

The new predicting score of axillary lymph node metastases in breast cancer patients



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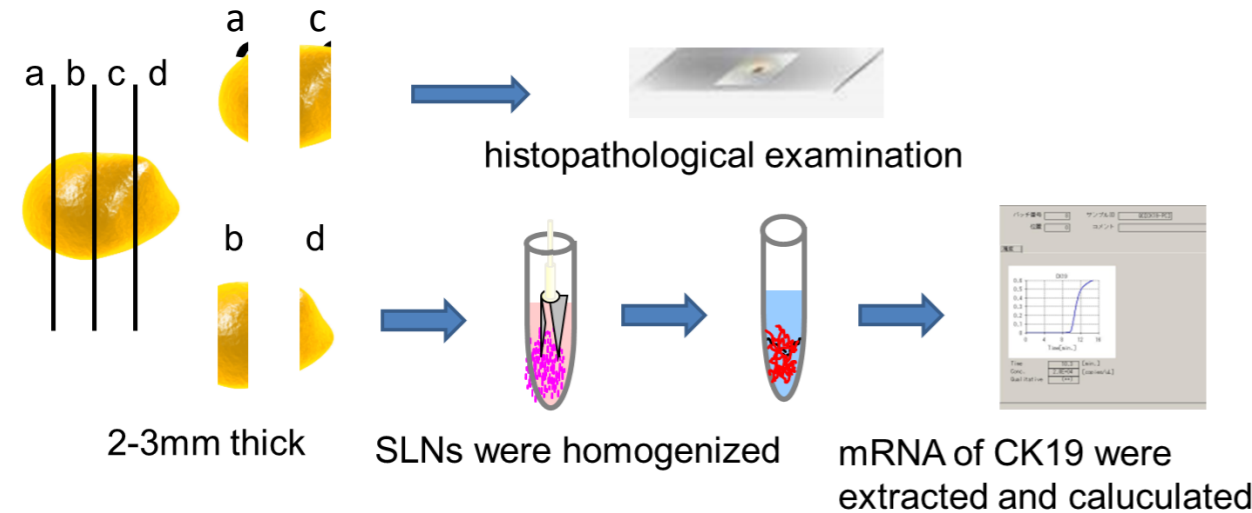
Background

- The American College of Surgeons Oncology Group (ACOSOG) Z0011 trial demonstrated no difference in overall survival or local-regional recurrence rates between patients planned for breast conservation therapy including whole breast irradiation with one or two positive sentinel lymph nodes (SLNs) randomly selected to undergo axillary lymph node dissection (ALND) versus no further surgery. But the result of this trial is controversial in some points and it would be dangerous to introduce the procedure into practice. Non-SLN status is important for the omitting ALND and the decision of the intensity of adjuvant therapy.
- Detection of SLN metastases in breast cancer patients has been determined by conventional histological examination or by molecular biological examination such as one step nucleic acid amplification (OSNA) (Table.1). We examine the assessment using a combination of histological examination and OSNA (Figure.1), the possibility of omitting ALND, and the intensity of adjuvant therapy.

【Table.1】 Definition of positive SLN by OSNA

	OSNA	CK19 mRNA (copy/μL)
Positive	2+	>5.0x10 ³
	1+	2.5x10 ² to 5.0x10 ³
	+I	<2.5x10 ² (10 fold dilution)
Negative	(-)	<2.5x10 ²

【Figure.1】 SLN assessment using a combination of histological examination and OSNA



