Using the combined 70- and 80-gene signatures on core needle biopsy to guide neoadjuvant chemotherapy recommendations for invasive breast cancer in a Black population: Can we identify those who benefit most at time of diagnosis? Using the combined 70- and 80-gene signatures on core needle biopsy to guide neoadjuvant chemotherapy recommendations for invasive breast cancer in a Black population: Can we identify those who benefit most at time of diagnosis?

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Background

- Studies in genomic testing in Black patients can lead to improved outcomes and reduced disparity.

Objectives

- To examine how MammaPrint (MP) and BluePrint (BP) results affected treatment decisions (Neoadjuvant chemotherapy (NAC) vs surgery first) and tumor response in a Black patient population.

Methods

- A retrospective chart review was performed on all cases of invasive breast cancer at a single institution from 2021-2023 that had MammaPrint and Blueprint sent on core needle biopsy (CNB).
- Descriptive statistics identified treatment differences between the MP and BP subgroups.

Table 1: MammaPrint and BluePrint results affecting recommendation for surgery first vs. neoadjuvant chemotherapy

		MammaPrint (MammaPrint Index -1 to +1)				
	Total (% of total N)	Ultralow (MI +0.356 to +1)	Low (MI 0 to +0.355)	High1 (MI 0 to -0.57)	High2 (MI -0.571 to -1)	p-value
N	85	13 (15.3%)	24 (28.2%)	28 (32.9%)	20 (23.5%)	
Age (mean)	60.447	64.077	63.833	60.893	53.4	0.02*
BluePrint						
Luminal A	35 (41.2%)	13	22	0	0	<0.001*
Luminal B	26 (30.6%)	0	1	22	3	
HER2	7 (8.2%)	0	0	4	3	
Basal	17 (20.0%)	0	1	2	14	
Treatment Plan						
Surgery first	57 (67.1%)	12	22	17	6	<0.001*
NAC	28 (32.9%)	1	2	11	14	
*Patients that had NAC and definitive surgery.						
N	19					
Breast &/or Axillary Downstaging						
Yes	16 (84.2%)	0	1	5	10	0.086
No	3 (15.8%)	0	0	3	0	
pCR						
Yes	10(52.6%)	0	0	2	8	0.038*
No	9(47.4%)	0	1	6	2	

Key: MI=MammaPrint Index, NAC=neoadjuvant chemotherapy, pCR= pathologic complete response, *=implies statistical significance.

Results

- Out of a total 85 Black patients, 57 underwent surgery first and 28 received NAC.
- 25/28 (89.2%) were genomically MP high risk whereas 3/28 (10.8%) were genomically MP low risk (p<0.001).
- Most patients that received NAC first were MP High2 in the Index score (14/28, 50%, p<0.001). Most patients that received surgery first were MP Low or UltraLow.
- 16/19 (84%) of patients that had NAC and definitive surgery had pathologic downstaging (p=0.086).
- 10/19 (52.6%) achieved complete pathological response. 8 of these patients were MP High2 (p=0.038) and 6 of these were Basal.

Conclusion

- Black patients with genomically high risk tumors, defined by MP and BP on CNB, were more frequently recommended for NAC and subsequently downstaged and/or achieved complete response.
- MP/BP can be an important tool in the treatment planning of Black patients.