Diverse adjuvant treatment in triple-negative breast cancer patients with residual disease after neoadjuvant chemotherapy: A single center real-world study

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Introduction

- Triple-negative breast cancer (TNBC) patients exhibiting residual disease post-neoadjuvant chemotherapy are associated with a poor prognosis.
- The CREATE-X study indicates that capecitabine adjuvant therapy benefits these patients, particularly the TNBC subgroup, and is now guideline-recommended. However, there's a lack of real-world data in China.
- The study aims to present the real-world adjuvant treatment of TNBC patients with residual disease after neoadjuvant therapy.

Methods and Materials

- This study enrolled TNBC patients with residual disease post-neoadjuvant chemotherapy after surgery at the Cancer Hospital, Chinese Academy of Medical Sciences, from July 2008 and December 2024.
- Clinical, pathological data, adjuvant therapy information were collected, and survival data was obtained via follow up.
- Patients were categorized into capecitabine, intravenous chemotherapy, and no chemotherapy groups based on adjuvant treatment.
- Survival outcomes were compared among the groups, with a multivariate Cox model adjusting for confounders.
- The Neo-bioscore (NB) was assessed in all patients, and according to the residual disease burden, we divided them into near-pCR (breast tumor diameter < 1cm and axillary lymph node negative) and high-risk residual disease(H-RD) groups. Stratified analysis was done based on NB scores and residual disease burden.

Results

- This study included 340 patients, median age 47.4 years (20–76), 61.8% of patients were premenopausal. 120 received capecitabine-containing regimen (Cape group), 118 had intravenous chemotherapy (IC group), 102 without adjuvant chemotherapy (NC group)(Table 1).
- The median follow-up was 37 months. The 3-year DFS for Cape, IC, and NC groups were 81.5%, 64.3%, and 70.5%, and the 3-year OS were 88.4%, 81.0%, and 74.5%(Figure 1).
- After multivariate adjustment, compared with NC, Cape significantly reduced recurrence and death risks (DFS HR=0.52, P=0.032; OS HR=0.40, P=0.026).
- Compared with IC, Cape reduced recurrence risk (DFS HR=0.54, P=0.037). In patients with NB≥5, Cape demonstrated significantly superior DFS compared to NC and IC (3-year DFS: 73. 2%, 47. 4%, 46. 5%; Log - rank P1=0. 043; P2=0. 043) and better OS than NC (3-year OS: 84. 0% vs 53. 6%; Log - rank P=0. 012). No significant survival differences were found in NB<5 patients (Figure 2A and Figure 2B).

Table1. Baseline characteristics

Characteristic	Overall	NC	IC	Cape	P
	N=340(%)	N=102(%)	N=118(%)	N=120(%)	
Median age(range）	47.5(20-76)	47(24-76)	49(24-73)	46.5(20-74)	0.845
Menstruation status					0.662
premenopausal	210(61.8%)	61(59.8%)	71(60.2%)	78(65.0%)	
postmenopausal	130(38.2%)	41(40.2%)	47(39.8%)	42(35.0%)	
NAC regimen					0.530
Anthracycline and/or taxane	132(38.8%)	37(36.3%)	45(38.1%)	50(41.7%)	
Taxane and platinum	197(57.9%)	62(60.8%)	71(60.2%)	64(53.3%)	
Others	11(3.2%)	3(2.9%)	2(1.7%)	6(5.0%)	
Immunotherapy or anti-vascular therapy					<0.001
Yes	51(15.0%)	5(4.9%)	12(10.2%)	34(28.3%)	
No	289(85.0%)	97(95.1%)	106(89.8%)	86(71.7%)	
Cycles of NAC					<0.001
<6	88(25.9%)	14(13.7%)	60(50.8%)	14(11.7%)	
≥6	252(74.1%)	88(86.3%)	58(49.2%)	106(88.3%)	
ypT stage					0.367
ypT0-1	203(59.7%)	68(66.7%)	67(56.8%)	68(56.7%)	
ypT2	112(32.9%)	27(26.5%)	40(33.9%)	45(37.5%)	
ypT3-4	25(7.4%)	7(6.9%)	11(9.3%)	7(5.8%)	
ypN stage					0.209
ypN0	144(42.4%)	53(52.0%)	45(38.1%)	46(38.3%)	
ypN1	99(29.1%)	25(24.5%)	35(2.7%)	39(32.5%)	
ypN2-3	97(28.5%)	24(23.5%)	38(32.2%)	35(29.2%)	
ypTNM stage					0.064
I	103(30.3%)	42(41.2%)	31(26.3%)	30(25.0%)	
II	136(40.0%)	36(35.3%)	47(39.8%)	53(44.2%)	
III	101(29.7%)	24(23.5%)	40(33.9%)	37(30.8%)	
*Adjuvant radiotherapy					0.149
Yes	275(80.9%)	76(78.4%)	95(81.9%)	104(88.1%)	
No	56(16.5%)	21(21.6%)	21(18.1%)	14(11.9%)	