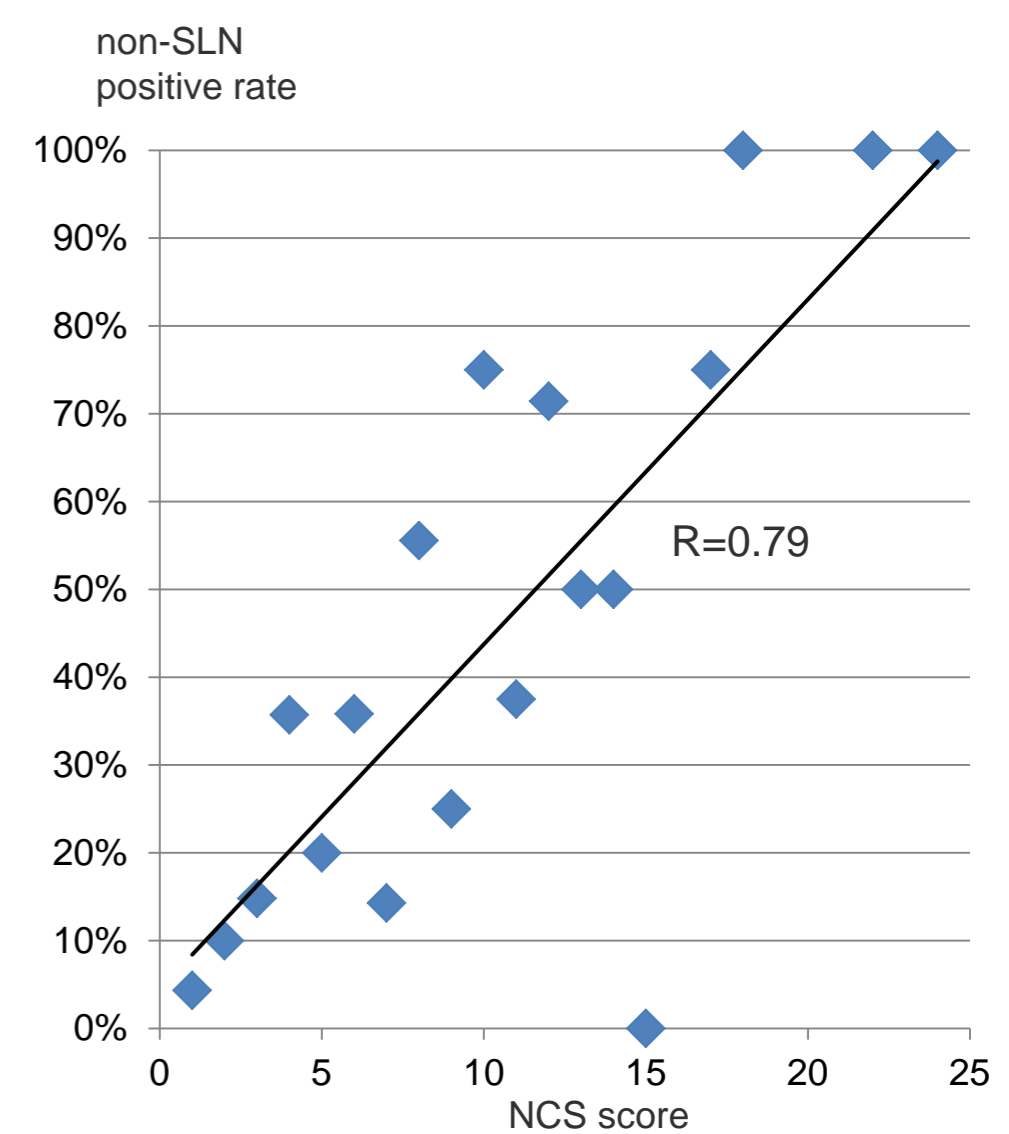
Results

- Figure.2 shows the relation between NCS score and non-SLN metastases detection rate in all cases (a), invasive ductal carcinoma (IDC) (b), and invasive lobular carcinoma (ILC) (c).
- Figure.3 shows the relation between NCS score and average number of metastatic axillary lymph nodes in IDC.

