

Prognostic Value of Axillary Nodal Ratio after Neoadjuvant Chemotherapy of Doxorubicin/Cyclophosphamide Followed by Docetaxel in Breast Cancer: A Multicenter Retrospective Cohort Study

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Supplementary Data

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Supplementary Table 1. Retrieved LNs after surgery

No. of retrieved LNs	No. (%)
1-3	40 (5.0)
4-9	221 (27.7)
More than 10	538 (67.3)

LN, lymph node.

Supplementary Table 2. Relapse pattern according to LNR status

LNR	No recur	Locoregional	Distant only	Locoregional+Distant
Low	494 (86.2)	25 (4.4)	45 (7.9)	9 (1.6)
Intermediate	119 (70)	20 (11.8)	23 (13.5)	8 (4.7)
High	34 (61.8)	6 (10.9)	10 (18.2)	5 (9.1)

Values are presented as number (%). Chi-square $p < 0.001$. LNR, lymph node ratio.

Supplementary Table 3. Multivariate analysis models for relapse-free survival

Variable	Model with ypN stage (without LNR) ^{a)}			Model with LNR (without ypN stage) ^{b)}		
	Hazard ratio	95% CI	p-value	Hazard ratio	95% CI	p-value
Age (< 50 yr vs. > 50 yr)	0.77	0.54-1.11	0.173	0.77	0.54-1.10	0.159
Histologic grade 1	1		0.001	1		< 0.001
Histologic grade 2	1.20	0.37-3.89		1.24	0.38-4.05	
Histologic grade 3	2.54	0.77-8.38		2.67	0.81-8.80	
Histologic grade NA	1.24	0.32-4.83		1.30	0.33-5.08	
Subtype: HR+/HER2-	1		< 0.001	1		< 0.001
Subtype: HER2+	1.68	1.02-2.76		1.69	1.02-2.80	
Subtype: TNBC	4.98	3.26-7.62		4.83	3.17-7.36	
pCR (ypT0/isN0) vs. non-pCR	0.26	0.08-0.86	0.027	0.17	0.05-0.50	0.001
ypT stage 0	1		< 0.001	1		< 0.001
ypT stage 1	0.85	0.40-1.84		0.65	0.31-1.37	
ypT stage 2	1.94	0.90-4.20		1.59	0.75-3.39	
ypT stage 3	1.68	0.72-3.97		1.33	0.58-3.09	
ypT stage 4	5.80	1.62-20.78		5.15	1.47-18.02	
ypN stage 0	1		< 0.001	-		-
ypN stage 1	1.72	1.05-2.81		-	-	
ypN stage 2	2.74	1.58-4.75		-	-	
ypN stage 3	3.61	1.99-6.55		-	-	
Lymphovascular invasion (yes vs. no)	1.51	1.02-2.22	0.039	1.64	1.11-2.41	0.012
LNR low (0-0.20)	-		-	1		0.002
LNR intermediate (0.21-0.65)	-			1.82	1.21-2.76	
LNR high (0.66-1.00)	-			2.46	1.38-4.38	

LNR, lymph node ratio; CI, confidence interval; NA, not available; HR, hormone receptor; HER2, human epidermal receptor 2; TNBC, triple negative breast cancer; pCR, pathologic complete response. ^{a)}-2 Log likelihood=1,665, chi-square=214, ^{b)}-2 Log likelihood=1,674, chi-square=196.

Supplementary Table 4. Multivariate analysis^{a)} for relapse-free survival of patients in each subtype

Subtype	Hazard ratio of recurrence					
	HR+/HER2-	p-value	HER2+	p-value	TNBC	p-value
LNR low (0-0.20)	1	0.58	1	0.08	1	0.40
LNR intermediate (0.21-0.65)	0.65		5.56		1.39	
LNR high (0.66-1.00)	0.93		5.50		0.68	

HR, hormone receptor; HER2, human epidermal receptor 2; TNBC, triple negative breast cancer; LNR, lymph node ratio.
^{a)}Adjusted for age, histologic grade, pathological complete response, ypT stage, ypN stage, and lymphovascular invasion.

Supplementary Table 5. Efficacy of NCT and prognostic value of LNR system

Study author	This study (n=799)	Keam et al. [17] (n=205)	Chen et al. [19] (n=569)
Result	ypN ≥ LNR	LNR better	LNR better
No. of cycles of NCT	8	3	3
pCR rate (%)	16.10	6.80	10.70
No. of involved LNs after NCT			
0	41.9	29.8	28.3
1-3	35.8	31.7	28.8
4-9	14.5	23.9	23.7
≥ 10	7.8	14.6	19.2

LNR, lymph node ratio; NCT, neoadjuvant chemotherapy; pCR, pathologic complete response; LN, lymph node.