BRCA Status and pCR in Early TNBC: Real-World Outcomes with KN522 Therapy

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Abstract

Triple-negative breast cancer (TNBC) is aggressive, with high recurrence risk.
The KN522 trial established chemo-immunotherapy as standard neoadjuvant therapy.
BRCA mutations impair DNA repair, making tumors more sensitive to chemotherapy.
Limited real-world data exist on the impact of BRCA mutation status on pCR, adjuvant treatment choices, and survival outcomes in KN522-treated TNBC.

Objectives

Primary Objective:
Compare pCR rates in BRCA+ vs BRCA− TNBC treated with KN522 regimen.
Secondary Objectives:
Describe clinicopathologic differences by BRCA status.
Assess treatment compliance and discontinuation.
Evaluate adjuvant therapy use (PARPi, capecitabine, pembrolizumab).
Report recurrence and survival outcomes

Methods

Design & Population:
- Retrospective, single-institution (KFMC, Riyadh)
- Study period: Jan 2021 – Dec 2023

Population:
- Stage II–III TNBC patients treated with KN522
- BRCA-tested patients only

Outcomes:
- Primary: Pathologic complete response (pCR)
- Secondary: Treatment compliance, adjuvant therapy, recurrence, survival

Statical considerations:
- Baseline characteristics were compared using Mann–Whitney U for continuous variables and Fisher's exact or χ^2 tests for categorical variables.
- The primary endpoint, pathologic complete response (pCR), was assessed using Fisher's test.
- Recurrence-free and overall survival were estimated with Kaplan–Meier curves and compared using the log-rank test.
- Cox regression was performed for exploratory multivariable analyses, and a two-sided $p < 0.05$ was considered statistically significant.

Methods

Patient Flow (CONSORT Diagram)

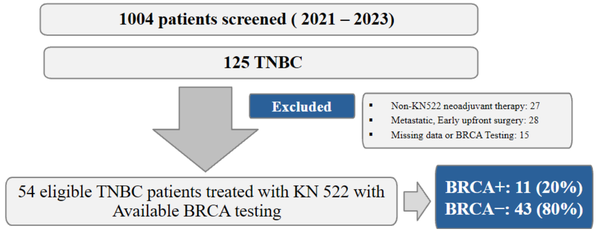


Chart 1. CONSORT Diagram

Characteristic	BRCA+ (n=11)	BRCA− (n=43)	P value
Age (years): Median (Range)	38 (28–56)	46 (27–70)	0.018
pre/perimenopausal	90.9%	72.1%	0.261
Laterality	9.1% bilateral	0% bilateral	0.204
Tumor grade (Grade 3)	91%	91%	1.00
Ki-67 (% , Range)	70 (30–90)	70 (15–95)	0.862
HER2	81.8%	65.1%	0.470
Clinical T ≥3	18.2%	41.9%	0.181
Clinical N+	36.4%	41.9%	0.310
Stage II	81.8%	59.5%	0.29
Stage III	18.2%	40.5%	0.29
Mastectomy	81.8%	65.1%	0.477

Table 1. Baseline Characteristics: Key Differences

Results

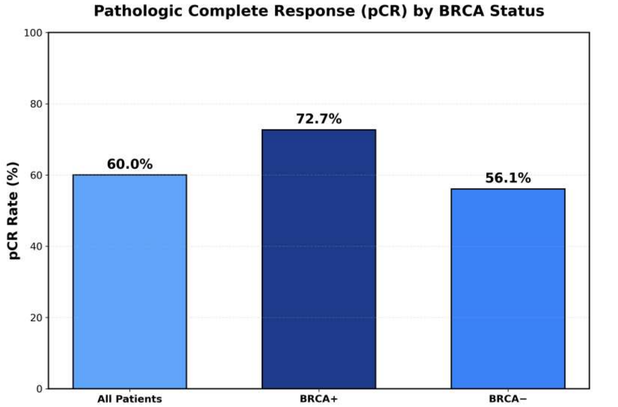


Chart 2. pCR

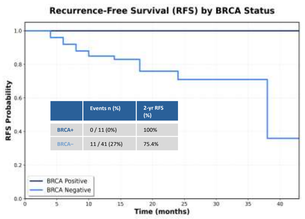


Chart 3. Recurrence Free Survival (RFS) : BRCA+ vs BRCA−

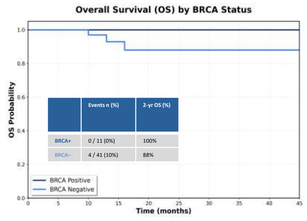


Chart 4. Overall Survival (OS): BRCA+ vs BRCA−

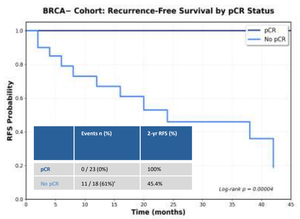


Chart 5. BRCA− Cohort: Recurrence-Free Survival by pCR Status

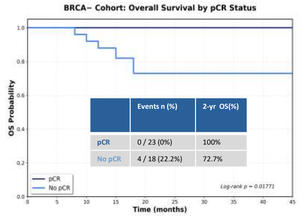


Chart 6. BRCA− Cohort: Overall Survival by pCR Status

Cont. Results

- Recurrence-Free Survival (BRCA/+ vs. BRCA−) – BRCA+ achieved 100% 2-yr RFS vs BRCA− 75.4% (p=0.068, trending). [Chart 3]
- Overall Survival (BRCA + vs. BRCA−) – BRCA+ achieved 100% 2-yr OS vs BRCA− 88% (p=0.272, not significant). [Chart. 4]
- RFS by pCR Status (BRCA−) – pCR predicted excellent RFS (100% 2-yr) while no-pCR showed poor RFS (45.4% 2-yr, statistically significant). [Chart. 5]
- OS by pCR Status (BRCA−) – pCR predicted excellent OS (100% 2-yr) while no-pCR showed poor OS (72.7% 2-yr, statistically significant). [Chart. 6]

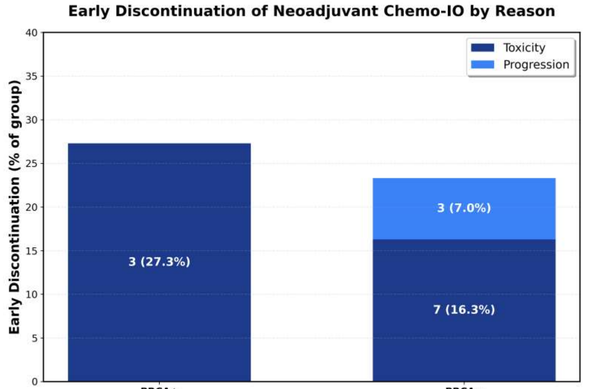


Chart 7. discontinuation

Conclusions

- pCR was numerically higher in BRCA+ than BRCA−, but not statistically significant.
- Recurrences occurred mainly in BRCA−, and were driven almost entirely by the no-pCR subgroup
- Patients with pCR (regardless of BRCA status) had excellent RFS/OS.
- Treatment completion was similar (early discontinuation largely toxicity); adjuvant therapy was individualized by residual disease and BRCA status
- Implication: For residual BRCA− disease, therapy escalation/novel strategies are needed to reduce early recurrences.

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This is updated data till 2023 collected between abstract submission and poster presentation

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