【Figure.2】 NCS score and non-SLN metastases detection rate

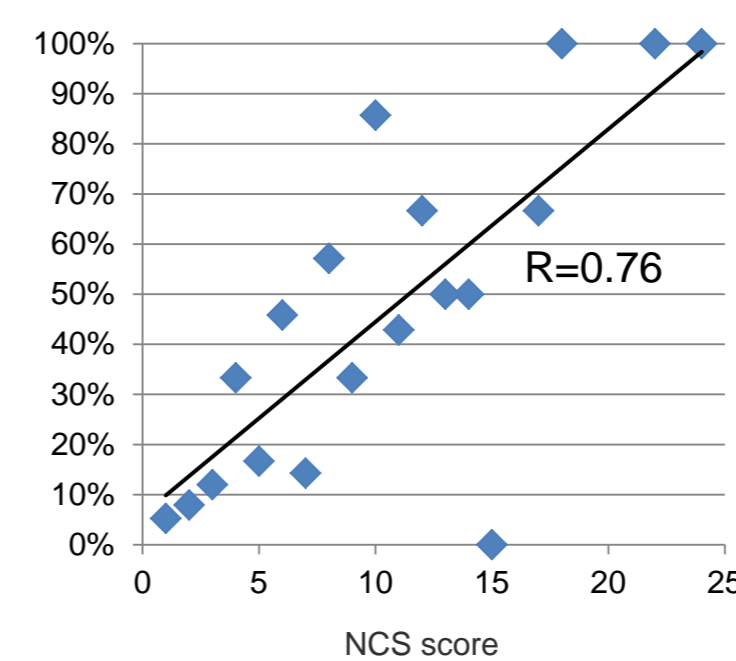
[2-a] all cases

NCS score	n	non-SLN positive rate
24	2	100%
20	1	100%
18	5	100%
17	4	75%
15	1	0%
14	2	50%
13	2	50%
12	14	71%
11	8	38%
10	8	75%
9	8	25%
8	19	56%
7	7	14%
6	67	36%
5	25	20%
4	28	38%
3	27	15%
2	70	10%
1	23	4%



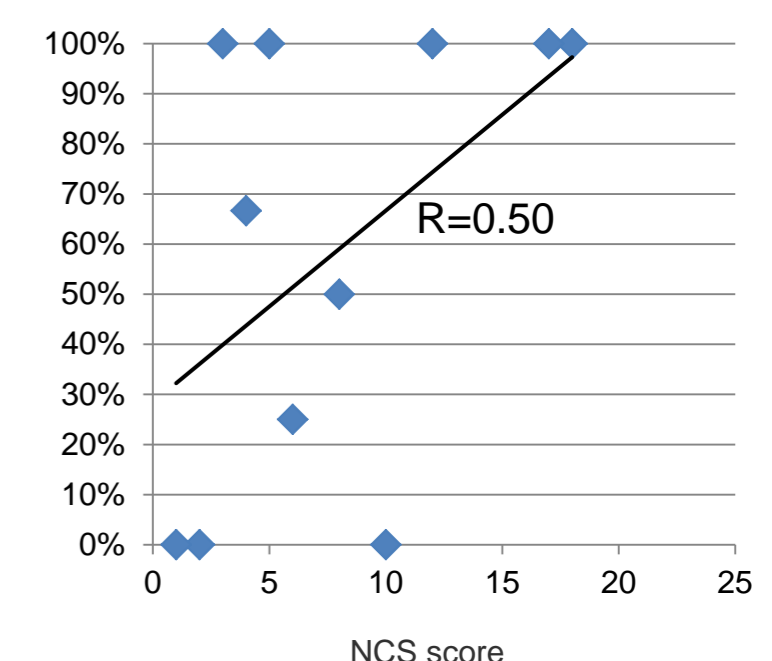
[2-b] IDC

non-SLN positive rate



[2-c] ILC

non-SLN positive rate



Patients and Methods

- 1158 consecutive patients with clinical node-negative cTis-cT3 primary breast cancer between February 2010 and June 2013 at our institution.
- We identified SLN by dye- and/or radioisotope-guided methods.
- 311 patients (27%) with positive SLN metastases by either histology or OSNA underwent further ALND.
- We allotted points by the SLN, and defined “NCC-SLN metastatic score (NCS score)” as the sum total points and predicted the existence of non-SLN metastases. (Table.2)

【Table.2】 SLN assessment and Intraoperative SLN score

Intraoperative Histology	Point allocation	OSNA	Point allocation
macro	3 points	2+	3 points
micro	2 points	1+	2 points
ITC	1 point	+I	1 point
(-)	0 point	(-)	0 point

【Example】

3SLNs ⇒ 2SLNs Histology: macro / OSNA: 2+
1SLN Histology: micro / OSNA: (-)

