HER2 POSITIVE BREAST CARCINOMA IN THE PRE AND POST ADJUVANT ANTI-HER-2 THERAPY ERA: A SINGLE ACADEMIC INSTITUTION EXPERIENCE IN THE SETTING OUTSIDE OF CLINICAL TRIALS

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INTRODUCTION

- HER2+ breast carcinoma (BC)
  - Considered “unfavorable” due to its aggressive nature and high mortality rate
    - High tumor grade, high cell proliferation rate, high frequency of visceral metastasis
    - Often negative estrogen and progesterone receptors

- Adjuvant anti-HER2 therapy
  - FDA approved in 1998 for HER2+ metastatic disease
  - Used since 2005 for adjuvant treatment of operable HER2+ BC
  - In large randomized clinical trials (NCCTG N9831 and NSABP B-31)\(^2\)\(^-\)\(^6\)
    - Reduces the risk of recurrence
    - Improves survival in patients

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OBJECTIVES

- Evaluate whether adjuvant anti-HER2 therapy has similar beneficial effect on survival outside of trials
  - Existing data from clinical trials
    - Highly controlled population of patients studied
    - Want to see if therapy is similarly beneficial in community-based practice
  - HER2+BC in Caucasian females at our academic institution
    - Clinicopathologic characteristics
    - Measured their overall survival
      - Comparing the treatments that they received before or after 11/2005
        - Implementation date of treatment with adjuvant anti-HER2 therapy as standard practice

Stage I-III HER2+BC patients from 1998-2009

- 167 patients
- Divided into 2 groups
  - Group 0: patients diagnosed before 11/2005
    - 78/167 patients
  - Group 1: patients diagnosed after 11/2005
    - 89/167 patients
- Further divided into HER2+ subtypes

167 HER2+ BC patients
Time Period
1/1998-12/2009
Followed ≤108 months

Group 0 (G0)= 78 HER2+ BC patients
Time Period
1/1998-11/2005
48/78 G0 patients
ER+/PR+/HER2+
(Luminal B/HER2+ subtype)
30/78 G0 patients
ER-/PR-/HER2+
(HER2+/Non-luminal subtype)

Group 1 (G1)= 89 HER2+ BC patients
Time Period
49/89 G1 patients
ER+/PR+/HER2+
(Luminal B/HER2+ subtype)
40/89 G1 patients
ER-/PR-/HER2+
(HER2+/Non-luminal subtype)
# RESULTS

<table>
<thead>
<tr>
<th>HER2+ patient's grouping</th>
<th>Group 0 Luminal B /HER2+ subtype</th>
<th>Group 0 HER2+/Non-luminal subtype</th>
<th>Group 1 Luminal B /HER2+ subtype</th>
<th>Group 1 HER2+/Non-luminal subtype</th>
</tr>
</thead>
<tbody>
<tr>
<td>HER2+ subtype frequency</td>
<td>48/78 = 61.5%</td>
<td>30/78 = 38.5%</td>
<td>49/89 = 55.1%</td>
<td>40/89 = 44.9%</td>
</tr>
<tr>
<td>Age*</td>
<td>57.1</td>
<td>59.4</td>
<td>54.6</td>
<td>57.5</td>
</tr>
<tr>
<td>Type of BC**</td>
<td>IDC</td>
<td>IDC</td>
<td>IDC</td>
<td>IDC</td>
</tr>
<tr>
<td>Grade**</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Size in mm*</td>
<td>25.6</td>
<td>22.5</td>
<td>22.9</td>
<td>33.1</td>
</tr>
<tr>
<td>TNM</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Anatomic stage</td>
<td>Stage III</td>
<td>Stage I</td>
<td>Stage I</td>
<td>Stage II</td>
</tr>
<tr>
<td>Survival months*</td>
<td>78.75</td>
<td>69.63</td>
<td>80</td>
<td>78.73</td>
</tr>
<tr>
<td>Alive patients - frequency</td>
<td>21/48 = 43.8%</td>
<td>15/30 = 50.0%</td>
<td>43/49 = 87.8%</td>
<td>34/40 = 85.0%</td>
</tr>
</tbody>
</table>
## RESULTS: TREATMENTS

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<tr>
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</tr>
</thead>
<tbody>
<tr>
<td>Most frequent surgery type</td>
<td>MRM 25/48 = 52.1%</td>
<td>MRM 20/30 = 66.6%</td>
<td>MRM 20/49 = 40.8%</td>
<td>MRM 20/40 = 50.0%</td>
</tr>
<tr>
<td>Radiation therapy received</td>
<td>27/46 = 58.6%</td>
<td>10/29 = 34.4%</td>
<td>26/47 = 55.3%</td>
<td>21/40 = 52.5%</td>
</tr>
<tr>
<td>Hormonal therapy received</td>
<td>39/48 = 81.3%</td>
<td>0/30 = 0%</td>
<td>43/49 = 87.8%</td>
<td>0/40 = 0%</td>
</tr>
<tr>
<td>Chemotherapy received</td>
<td>31/48 = 64.6%</td>
<td>21/30 = 70.0%</td>
<td>31/47 = 66.0%</td>
<td>38/40 = 95.0%</td>
</tr>
<tr>
<td>Anti-HER2 therapy received</td>
<td>5/48 = 10.4%</td>
<td>7/30 = 23.3%</td>
<td>30/49 = 61.2%</td>
<td>35/40 = 87.5%</td>
</tr>
</tbody>
</table>
RESULTS

- Clinicopathologic characteristics
  - Mostly high grade
  - >20 mm in size
- G0: 53.8% mortality at 108 months
- G1
  - 73% received adjuvant anti-HER2 therapy
  - 13.5% mortality at 108 months (p<0.001)
- ER/PR phenotype: No significant impact on OS (p=0.672)
RESULTS

![Cumulative Survival vs Survival Months Graph](image)

**Note:** + = Censored
RESULTS

Controlled for age, grade, and TNM stage
RESULTS

Note: + = Censored
RESULTS

Note: + = Censored
CONCLUSIONS

- Overall survival
  - Significantly improved in G1 versus G0
- Supports adjuvant anti-HER2 therapy as a valuable treatment for significantly improving outcomes in HER2+ breast carcinoma in the settings outside of clinical trials
- Community-based data on overall survival emerging now
REFERENCES


