Miami Cancer Institute
BAPTIST HEALTH SOUTH FLORIDA

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Pathologic complete response rates in early-stage triple negative metaplastic breast cancer in the neoadjuvant immunotherapy era: a retrospective review

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Background

Metaplastic breast cancer (MpBC) is a rare, histologically diverse subtype of breast cancer that is often triple-negative (TN) and responds poorly to chemotherapy. Our prior work showed a low pathologic complete response (pCR) rate (27%) with neoadjuvant chemotherapy (CT) alone. This study evaluates whether adding immunotherapy (IO) to neoadjuvant CT improves pCR in patients with early-stage TN MpBC.

METHODS

Pts treated for MpBC at Miami Cancer Institute (2017–2024) were retrospectively reviewed after IRB approval.

Eligible pts had stage 2-3 ER-negative (ER<10%), PR-negative, and HER2-negative MpBC, received neoadjuvant systemic therapy, and subsequently underwent definitive surgery

Demographic, clinical, treatment and outcome data were collected

pCR was defined as the absence of residual invasive cancer in the breast and axillary lymph nodes at surgery

Fisher's exact test was used to compare pCR rate between groups. All p values were two-sided.

Kaplan-Meier method was used to estimate median invasive breast cancer-free survival (mIBCFS) and median overall survival (mOS)

The analysis was done using R4.3.3.

Table 1. Baseline patient, diagnostic, and treatment characteristics

Baseline Characteristics	N
Overall	27
Median age at diagnosis (IQR)	54.0 (43.5-67.0)
Median BMI	30.2
Menopause status	
Postmenopausal	14 (53.8%)
Premenopausal	12 (46.2%)
Missing	1 (3.7%)
Race	
White	22 (81.5%)
Black	3 (11.1%)
Asian	2 (7.4%)
Ethnicity	
Hispanic	11 (40.7%)
Non-Hispanic	16 (59.3%)
Metaplastic histology	
Spindle Cell	5 (18.5%)
Non-spindle cell	16 (59.3%)
Missing	6 (22.2%)
Stage	
II	22 (81.5%)
III	5 (18.5%)
Chemotherapy*	
Anthracycline	22 (81.5%)
Non-anthracycline	5 (18.5%)
Receipt of Immunotherapy	
No (pre-IO era)	16 (59.3%)
Median follow up (m)	19.2
Yes (post-IO era)	11 (40.7%)
Median follow up (m)	15.5
Immune-related AEs	n=11
Yes	5 (45.5%)
No	6 (54.5%)

Key: IQR = interquartile range, IO = immunotherapy, m = months, AEs = adverse events. *All patients received taxane chemotherapy.

Results

Figure 1. pCR Rate by Treatment Group

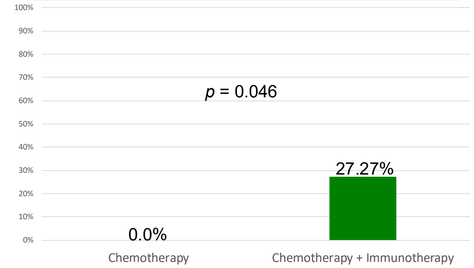


Figure 2. pCR Rate Associated with IrAE (CT+IO group only)

