A Real-World Study on the Current Status of First-Line Treatment and Clinical Outcomes in Patients with Advanced Triple-Negative Breast Cancer (aTNBC) in Western China

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Background

- Triple-negative breast cancer (TNBC) is characterized by limited treatment options and poor prognosis, with chemotherapy serving as the primary treatment approach.
- Immunotherapy and targeted therapy have become critical strategies for improving prognosis in patients with TNBC, but real-world adoption remains unclear. This study aimed to characterize first-line (1L) treatment and clinical outcomes in patients with advanced TNBC (aTNBC) in Western China.

Method

- This retrospective study enrolled aTNBC patients initiating first-line therapy (2018–2023) in West China Hospital. Demographic, pathological characteristics, treatment regimen, overall survival (OS) , progression-free survival (PFS), and time to next treatment or death (TTNTD) were analyzed. Kaplan-Meier methods estimated OS, PFS, and TTNTD, while Cox regression models assessed associations with multifactorial tumor features. Descriptive statistics summarized treatment adoption and patient characteristics.

Results

- A total of 238 patients with aTNBC (median age, 51 years; range, 22–80) were included. (Table 1) During a median follow-up of 23.4 months (IQR, 12.4 - 39.9), 159 (66.81%) patients died, with a median OS of 29.6 months (95% CI, 22.4-35.2), median PFS of 8.0 months (95% CI, 6.8-10.6), and median TTNTD of 8.6 months (95% CI, 7.2-11.1). 179/238 (75.21%) proceeded to the second line, and 123/179 (68.72%) to the third line.

Results

Table 1. Baseline characteristics of aTNBC

Characteristics	group(n=238, %)	Characteristics	group(n=238, %)
Age (median[range]), years		Distant metastasis	
<40	34 (14.28%)	no	77 (32.35%)
40-65	183 (76.90%)	yes	161 (67.65%)
>65	21 (8.82%)	Sites of distant metastasis	
BMI		bone	41 (17.23%)
< 18.5	7 (2.94%)	brain	11 (4.62%)
18.5 - 24.9	158 (66.39%)	liver	31 (13.03%)
25.0 - 29.9	52 (21.85%)	lung	72 (30.25%)
>30	7 (2.94%)	lymph node	43 (18.07%)
Unknown	14 (5.88%)	other sites	23 (9.66%)
HER2 status		TFI (month)	
IHC 0	143 (60.09%)	TFI = 0	41 (17.23%)
IHC 1+	69 (28.99%)	0 < TFI ≤ 6	26 (10.92%)
IHC 2+/FISH-	26 (10.92%)	6 < TFI ≤ 12	38 (15.97%)
Metastatic breast cancer		TFI ＞ 12	92 (38.66%)
de novo	41 (17.23%)	Germline BRCA1/2 Status	
recurrent	197 (82.77%)	wild	52 (21.85%)
Locoregional Recurrence		mutant	18 (7.56%)
no	111 (46.64%)	unknown	168 (70.59%)
yes	127 (53.36%)	PD-(L)1	
Sites of locoregional recurrence		CPS<1	25 (10.51%)
primary breast	16 (6.72%)	1≤CPS＜10	9 (3.78%)
ipsilateral chest	54 (22.69%)	CPS≥10	15 (6.30%)
regional lymph nodes	68 (28.57%)	Unknown	189 (79.41%)

Results

Key Prognostic Factors

- A treatment-free interval (TFI) > 12 months correlated with significantly longer OS (p<0.0001; 44.0 vs. 19.2 months), PFS (p<0.0001; 14.5 vs. 6.2months), and TTNTD (p<0.0001; 16.5 vs. 6.3 months), whereas developing distant metastasis was associated with significantly shorter OS (p=0.014; 26.6 vs.40.0 months), PFS (p=0.001; 7.2 vs. 11.2 months), and TTNTD (p=0.001; 7.4 vs. 13.9 months). PD-L1 expression of ≥1% predicted longer PFS (p=0.014; 11.8 vs.6.8 months) and longer TTNTD (p=0.024; 12.7 vs. 7.0 months).
- PD-L1 testing (22C3) in 20.6% (49/238) of patients showed a 49.0% positivity rate (24/49, CPS ≥1), yet only 6 received 1L ICIs. Pathogenic gBRCA1/2 mutations were identified in 25.7% (18/70) of those tested. 4 received ADC drugs.

Impact of Recurrence/Metastasis Site

- For 161 patients with distant metastasis, liver and lung metastases were independent risk factors for shorter OS, PFS, and TTNTD (all p<0.05).

Treatment patterns

- The drug most commonly used in the 1L are taxanes, platinum, and antimetabolites. (Figure 1) The top 8 first-line regimens for aTNBC are shown in Figure 2.
- In 197 patients with recurrent breast cancer, first-line platinum significantly improved PFS (median, 10.5 vs. 6.8 months; p=0.029) and TTNTD (median, 10.6 vs. 7.0 months; p=0.034) but not OS. Conversely, among 41 patients with de novo breast cancer, platinum-based therapy significantly improved OS (median, 27.8 vs. 16.8 months; p=0.007), PFS (median, 10.9 vs. 4.4 months; p=0.002), and TTNTD (median, 10.9 vs. 4.4 months; p=0.001).

Results

Biomarkers and 1L Treatment Utilization

Figure1. First-Line Treatment of aTNBC (Top 3 Drugs)

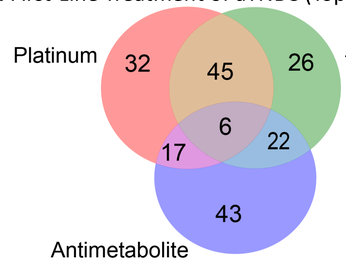
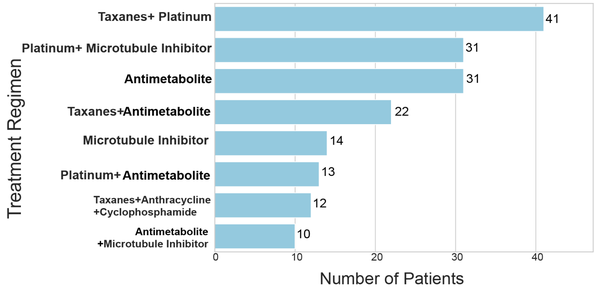


Figure2. Top 8 First-Line Regimens for Advanced aTNBC



Conclusions

- In Western China, 1L treatment for advanced triple-negative breast cancer (aTNBC) predominantly relies on chemotherapy. Platinum-based regimens, in particular, have demonstrated efficacy in 1L therapy. Novel therapies, as new treatment options will help improve outcomes for 1L aTNBC patients. Future efforts to expand access to these novel therapies in Western China are clinically imperative to address current care disparities.

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