

Neoadjuvant Chemotherapy versus Surgery for Clinically Node-Negative, Early-Stage Breast Cancer Patients

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Introduction:

Neoadjuvant chemotherapy (NAC) may surgically down-stage large breast cancers, providing the patient with an opportunity to have breast conserving surgery (BCS), with many studies showing equivalent outcomes to upfront surgery (SX) and adjuvant therapy. There are few studies that compare NAC and (SX) for clinically node-negative (cN0), early-stage breast cancer patients. We hypothesized that NAC for patients with cT3cN0 breast cancer does not affect rates of breast conserving surgery or local-regional recurrence (LRR).

Methods:

A single-institution retrospective chart review was conducted for patients with cT3N0 breast cancer between January 2008 and July 2018. Patients were clinically node negative, with histologically confirmed disease. Data was analyzed with descriptive statistics for demographic and disease characteristics as well as with Kaplan-Meier method, log-ranked tests and Cox proportional-hazard tests to compare LRR between NAC and SX. Chi-square tests or Fisher's exact test and Kruskal-Wallis tests were also used.

Results:

Of the 70 patients with cT3N0 breast cancer, 47 (67%) were treated with NAC, while 23 (33%) were treated with SX. Sixty-eight patients had sentinel lymph node biopsy (SLNB). There was no difference between the age of patients treated with NAC vs. SX (median 51 vs 59 years; $p=0.39$) and both had a similar clinical T size (median 62 vs 60 mm; $p=0.88$). NAC patients had a smaller pathological tumor size upon resection (median 10 vs 61 mm; $p<0.001$). SX patients more often had ER positive ($p=0.003$) and PR positive ($p=0.022$) tumors, but there was no difference in HER2 positivity ($p=0.35$). There was no significant difference in rates of BCS ($p=0.708$), however, only 13% of all patients had BCS, while 87% had mastectomy. SLN was positive more often in SX than in NAC, 69% vs. 17%, respectively ($p<0.001$). However, there was no statistically significant difference in use of axillary dissection, with 12.8% of NAC and 27.3% of SX having ALND. There was also no significant difference in use of adjuvant radiation to the breast (68% in NAC vs. 70% in SX, $p=1.0$) or axilla (33% in NAC vs. 55% in SX, $p=0.11$).

On univariable analysis, there was no significant difference in LRR between NAC vs SX (hazard ratio 0.00, $p=0.14$). There was a significant difference between NAC and SX for distant recurrence (hazard ratio 7.33, log rank test $p=0.044$).

Conclusions:

In the treatment of patients with cT3N0 breast cancer, NAC did not increase the rate of BCS compared to SX. Despite smaller pathologic T stage, the vast majority of patients in both groups still had mastectomy. Most NAC patients were not down staged to BCS. There was no difference in LRR, however, SX was associated with a higher rate of distant recurrence, unlike many studies showing no difference in outcomes. Subsequent studies should explore reasons for the higher rate of distant recurrence associated with surgery first.

Table 1. Clinicopathologic, Treatment and Outcomes in NAC versus SX Patients					
Variable	Level	Total (n=70)	NAC (n=47)	SX (n=23)	p-value
Tumor subtype	ER and/or PR-, Her2+	15 (21.4%)	12 (25.5%)	3 (13%)	0.001
	Luminal A	6 (8.6%)	2 (4.3%)	4 (17.4%)	
	Luminal B	30 (42.9%)	15 (31.9%)	15 (65.2%)	
	TNBC/Basal-like	19 (27.1%)	18 (38.3%)	1 (4.3%)	
Lymphovascular Invasion	No	50 (84.7%)	34 (91.9%)	16 (72.7%)	0.066
	Yes	9 (15.3%)	3 (8.1%)	6 (27.3%)	
Breast Surgery	Mastectomy	61 (87.1%)	40 (85.1%)	21 (91.3%)	0.708
	Lumpectomy	9 (12.9%)	7 (14.9%)	2 (8.7%)	
Pathologic T stage	ypT0/is	12 (17.1%)	12 (25.5%)	0 (0%)	< 0.001
	ypT1	21 (30%)	16 (34%)	5 (21.7%)	
	ypT2	15 (21.4%)	12 (25.5%)	3 (13%)	
	ypT3	22 (31.4%)	7 (14.9%)	15 (65.2%)	
ALND	No	57 (82.6%)	41 (87.2%)	16 (72.7%)	0.177
	Yes	12 (17.4%)	6 (12.8%)	6 (27.3%)	
Pathologic N stage	(y)pN0	44 (62.9%)	35 (74.5%)	9 (39.1%)	0.008
	(y)pN1	21 (30%)	9 (19.1%)	12 (52.2%)	
	(y)pN2-N3	5 (7.1%)	3 (6.4%)	2 (8.7%)	
Covariate	Treatment	N	Hazard Ratio (95% CI)	p-value	
Local	SX	23	0.00	0.142	
	NAC	47			
Distant Recurrence	SX	23	7.33 (0.76-70.82)	0.044	
	NAC	47			
<i>TNBC</i> : triple negative breast cancer <i>ALND</i> : axillary lymph node dissection <i>NAC</i> : patients treated with neoadjuvant chemotherapy <i>SX</i> : patients treated with upfront surgery					