



Characteristics and Treatment Patterns of de novo Oligometastatic Stage IV Breast Cancer: A Single-Center Retrospective Cohort Study.

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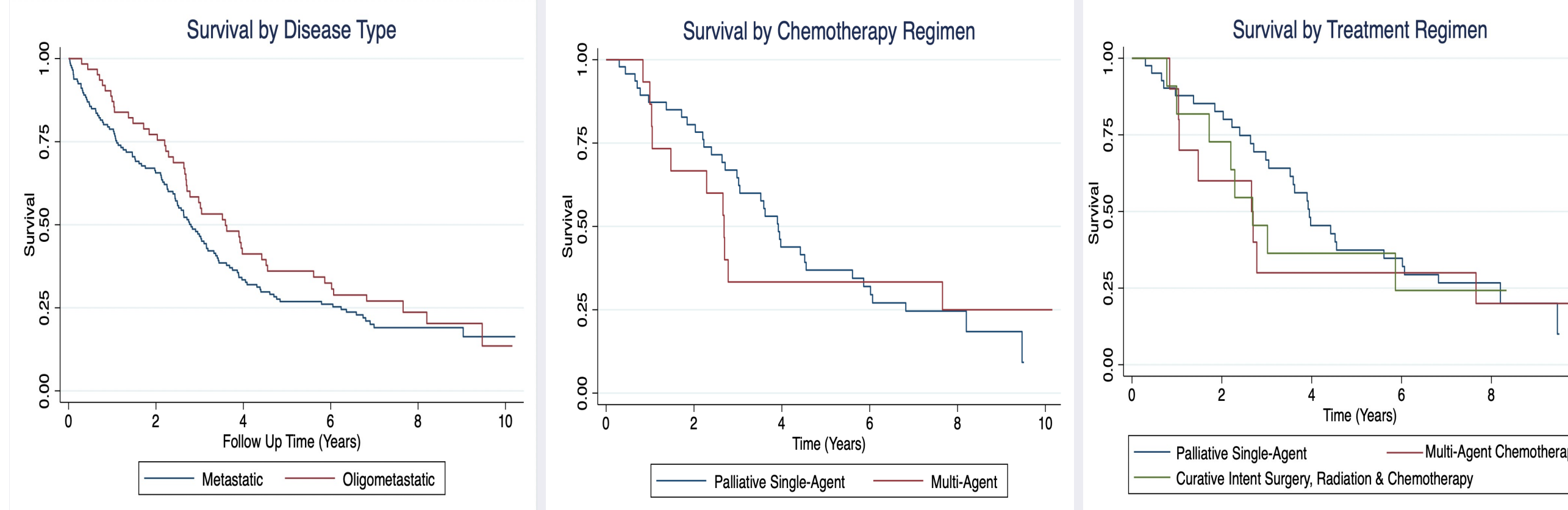
BACKGROUND

- Oligometastatic breast cancer, defined as ≤ 5 metastatic lesions, may present as *de novo* stage IV or recurrent disease.
- De novo* metastatic breast cancer represents approximately 3-6% of incident cases, with improved overall survival compared to recurrent metastatic disease.^{1,2,3}
- De novo* stage IV oligometastatic breast cancer is thought to be a distinct subset of metastatic disease and may benefit from multimodality therapy.⁴
- Racial/ethnic disparities in survival outcomes may be partially attributed to differences in access to care.⁵
- No randomized clinical trials have compared multimodality treatment with aggressive chemotherapy regimens, surgery and radiation to palliative intent treatment.
- We investigated differences in 5-year mortality in patients with *de novo* oligo-stage IV vs *de novo* extensive-stage IV breast cancer who received curative intent aggressive multi-drug chemotherapy vs palliative intent therapy at our institution as well as surgery and/or radiation.

