Factors influencing the number of adjuvant TC - docetaxel and cyclophosphamide - cycles in hormone receptor-positive early-stage breast cancer

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Introduction

Docetaxel and cyclophosphamide (TC) is a widely used anthracycline-free regimen for hormone receptor-positive (HR+) early-stage breast cancer [1-3]. While typically administered over four to six cycles, the optimal number of cycles for various risk profiles remains a topic of clinical debate. This study aimed to identify clinical and pathological factors associated with the number of adjuvant TC cycles prescribed in a real-world setting.

Methods

We conducted a retrospective analysis of patients with HR+ early-stage breast cancer treated between 2018 and 2025 across a multicenter oncology network in Brazil. Eligible patients had undergone surgery and received adjuvant TC chemotherapy. Variables such as age, menopausal status, tumor size and nodal status, histologic grade, and Ki-67 index were examined in relation to the number of TC cycles administered (six versus four). For patients who received four cycles, we recorded whether this was based on the original treatment plan, early discontinuation due to adverse events, or other reasons. Logistic regression was used to evaluate associations between baseline characteristics and the likelihood of receiving fewer versus more TC cycles.

CONSORT

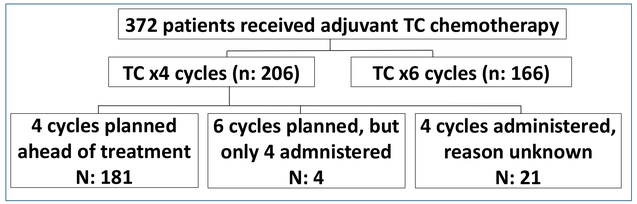


Table 1. Patients' characteristics and its effects on treatment decision

Characteristics	TC x4 cycles (n: 206)	TC x6 cycles (n: 166)	P-value
Age - median (years)	52 (45 – 63)	50 (42 – 60)	0.025
ECOG performance scale (%)			
0	181 (87.8)	143 (86.1)	0.823
1	22 (10.6)	19 (11.4)	
Menopausal status (%)			
Pre-menopausal	95 (46.1)	89 (53.6)	0.246
Post-menopausal	101 (49)	67 (40.3)	
Not-reported	10 (4.8)	10 (6)	
Histology subtype (%)			
Ductal	173 (83.9)	137 (82.5)	0.935
Lobular	18 (8.7)	17 (10.2)	
Other	10 (4.8)	9 (5.4)	
Histology grade (%)			
Grade 1	16 (7.7)	7 (4.2)	0.066
Grade 2	126 (61.1)	91 (54.8)	
Grade 3	59 (28.6)	57 (34.3)	
Ki-67 status (%)			
< 20%	62 (30.1)	46 (27.7)	0.856
≥ 20%	133 (64.5)	112 (67.4)	
Estrogen-receptor status (%)			
Positive	202 (98)	166 (100)	0.257
Negative	1 (0.4)	0 (0)	

Table 1. Patients' characteristics and its effects on treatment decision - continued

Characteristics	TC x4 cycles (n: 206)	TC x6 cycles (n: 166)	P-value
Progesterone-receptor status (%)			
Positive	180 (87.3)	150 90.3)	0.460
Negative	20 (9.7)	15 (9.04)	
Surgery (%)			
Breast-conserving (BCS)	141 (68.4)	108 (65)	0.937
Mastectomy	57 (27.6)	52 (31.3)	
Other	8 (3.8)	6 (3.6)	
Pathological T staging (%)			
pT1	89 (43.2)	78 (46.9)	0.184
pT2	100 (48.5)	72 (43.3)	
pT3	3 (1.4)	8 (4.8)	
Other	14 (6.8)	8 (4.8)	
Pathological N staging (%)			
pN0	146 (70.8)	84 (50.6)	<0.001
pN1	41 (19.9)	70 (42.1)	
pN2	2 (0.9)	6 (3.6)	
Other	17 (8.2)	6 (3.6)	
Adjuvant radiotherapy (%)			
Yes	149 (72.3)	128 (77.1)	0.509
No	39 (18.9)	24 (14.4)	

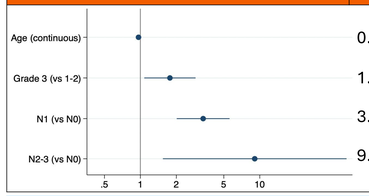
Results

Patients who received six cycles were slightly younger (median age 50 years) than those receiving four cycles (median age 52 years; *P*=0.025). The six-cycle group had a higher proportion of patients with positive lymph nodes (42.2% pN1 and 3.6% pN2) compared to the four-cycle group (19.9% pN1 and 0.9% pN2; *P*<0.001), and a greater proportion of grade 3 tumors (34.3% vs. 28.6%; *P*=0.048). No significant differences were observed in primary tumor size, menopausal status, or Ki-67 index.

In multivariable logistic regression, lymph node status, tumor grade, and age were significantly associated with receiving six TC cycles (Table). Increasing age was associated with a lower likelihood of receiving six cycles, while pN1, pN2, and grade 3 tumors were associated with higher odds.

Figure 1. Subgroup analysis

Variable	OR	95% CI	P-value
Age (continuous)	0.96	0.94 – 0.98	0.001
Grade 3 (vs 1-2)	1.76	1.07 – 2.89	0.024
N1 (vs N0)	3.35	2.01 – 5.58	< 0.001
N2-3 (vs N0)	9.06	1.54 – 53.27	0.015



Conclusion

These findings suggest that treatment duration with TC is influenced not only by formal staging criteria but also by individualized clinical judgment reflecting perceived recurrence risk and patient tolerance. Further studies are needed to determine whether six versus four cycles of TC differ in efficacy when compared in cohorts balanced for these baseline factors.

References

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