Anthracycline vs. Non-Anthracycline Chemotherapy Regimens for ER+/HER2– Early-Stage Breast Cancer Based on Oncotype DX Recurrence Score: A Retrospective Study

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Background

- Choosing between anthracycline (A)-based versus non-A-based chemotherapy (chemo) for ER+/HER2- stage I-II breast cancer, when chemotherapy is indicated, remains challenging due to limited and mixed data[1-5].
- We utilized the Flatiron Health Research Database to examine whether demographic, clinical, and pathologic factors, particularly Oncotype DX recurrence score (RS), linked to administration of A- versus non-A-based chemo regimens in this setting.

Eligibility and Methods

- Age 18+, stage I-II, ER+/HER2- BC. From 2/2011-4/2023.
- Initiated chemo within 180 days of BC diagnosis
- Had Oncotype DX recurrence score (RS)
- Patients who received ≥ 1 dose of doxorubicin were designated as having received A-based chemo.
- Propensity score matching to balance baseline clinical characteristics and reduce confounding due to treatment selection
- Logistic regression to determine factors that linked to A- vs non-A-based chemo decision
- Cox regression to compare survival probabilities between patients who received A- versus non-A-based chemo

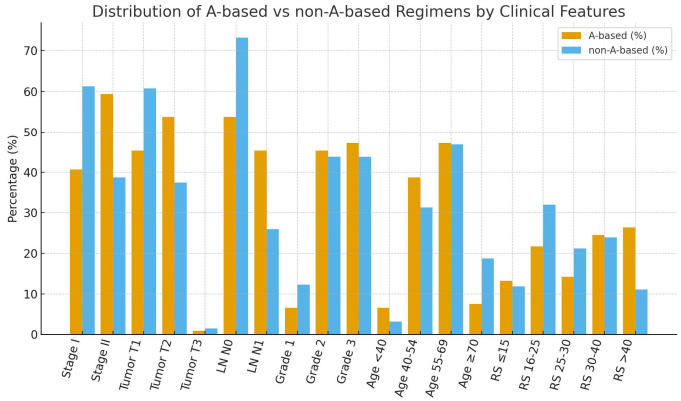
Results 1. Patient Baseline Characteristics (N=512)

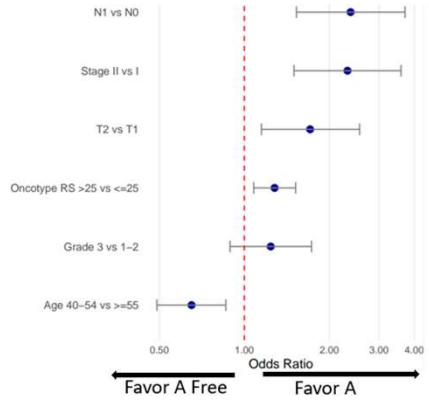
	N	%
Age at time of BC diagnosis		
<40	20	3.9
40-54	168	32.8
55-69	240	46.9
≥70	84	16.4
Sex		
Femal	510	99.6
Male	2	0.4
Race		
Non-Hispanic White	351	68.6
Other	117	22.9
Missing	44	8.6
Stage		
I	292	57.0
II	220	43.0
Tumor size		
T1	295	57.6
T2	209	40.8
T3	7	1.4
Missing	1	0.2

	N	%
N stage		
N0	354	69.1
N1	153	29.9
Missing	5	1.0
Grade		
1	57	11.1
2	226	44.1
3	228	44.5
Missing	1	0.2
Oncotype RS		
≤15	62	12.1
16-25	153	29.9
26-30	101	19.7
31-40	123	24.0
>40	73	14.3

Results 2. When Oncologists Tend to Offer A-based Chemotherapy Regimen

Total 120/512 (23.4%) patients received A based chemotherapy



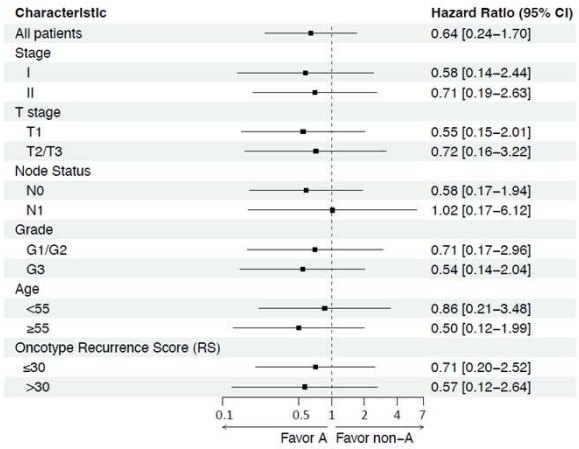


Results 3. Odds Ratio of Using A- vs non-A-based Chemo Regimens

References.
1. J O'Shaughnessy, et al. ASCO abstract 2024
2. N Chen, et al. Ann of Oncol. 2025
3. Early breast cancer trialists' collaborative group. The Lancet. 2023
4. C. E. Geyer, et al. JCO. 2024
5. U Nitz, et al. JCO. 2019