METHODS

- Retrospective cohort design using the Yale tumor registry.
- Identified *de novo* stage IV breast cancer diagnosed 2012-2016.
- Clinical characteristics and treatment patterns were compared between oligo-stage IV vs extensive-stage IV.
- Aggressive multi-drug chemotherapy regimens were defined as TCHP or AC-THP for HER2+, ddAC->T or TC for ER+, and ddAC->T for TNBC.
- Palliative regimens were defined as THP for HER2+ or single agent chemotherapy.
- 5-year mortality rates were calculated from date of diagnosis to date of death. Living patients censored at date of last contact.
- Kaplan-Meier curves were estimated and compared using log-rank tests.
- Univariate and multivariate Cox proportional hazards models assessed the association between oligo-stage IV vs extensive-stage IV breast cancer, treatment regimen, and 5-year mortality.
- Models were adjusted for receptor status, age at diagnosis, receipt of surgery, and radiation, then stratified by receptor status.

RESULTS



Improved 5-year survival in patients with oligometastatic disease compared to metastatic disease ($p = 0.10$).

No difference in 5-year survival among patients with oligometastatic breast cancer who receive palliative versus curative intent treatment ($p = 0.44$).

Baseline Characteristics of Patients with *de novo* Stage IV Metastatic Breast Cancer.

Characteristic*	Oligometastatic Stage IV (n = 62)	Extensive Stage IV (n = 147)	p-value
Age at Diagnosis, years**	61.7 ± 14.8	61.1 ± 14.3	0.80
Number of metastatic lesions			
1 lesion	18 (29.0)		
2-5 lesions	44 (71.0)		
Location of metastatic lesions			
Bone	19 (39.6)	58 (42.0)	
Visceral	21 (43.7)	24 (17.4)	
Bone & Visceral	8 (16.7)	56 (40.6)	< 0.001
Receptor Status			
HER2 positive	18 (30.5)	42 (29.0)	0.83
ER positive	40 (65.6)	119 (81.2)	0.01
Triple-negative	12 (19.4)	13 (8.8)	0.03
Systemic Chemotherapy			
Palliative Single Agent	47 (75.8)	129 (92.1)	
Aggressive Multi-Drug	15 (24.2)	11 (7.9)	0.003
Treatment Regimen			
Surgery & Chemotherapy	11 (24.4)	19 (17.9)	0.36
Radiation & Chemotherapy	6 (15.0)	40 (31.5)	0.04
Surgery, Radiation & Chemotherapy	11 (17.7)	1 (0.7)	< 0.001

*Reported as N (%), unless otherwise noted.

**Mean ± standard deviation.

Association Between Disease Status and 5-Year Mortality Among Patients with *de novo* Stage IV Oligometastatic Breast Cancer (N=201).

		Median Survival (years)	5-Year Mortality N (%)
Extensive Stage IV		2.7	108 (70.6)
Oligometastatic Stage IV		3.3	44 (64.7)
		Univariate	Multivariate*
		HR of 5-year mortality (95% CI)	HR of 5-year mortality (95% CI)
Disease Status	Oligometastatic Stage IV	0.73 (0.51 - 1.06)	0.62 (0.40 - 0.94)
		Reference	
Chemotherapy	Extensive Stage IV	1.33 (0.65 - 2.76)	1.67 (0.96 - 2.90)
	Multi-Drug Regimen	Reference	
Receptor Status	Palliative Single Agent	Reference	
	Triple Negative	3.17 (1.52 - 6.60)	3.16 (1.83 - 5.46)
		Reference	
Surgery	Receptor Positive	0.88 (0.45 - 1.72)	0.62 (0.38 - 0.99)
	Did Not Receive	Reference	
Radiation Therapy	Received	1.18 (0.58 - 2.39)	1.33 (0.91 - 1.95)
	Did Not Receive	Reference	

*Adjusted for receptor status, age at diagnosis, receipt of surgery, and radiation.

CONCLUSIONS

- Patients with oligometastatic stage IV breast cancer had lower 5-year mortality vs extensive stage IV breast cancer.
- Surgery, but not aggressive chemotherapy nor radiation, was associated with lower 5-year mortality. However, very few patients received all three modalities with curative intent.
- These results are consistent with prior randomized clinical trials but leave the question unanswered if combining all three modalities may improve overall survival in *de novo* oligometastatic stage IV breast cancer.

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