Axillary staging techniques and oncologic outcomes for breast cancer patients with high clinical nodal burden undergoing neoadjuvant systemic therapy: A cancer registry study

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Background

- Evidence for de-escalated axillary surgical staging after neoadjuvant systemic therapy (NAST) mainly exists for breast cancer patients with cN1 disease but not for patients with higher clinical nodal burden (cN2/3).
- We aimed to evaluate the role of axillary lymph node dissection (ALND) vs. targeted approached like sentinel lymph node biopsy (SLNB) or targeted axillary dissection (TAD) for patients with cN2/3 breast cancer undergoing NAST in a real-world setting.

Methods

- We identified patients with cN2/3 breast cancer undergoing NAST diagnosed between 2009 and 2022 within the Baden-Württemberg cancer registry (BWCR), Germany.
- Invasive disease-free survival (iDFS) was assessed using Kaplan-Meier statistics and multivariate Cox regression models (adjusted for age, ALND vs. targeted approach, cN stage, cT stage, ypN stage, use of radiation therapy, tumor biology).

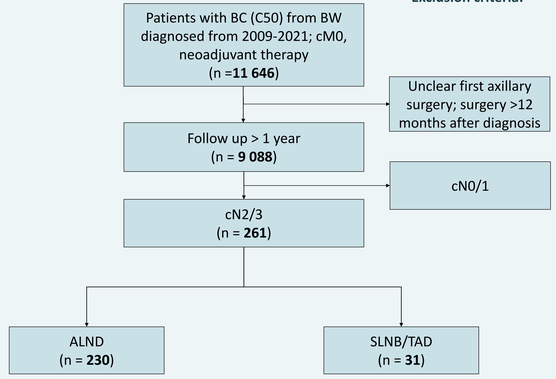
Tab 1: Baseline clinical and patient characteristics

	Overall	ALND	SLNB/TAD	p-value
	261 (100)	230 (88.9)	31 (11.1)	
Age group — no. (%)				1.000
≤60 years	134 (51.3)	118 (51.3)	16 (51.6)	
>60 years	127 (48.7)	112 (48.7)	15 (48.4)	
cN — no. (%)				0.716
cN2	180 (69.0)	160 (69.6)	20 (64.5)	
cN3	81 (31.0)	70 (30.4)	11 (35.5)	
cT — no. (%)				0.155
cT1-2	152 (58.5)	129 (56.3)	23 (74.2)	
cT3-4	88 (33.8)	81 (35.4)	7 (22.6)	
cT4d	20 (7.7)	19 (8.3)	1 (3.2)	
Tumor biology — no. (%)				0.545
HR+/HER2-	124 (49.4)	111 (50.0)	13 (44.8)	
HER2+	82 (32.7)	70 (31.5)	12 (41.4)	
TNBC	45 (17.9)	41 (18.5)	4 (13.8)	
pN (first surgery) — no. (%)				0.214
pN0	108 (44.4)	92 (42.6)	16 (59.3)	
pN1	48 (19.8)	42 (19.4)	6 (22.2)	
pN2	55 (22.6)	51 (23.6)	4 (14.8)	
pN3	32 (13.2)	31 (14.4)	1 (3.7)	
Secondary ALND — no. (%)				<0.001
Yes	5 (1.9)	1 (0.4)	4 (12.9)	
No	256 (98.1)	229 (96.4)	27 (87.1)	
Radiotherapy — no. (%)				0.245
No	44 (16.9)	36 (15.7)	8 (25.8)	
Yes	217 (83.1)	194 (84.3)	23 (74.2)	

Results

- A total of 261 patients with a median follow-up of 24.9 months were identified
- Use of ALND vs. a targeted approach as primary surgery was 88.1% (230 of 261) vs. 11.9% (31 of 261) overall. ypN stage was ypN0-1 in 48.7% (134) following initial ALND vs. 81.5% (22) after an initial targeted approach and ypN2-3 in 38.0% (82) vs. 18.5% (5). Use of radiotherapy was 84.3% (194) vs. 74.2% (23). Of the 31 patients undergoing a primary targeted approach, 12.9% (4) underwent secondary completion ALND.
- Multivariate Cox regression analysis revealed no significant influence for the use of a targeted axillary approach as primary surgery on iDFS: HR 1.92 (95% CI 0.70 to 5.30) for ALND (targeted approach as reference); cT4d (HR 3.04, 95% CI 1.48 to 6.30), ypN2-3 (HR 1.75, 95% CI 1.08 to 2.80), and TNBC (HR 2.04, 95% CI 1.04 to 4.00) were significantly associated with worse iDFS.

