PS3-08-11

Correlation Between Clinicopathological Features and Oncotype DX Recurrence Score in HR+/HER2– Early Breast Cancer: A Real-World, Retrospective, Monocentric Analysis of Over 700 Patients

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Introduction

Adjuvant chemotherapy has been shown to reduce the risk of recurrence in patients with hormone receptor–positive, HER2-negative early breast cancer (HR+/HER2- eBC), particularly in the presence of high-risk features such as nodal involvement, high histologic grade, and high Ki67 expression. Among available oncogenomic assays, the Oncotype DX Recurrence Score (RS) is widely used as a predictive and prognostic tool to guide adjuvant treatment decisions by identifying patients most likely to benefit from chemotherapy. However, the association between RS and conventional clinicopathologic characteristics remains only partially understood.

Methods and Materials

This monocetric, real-world, retrospective study conducted at Fondazione IRCCS Istituto Nazionale dei Tumori in Milan, investigated the association between the Oncotype DX oncogenomic test RS and clinicopathological features in patients that underwent radical surgey for HR+/HER2− eBC between June 2009 and December 2024. Patients were classified into 3 risk groups according to RS: RS ≤10, RS 11–25, and RS ≥26. The association between clinicopathological features and categorized RS was expressed as odds ratios (ORs). A multivariable cumulative link model was fitted to adjust these associations for 10 clinically relevant covariates, both in the overall population and within subgroups defined by lymph node involvement. All statistical tests were two-tailed, and a p-value (*P)* <0.05 was considered significant.

Characteristics	RS <11 *N*=149 (%)	RS 11-25 *N*=443 (%)	RS >25 *N*=140 (%)
Age* (years)	58 (32-68)	55 (28-64)	57 (31-65)
Premenopausal	52 (35.9)	177 (40.0)	40 (28.6)
Histology			
NST	110 (73.9)	360 (81.3)	121 (86.4)
ILC	26 (17.4)	55 (12.4)	12 (8.6)
Other	13 (8.7)	28 (6.3)	7 (5.0)
ER expression* (%)	99 (95-99)	99 (95-99)	98 (30-99)
PgR expresion* (%)	95 (90-99)	85 (40-95)	20 (1-70)
Ki67 expression* (%)	22 (15-27)	23 (18-28)	30 (24-40)
Tumor grade			
1	7 (4.7)	25 (5.6)	1 (0.7)
2	119 (79.9)	319 (72.0)	55 (39.3)
3	23 (15.4)	99 (22.3)	84 (60.0)
HER2 low§	35 (23.5)	111 (25.1)	32 (22.9)
Tumor size			
≤1 cm	27 (18.1)	85 (19.2)	22 (15.7)
1-2 cm	73 (49.0)	243 (54.8)	71 (50.7)
>2 cm	49 (32.9)	115 (26.0)	47 (33.6)
Nodal involvement			
N0	84 (56.4)	276 (62.3)	108 (77.1)
N1mi	13 (8.7)	32 (7.2)	7 (5.0)
N1	50 (33.7)	126 (28.5)	21 (15.0)
NX	2 (0.2)	9 (2.0)	4 (2.9)

Table 1. Patients clinicopathological characteristics according to RS.
*for continuous variable median with inter-quartile range was reported
§ defined as IHC 1+ or IHC 2+ with negative ISH

Results

The final study population included 732 patients, of whom 149 (20.3%) had RS ≤10, 443 (60.5%) had RS 11–25, and 140 (19.2%) had RS ≥26. The lymph node positive group included In the overall population (**Figure 1**), higher Ki67 levels were independently associated with higher RS values **(*P*<0.001)**, whereas higher PgR expression , lobular histology, and older age, were associated with lower RS. Both PgR and Ki67 expression remained significantly correlated with RS in patients with negative (*N*=486; **Figure 2**) and positive (*N*=197; **Figure 3**) lymph nodes. Conversely, lobular histology was significantly associated with lower RS among node-negative patients (**Figure 2**), while older age was associated with lower RS in patients with lymph node involvement at surgery (**Figure 3**).