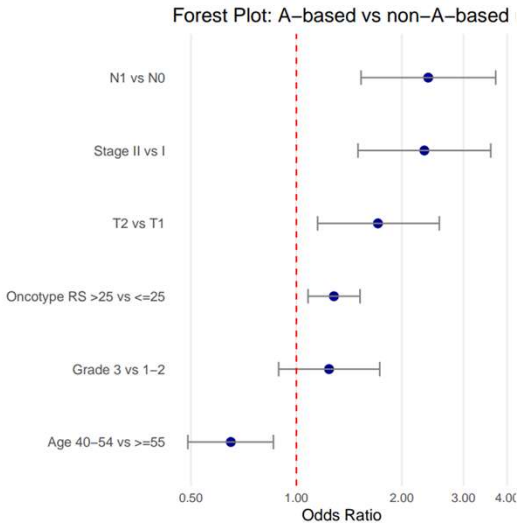
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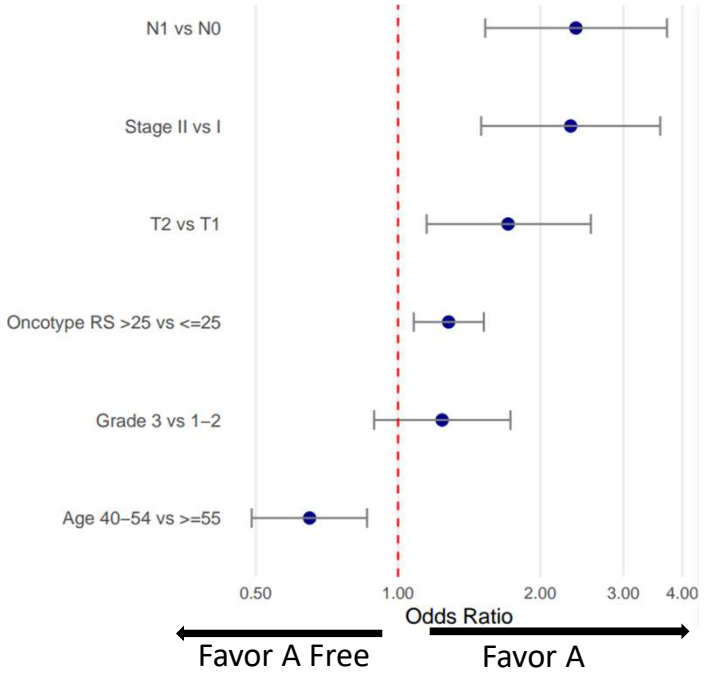
Results 4. Recurrence-Free Survival Between A- vs non-A-based Chemo Regimen



Conclusions

- Oncologists still offered A-based chemotherapy to patients with stage I-II, ER+/HER2- BC when chemotherapy is indicated.
- Oncologists tended to offer A-containing chemotherapy to patients who are younger and those with higher-risk BC, such as N1 (vs N0), stage II (vs I), T2 (vs T1), or G3 (vs G1-2).
- Oncologists tended to offer A-based chemotherapy if high RS; no clear RS cut-off was identified.
- No recurrence free survival benefit was seen among patients who received A-based chemotherapy, even among patients with RS>30 and G3.
- Limitations: retrospective study, limited sample size


Forest Plot: A–based vs non–A–based
N1 vs N0
Stage II vs I
T2 vs T1
Oncotype RS >25 vs <=25
Grade 3 vs 1–2
Age 40–54 vs >=55
0.50
1.00
2.00
3.00
Odds Ratio


N1 vs N0
Stage II vs I
T2 vs T1
Oncotype RS >25 vs <=25
Grade 3 vs 1–2
Age 40–54 vs >=55
0.50
1.00
2.00
3.00
4.00
Odds Ratio
Favor A Free
Favor A