Fig. 1: Flow Chart



Conclusion

- This data suggests that for patients undergoing neoadjuvant treatment with initial high clinical nodal burden, a targeted approach, such as SLNB or TAD, may not have a disadvantage (i.e. reduced iDFS) compared to ALND as the first axillary surgery
- Complete response in the axilla (ypN0) for patients with cN2/3 was frequent at 44% and only 13% of SLNB patients underwent a secondary completion ALND.
- Larger studies with longer-term follow-up are welcomed to fully inform this discussion.
- In the absence of RCTs, real-world evidence from cancer registries may provide guidance for clinically-relevant questions.

Fig. 2: Kaplan-Meier plot for iDFS in cN2/3 breast cancer

Whole cohort, cN2/3 patients undergoing neoadjuvant systemic treatment

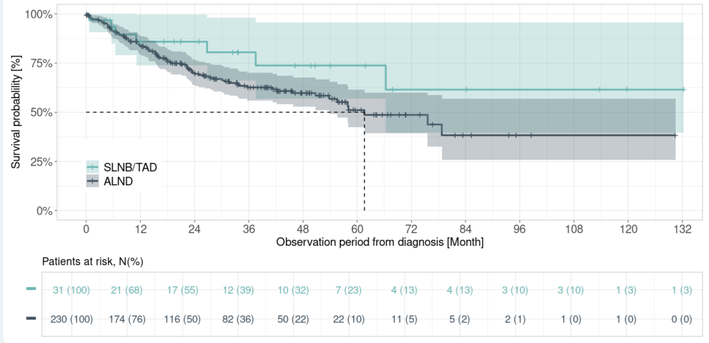
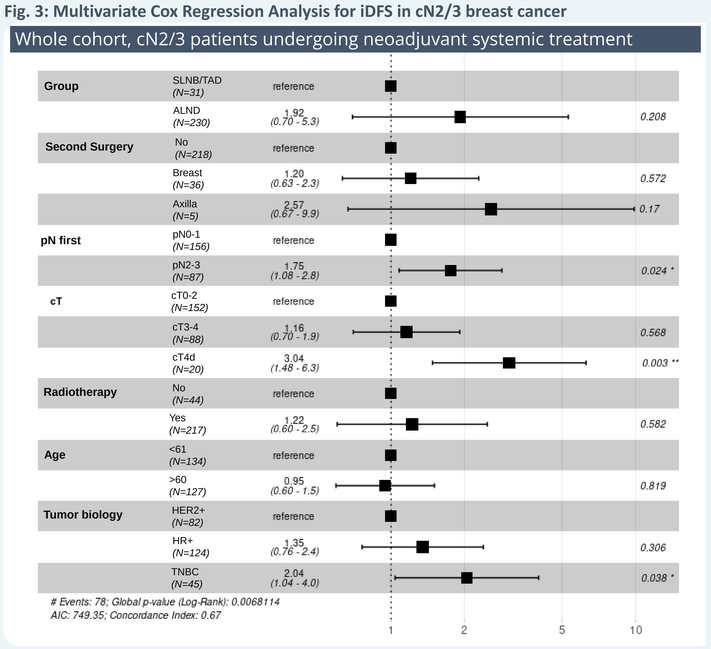


Fig. 3: Multivariate Cox Regression Analysis for iDFS in cN2/3 breast cancer

Whole cohort, cN2/3 patients undergoing neoadjuvant systemic treatment



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