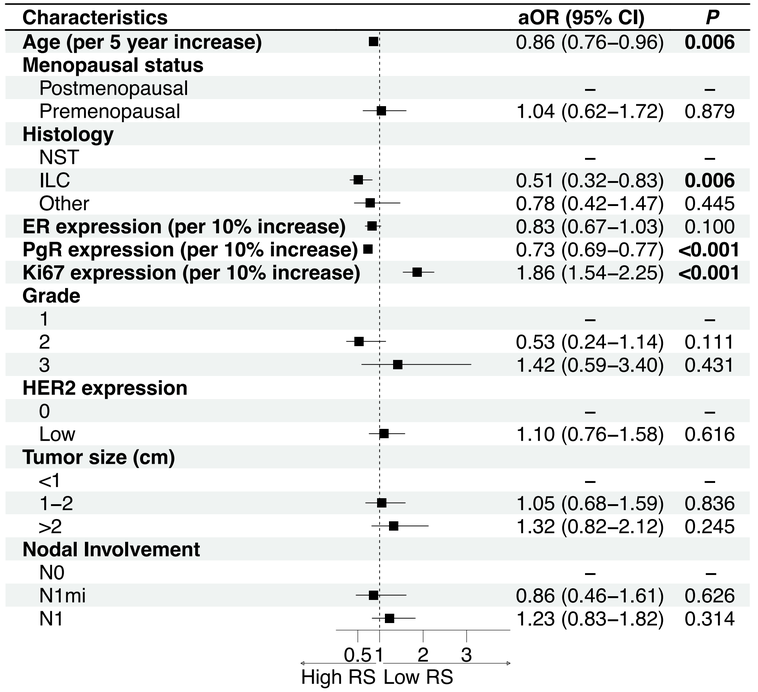


Figure 1. Forest plot showing the adjusted associations between Recurrence Score (RS) and clinicopathologic features from the multivariable regression model in the overall population.

Conclusions

Among clinicopathologic features, Ki67 and PgR showed the most consistent association with genomic risk in patients with HR+/HER2– early breast cancer. In settings with limited access to genomic testing, PgR and Ki67 may serve as the most reliable markers for prognostic and predictive stratification, complemented by lobular histology in node-negative tumors and age in node-positive disease.

Acknowledgements

The authors thank all patients involved in the study, as well as their caregivers, care team, investigators and research staff.

Disclosures

All authors declare no competing interests linked to this study

Abbreviations: aOR, adjusted odds ratio; CI: confidence interval; ER, estrogen receptor; HR+: hormone receptor positive; HER2: human epidermal growth factor receptor-2; ILC, invasive lobular carcinoma; NST: non-special type; PgR progesteron receptor.; RS: recurrence score.

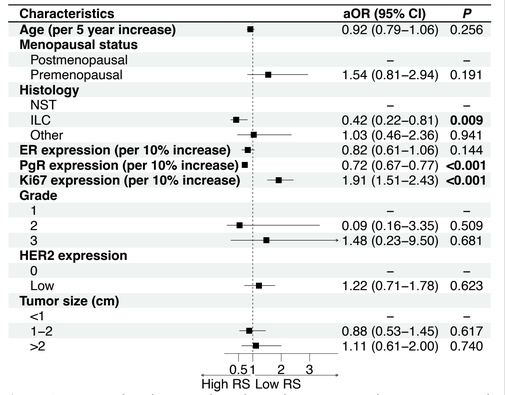


Figure 2. Forest plot showing the adjusted associations between RS and clinicopathologic features from the multivariable regression model in in patients with node negative disease. .

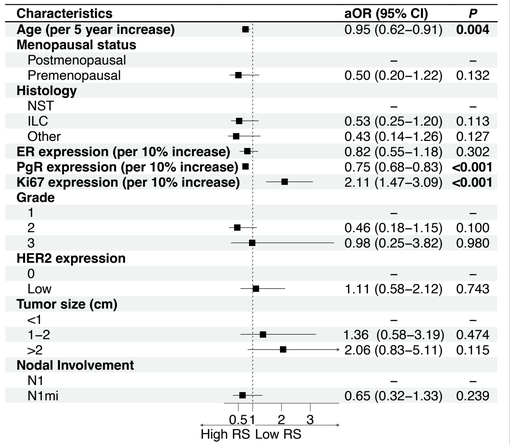


Figure 3. Forest plot showing the adjusted associations between RS and clinicopathologic features from the multivariable regression model in patients with node positive disease.

Presented at 48th Annual San Antonio Breast Cancer Symposium, San Antonio, TX, USA, 9-12 Dec 2025

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References

1. Sparano JA et al. Adjuvant Chemotherapy Guided by a 21-Gene Expression Assay in Breast Cancer. N Engl J Med. 379(2):111-121 (2018)
2. Kalinsky K et al. 21-Gene Assay to Inform Chemotherapy Benefit in Node-Positive Breast Cancer. N Engl J Med. 385(25):2336-2347 (2021)
3. Loibl S et al. Early breast cancer: ESMO Clinical Practice Guideline for diagnosis, treatment and follow-up. Ann Oncol, 35(2):159-182 (2024)

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