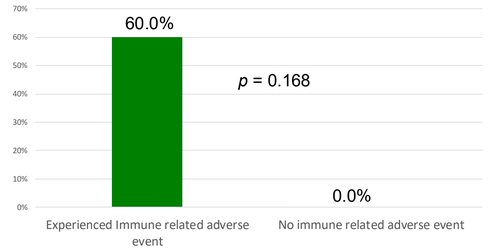


Figure 3. pCR Rate by Patient and Disease Characteristics

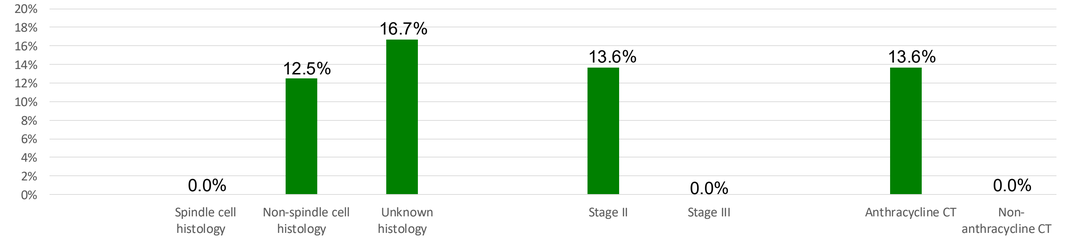


Figure 4. mIBCFS by Treatment Group

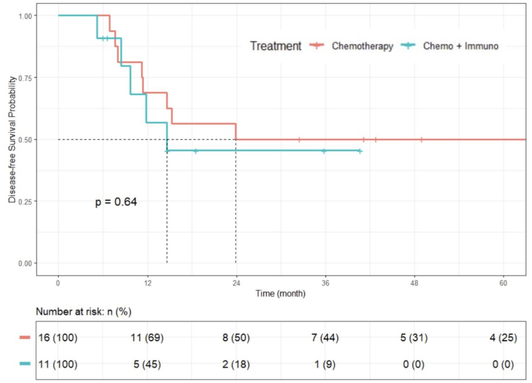
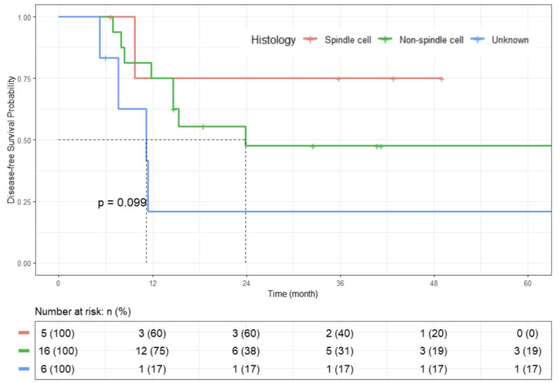
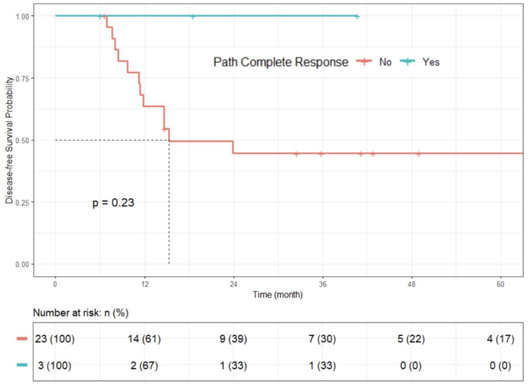


Figure 5. mIBCFS by Metaplastic Histology



pCR: pathologic complete response, IrAE: immune-related adverse event, CT: chemotherapy, IO: immunotherapy, mIBCFS: median invasive breast cancer-free survival

Figure 6. mIBCFS by pCR Status



Conclusions

- In this small real-world analysis of pts with early-stage TN MpBC, the addition of IO to neoadjuvant CT was associated with higher pCR rate compared to CT alone.
- PCR rate following neoadjuvant CT+IO was low in this cohort, likely reflecting the small sample size and inherently CT-resistant biology of MpBC.
- All pts who achieved pCR in this cohort experienced an IrAE, suggesting a potential association between robust immune response and IO efficacy.
- None of the patients in the CT alone group achieved pCR, suggesting that IO may help to overcome CT resistance in MpBC.

Limitations

- Short follow-up in the post-immunotherapy era and small sample size were limitations in this study. This may explain why there was no statistically significant differences in mIBCFS and mOS with the addition of IO to CT. Future multicenter analyses are ongoing to validate these results in a larger more diverse population.

1. El Zein D., et al. Clin Breast Cancer, 2017. 17, 382-391. 2. Nelson, R.A., et al. Ann Surg Oncol 2015. 22, 24–31. 3. Schmid, P., et al. N Eng J Med, 2020. 382, 810-821. 4. Dempsey N., et al. AACR 2024.

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