

Patient selection for clinical trials eliminating surgery in HER2-positive breast cancer treated with neoadjuvant systemic therapy

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Introduction

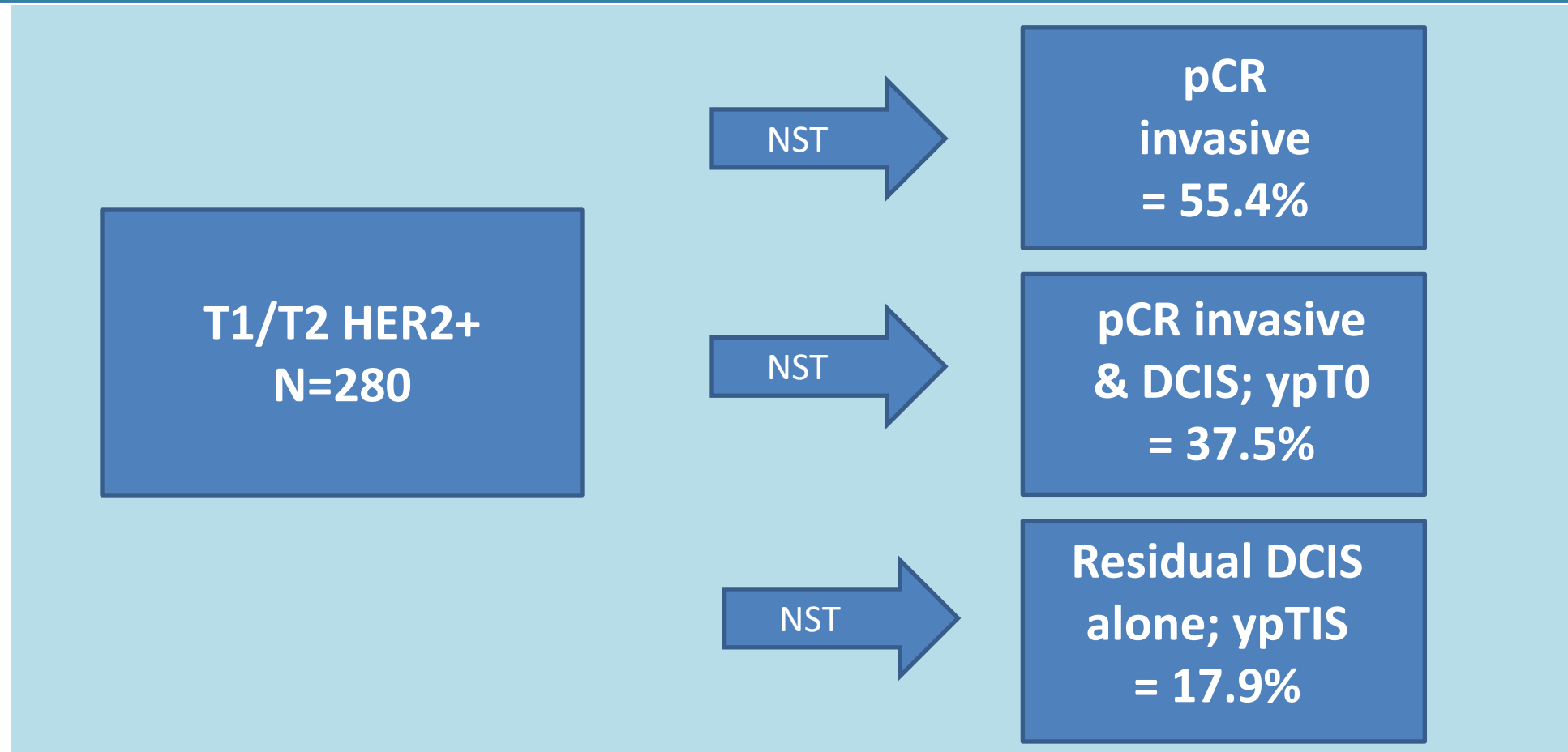
- High rates of pCR for HER2 positive breast cancer highlight potential omission of surgery after neoadjuvant systemic therapy
- How do we identify patients with pCR who may be candidates for ongoing MD Anderson Multicenter and other clinical trials assessing the safety of non-operative treatment?
 - Multimodality imaging lacks in sensitivity/specificity in predicting pCR
 - Multimodality imaging with vacuum assisted biopsy
 - Accuracy: 98%
 - False negative rate: 5%
 - NPV: 95%

van la Parra and Kuerer, *BCR* 2016
Kuerer *et al*, *ANN SURG* 2018

Methods and Purpose

- Inclusion criteria
 - HER2 positive
 - cT1-T2, cN0-N1
 - Treated with neoadjuvant HER2 targeted regimens
- Surgical resection and axillary surgery
- Purpose
 - Identify clinicopathologic characteristics associated with residual disease in HER2 positive breast cancer after neoadjuvant therapy
 - Assess effectiveness of neoadjuvant therapy on invasive disease and DCIS

Overall key breast pathologic outcome measures following neoadjuvant systemic therapy in HER2-positive cancer treated with neoadjuvant systemic therapy



Effect of neoadjuvant therapy on the DCIS component in HER2-positive invasive breast cancer