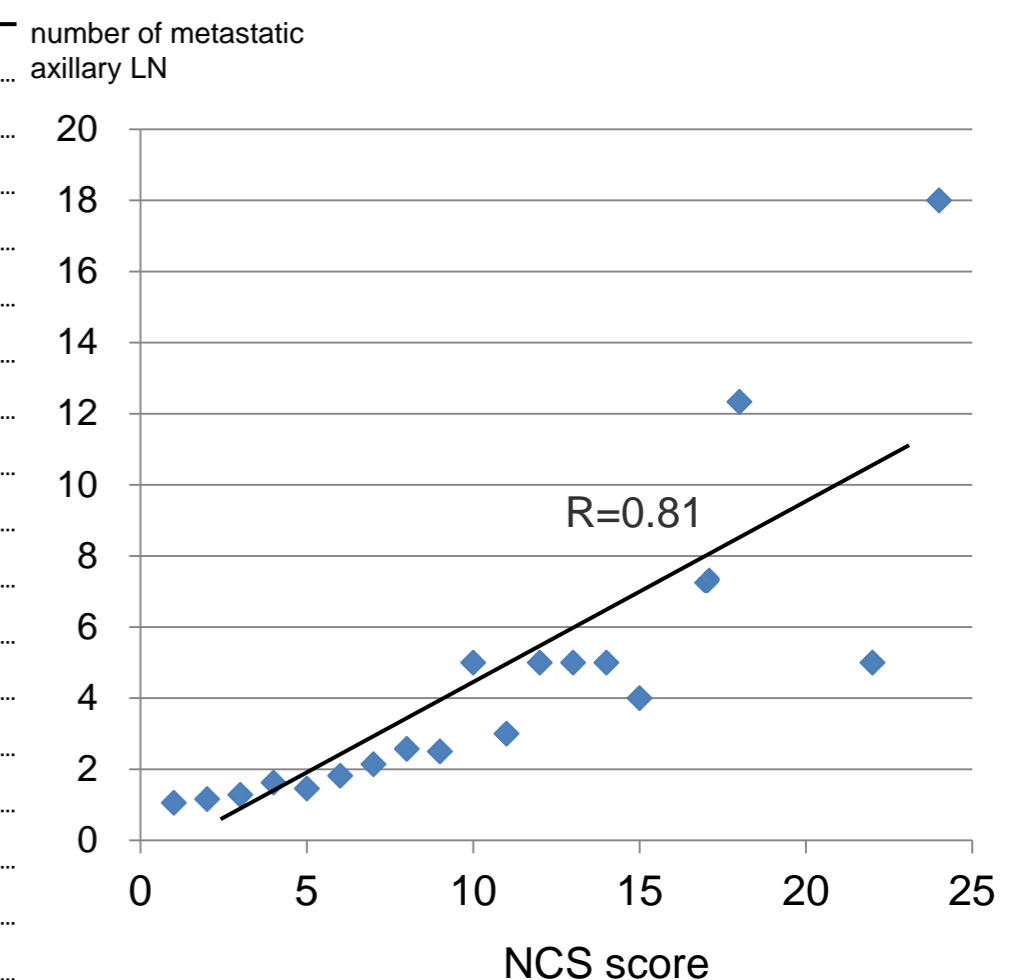
NCC-SLN metastatic score

$$3 \text{ points} \times 2 + 3 \text{ points} \times 2 + 2 \text{ points} \times 1 + 0 \text{ point} \times 1 = 14 \text{ points}$$

macro OSNA2+ micro

【Figure.3】 NCS score and number of metastatic axillary LN

NCS score	number of metastatic axillary LN
24	18.0
22	5.0
18	12.3
17	7.3
15	4.0
14	5.0
13	5.0
12	5.0
11	3.0
10	5.0
9	2.5
8	2.6
7	2.1
6	1.8
5	1.5
4	1.6
3	1.3
2	1.2
1	1.1



Conclusion

- NCS score had a strong correlation with the non-SLN metastases detection rate and number of metastatic axillary LN in the invasive ductal carcinoma.
- By using this score we could decided the case that we omit the further ALND and the intensity of adjuvant therapy.