS)</td>
<td>0, 1 or 2</td>
</tr>
<tr>
<td>Tumor Grade</td>
<td>Poor (&lt; 2.5 cm diameter, uninterpretable)</td>
</tr>
</tbody>
</table>

Table 2: Baseline Characteristics for 19 T1, NO, M0 Patients

<table>
<thead>
<tr>
<th>Variable</th>
<th>n (%)</th>
<th>Variable</th>
<th>n (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Single Gene Status</td>
<td>Menopausal Status</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ER Status*</td>
<td>Poor (ER&lt;6.5)</td>
<td>19 (100%)</td>
<td>Post</td>
</tr>
<tr>
<td>PR Status</td>
<td>Poor (PR&lt;5.5)</td>
<td>6 (32%)</td>
<td></td>
</tr>
<tr>
<td>HER2 Status†</td>
<td>Poor (HER2&lt;10.7)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tumor Grade</td>
<td>Poor (T&lt;30)</td>
<td>4 (21%)</td>
<td>Progressive Disease (PD)</td>
</tr>
<tr>
<td></td>
<td>Poor (T&lt;30)</td>
<td>10 (53%)</td>
<td>Partial Response (PR)</td>
</tr>
<tr>
<td></td>
<td>Poor (T&lt;30)</td>
<td>5 (26%)</td>
<td>Complete Response (CR)</td>
</tr>
<tr>
<td></td>
<td>Poor (T&lt;30)</td>
<td>4 (21%)</td>
<td>Stable Disease (SD)</td>
</tr>
</tbody>
</table>

Figure 2: Correlation of Oncotype DX ER with Post-Neoadjuvant ER

Figure 3: Correlation of Oncotype DX PR with Post-Neoadjuvant PR

Figure 4: Correlation of Oncotype DX HER2 with Post-Neoadjuvant HER2

Results

- 21 patients consented to this study and initiated short-term neoadjuvant therapy: 13 completed therapy, underwent surgery, and had evaluable core biopsy and excisional specimens.
- 2 patients were excluded from this analysis.
- 1 patient had metastatic breast cancer in the excisional specimen
- 1 patient did not have evaluable core and excisional specimens

Strengths

Prospective study of changes in biomarkers in early-stage, ER-positive breast cancer treated with endocrine therapy

Limitations

- Small sample size: 19 patients
- Only 3 pre-menopausal patients: too few to examine potential differences by menopausal status
- Potential selection bias
- Only 11/19 patients were HR-positve
- Hypothesis tests not pre-specified

Summary and Discussion

Expression levels of ER, PR, and HER2 from core biopsies and excisional specimens were correlated (Pearson correlation coefficients, r = 0.87, 0.72, and 0.77, respectively), as was RS (r = 0.89), following short term neoadjuvant endocrine therapy.

In this study, we hypothesized that the expression of ER and PR, while HER2 expression was unchanged, the expression of PR and HER2 was augmented to a statistically significant increase (r = 0.89, 0.73, and 0.77, respectively), as was RS (r = 0.89, following short term neoadjuvant endocrine therapy).

- Prospective study of changes in biomarkers in early-stage, ER-positive breast cancer treated in multiple clinical studies; none of these patients had received neoadjuvant therapy. There are no data on the predictive or the ability of the RS observed in this tumor sample obtained after neoadjuvant therapy.

The clinical significance of the changes in ER, PR and RS is therefore unclear.

Conclusions

In this small, hypothesis-generating study:

- Expression of ER and PR increased significantly with a small but statistically significant increase in RS (r = 0.89)
- The clinical significance of these changes on breast cancer treatment is unclear.

References