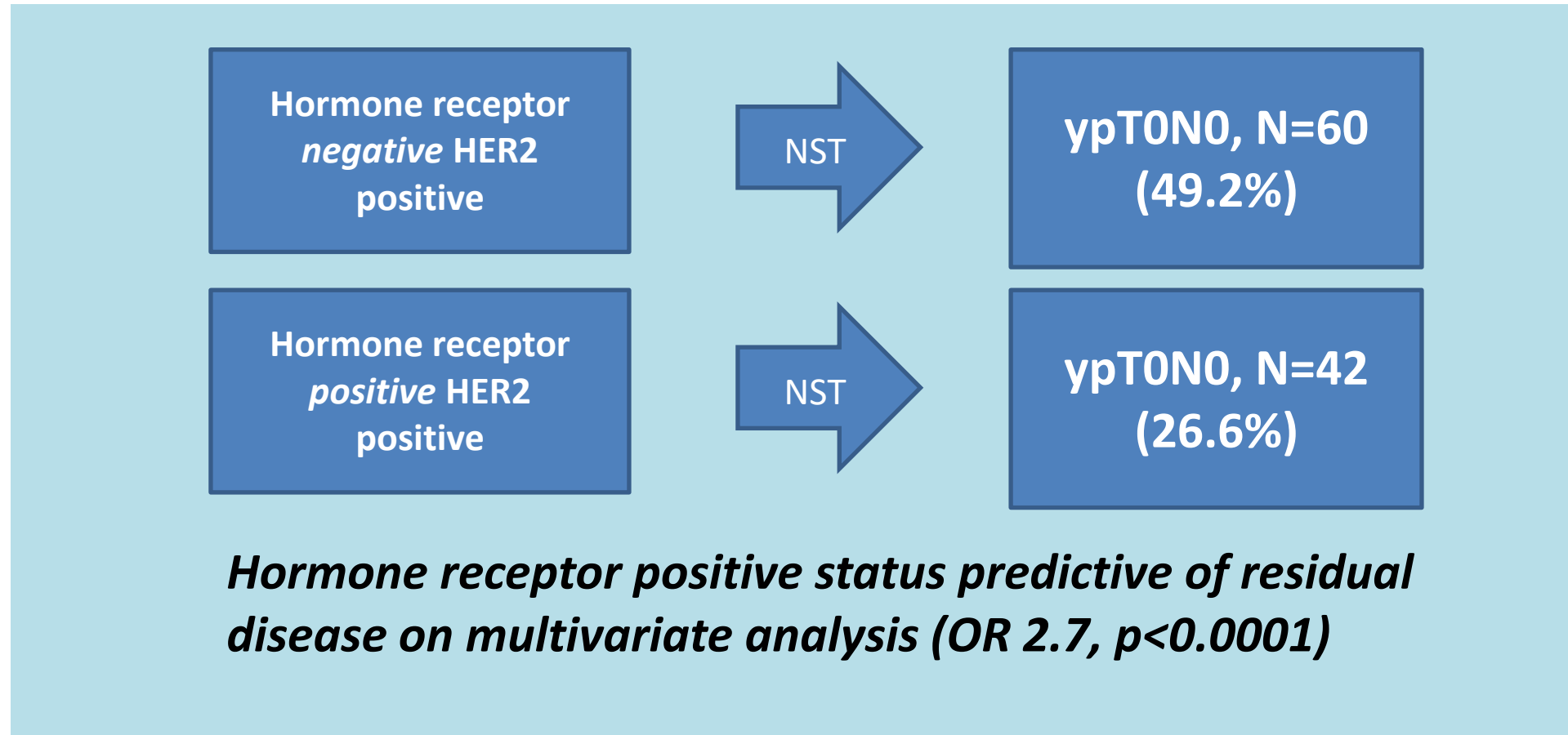
DCIS identified
on initial biopsy
N=129 (46.1%)

NST

DCIS eradicated,
N=46 (35.7%)

Presence of DCIS on biopsy associated with higher proportion of patients with residual disease compared to those without DCIS on initial biopsy (69% vs 57%; $p=0.04$)

Effect of hormone receptor status of HER2 positive cancer on response to NST



Multimodality imaging response and pathologic response after NST

Measure	Breast	Lymph Nodes	Breast and lymph nodes
Sensitivity, %	96.5 (94.3-98.7)	66.3 (57.9-74.6)	97.1 (95.1-99.1)
Specificity, %	13.3 (9.2-17.3)	40.9 (32.3-49.6)	12.2 (8.33-16.2)
Positive-predictive value, %	66 (60.3-71.7)	67.1 (58.8-75.4)	65.9 (60.2-71.5)
Negative predictive value, %	68.4 (62.9-74.0)	40.0 (31.4-48.6)	70.6 (65.1-76.0)
Values in parentheses are 95% CIs			

Summary and Conclusions NST in HER2+ Disease

- NST can eradicate the DCIS component of HER2+ breast cancer
 - Associated with decreased rate of pCR
 - For no surgery trials, need eradication of invasive and DCIS components of disease to avoid nidus for carcinoma in the future
- Hormone receptor positive tumors associated with residual disease
- Multimodality imaging not reliable in identifying pCR
 - Image guided percutaneous biopsy required to safely select patients for inclusion in ongoing and future elimination of surgery clinical trials