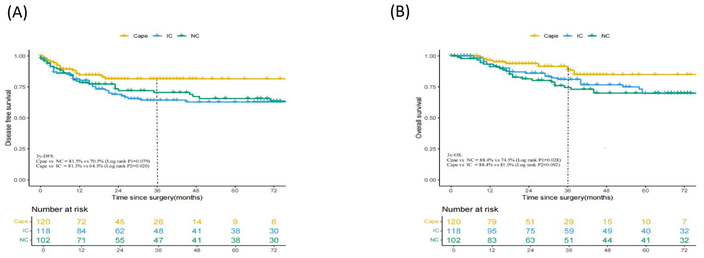


Figure1.(A)Disease-free survival in the three groups.(B)Overall survival in the three groups.

- For H-RD patients(tumor≥1cm or axillary lymph node positive) , Cape showed significantly better DFS and OS than NC and IC (3-year DFS: 81.7%, 66.5%, 61.1%; 3-year OS: 90.3%, 70.2%, 78.5%; All Log-rank P<0.05). Near-pCR patients(tumor < 1cm and axillary lymph node negative) exhibited no significant survival differences (Figure 2C and Figure 2D).

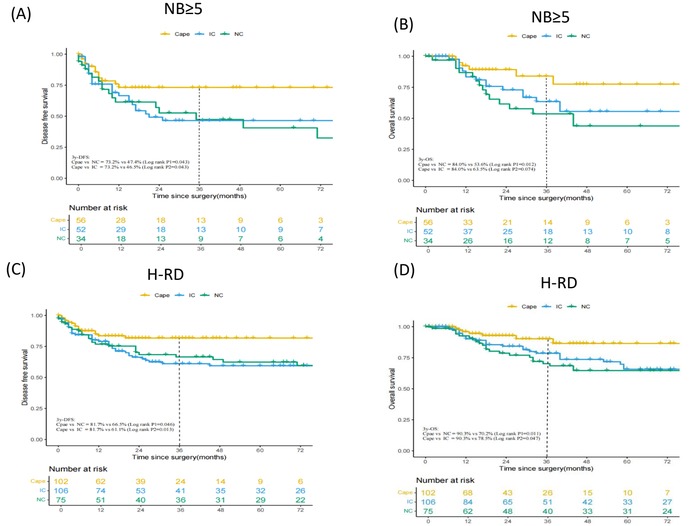


Figure 2. (A)Disease-free survival in patients with NB ≥ 5.(B)Overall survival in patients with NB ≥ 5. (C)Disease-free survival in patients with H-RD.(D)Overall survival in patients with H-RD.

Conclusions

- The study presents the diverse adjuvant therapy options for TNBC patients with residual disease after neoadjuvant chemotherapy in real-world.
- Adjuvant capecitabine significantly reduces recurrence and mortality risks compared to no adjuvant chemotherapy, especially in patients with NB≥5 or H-RD.

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