

The 70-gene signature (MammaPrint) accurately predicts distant breast cancer recurrence risk in older patients

Introduction

Adjuvant therapy for hormone receptor positive (HR+) breast cancer (BC) is guided by clinicopathological risk factors, but these are generally insufficient for accurate determination of prognosis.

The 70-gene signature test (MammaPrint) has been shown to accurately predict recurrence in women younger than 70 years with early BC and up to 3 positive lymph nodes.

Little evidence is available for genetic prognostic markers in real life populations of older patients.

This study assesses the validity of MammaPrint in patients aged ≥70 years with BC in a population-based cohort.

Methods

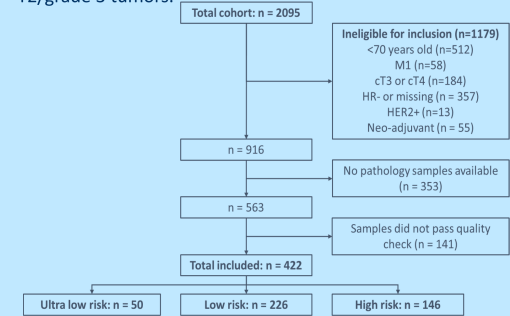
FOCUS is a population based cohort that included all consecutive breast cancer patients over 65 years old diagnosed between 1997 and 2004 in the Comprehensive Cancer Center region West, the Netherlands.

The present study included all FOCUS patients with the following criteria:

- ≥70 years old
- T1-2, N0-3, M0 breast cancer
- HR+
- HER2 negative
- No neoadjuvant treatment

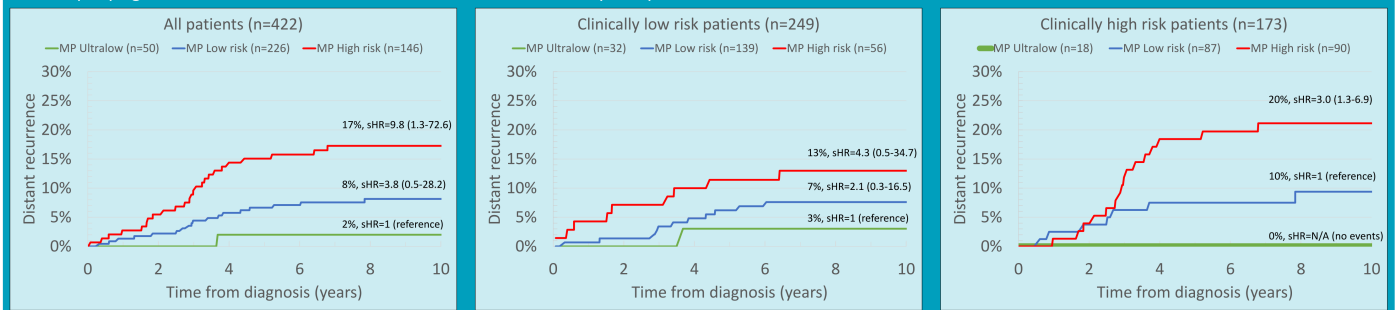
MammaPrint (MP) is a genomic risk profile based on microarray gene expression analysis, classifying patients as ultralow, low or high risk of developing recurrences.¹

Patients were considered clinically low risk with T1-2, N0, grade 1-2 tumors, and clinically high risk with N+ or T2/grade 3 tumors.



Results

Incidence of distant recurrences estimated from cumulative incidence analyses to take competing mortality into account. Subdistribution hazard ratios (sHR) and accompanying 95% confidence intervals are derived from Fine and Gray analyses.



	MP Ultralow risk	MP Low risk	MP High risk
Total patients	50 (12%)	226 (54%)	146 (35%)
Age [Median (IQR)]	79 (74-85)	79 (74-84)	77 (74-84)
Histological grade			
I	11 (22%)	39 (17%)	5 (3%)
II	21 (42%)	92 (41%)	42 (29%)
III	1 (2%)	31 (14%)	54 (37%)
Missing	17 (34%)	64 (28%)	45 (31%)
T-stage			
Tis	0 (0%)	2 (1%)	0 (0%)
T1	17 (34%)	111 (49%)	54 (37%)
T2	33 (66%)	113 (50%)	89 (61%)
Missing	0 (0%)	0 (0%)	3 (2%)
N-stage			
N0	32 (64%)	140 (62%)	66 (45%)
N1	17 (34%)	72 (32%)	67 (46%)
N2	0 (0%)	6 (3%)	6 (4%)
N3	0 (0%)	2 (1%)	3 (2%)
Missing	1 (2%)	6 (3%)	4 (3%)
Clinical risk			
Low	32 (64%)	139 (62%)	56 (38%)
High	18 (36%)	87 (39%)	90 (62%)
Adjuvant ET			
No	24 (48%)	103 (46%)	40 (27%)
Yes	26 (52%)	123 (54%)	106 (73%)
Adjuvant CT			
No	46 (92%)	217 (96%)	137 (94%)
Yes	4 (8%)	9 (4%)	9 (6%)

Interpretation and conclusion

1) MammaPrint accurately predicts 10-year distant recurrence free interval in older BC patients.

2) Patients classified as ultralow risk had a very low chance of developing metastatic disease

- **Even though 48% did not receive any adjuvant endocrine therapy**
- **Clinically high risk patients** that received no adjuvant treatment had **NO recurrent disease even 10 years** after diagnosis

3) These findings are in line with published results of the STO-3 trial² and may be used as the foundation for trials investigating de-escalation of treatment in older patients guided by genomic testing.

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