

The Role of Geographic Location in The Decline of Left Ventricular Ejection Fraction Amongst Breast Cancer Patients Receiving Doxorubicin-Based Chemotherapy

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BACKGROUND

- Left ventricular ejection fraction (LVEF), a measure of cardiac function, often declines as a result of breast cancer treatment.
- This decline is associated with the incidence of heart failure, and is the leading cause of morbidity and mortality amongst breast cancer patients.
- Individuals in both metro and non-metro locations often experience LVEF decline, due to advanced cardiovascular disease.
- Objective: To assess the association between metro and non-metro geographic location and the decline of LVEF amongst breast cancer patients receiving doxorubicin-based chemotherapy.

METHODS

- 279 breast cancer patients receiving doxorubicin-based chemotherapy were recruited across 31 sites into a double-blinded, placebo-controlled, 24-month randomized trial of a statin versus a placebo drug.
- LVEF was obtained via cardiac magnetic resonance at pretreatment and then 6 months after doxorubicin treatment was initiated.
- Patients’ zip codes were converted to rural-urban continuum codes (RUCC), a classification that distinguishes metropolitan counties by population size and non-metropolitan counties by population size and adjacency to metropolitan areas.
- Patients’ LVEF measurements were analyzed blinded to their geographic location.

In this preliminary study, with a small number of patients, we observed a difference in point estimate; however, a significant difference in LVEF decline between breast cancer patients living in metro and non-metro geographic locations was not reached 6 months after initiation of doxorubicin-based chemotherapy.

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RESULTS

Table 1. Descriptive Characteristics (Values expressed as n (%) or mean ± SE)

	All Patients (n = 279)
Age (years)	49 ± 12
Sex (female)	256 (91.8)
Race	
White	231 (82.8)
Black	38 (13.6)
Native Hawaiian/Pacific Islander	4 (2.9)
Asian	3 (1.1)
Native American/Alaskan	2 (0.7)
Unknown	1 (0.7)
Height (centimeters)	166.1 ± 8
Weight (kilograms)	82.6 ± 19.8
Body Mass Index	30 ± 6.9

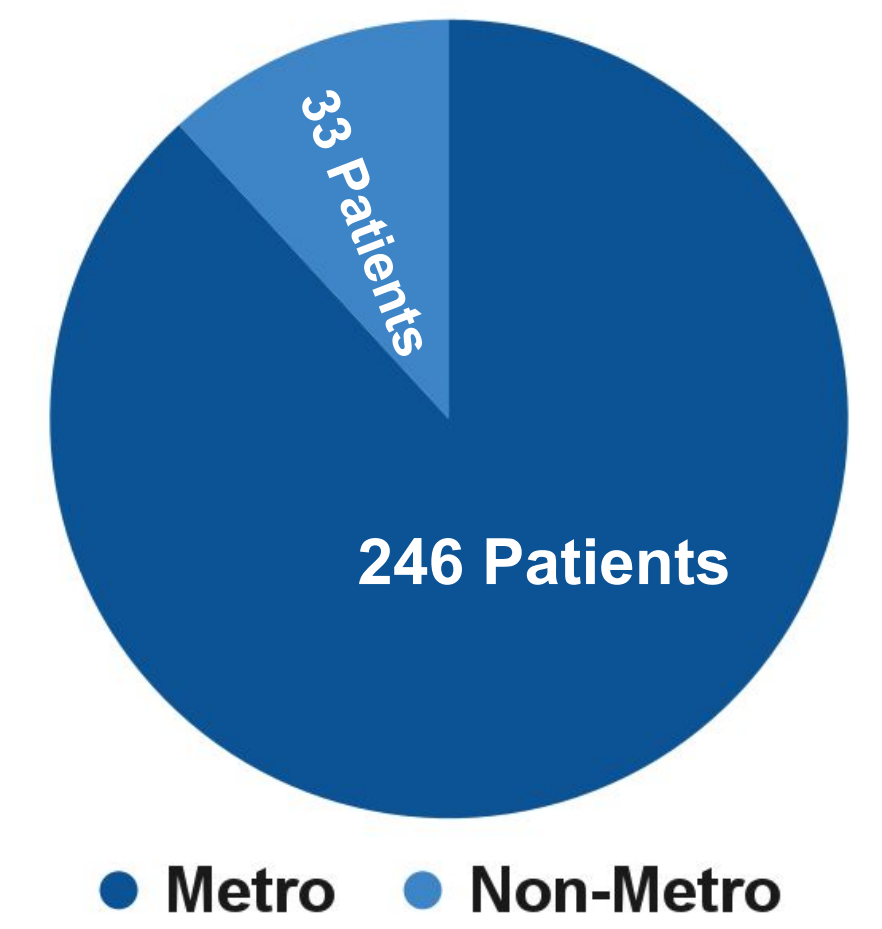


Figure 1. Geographic Location Distribution

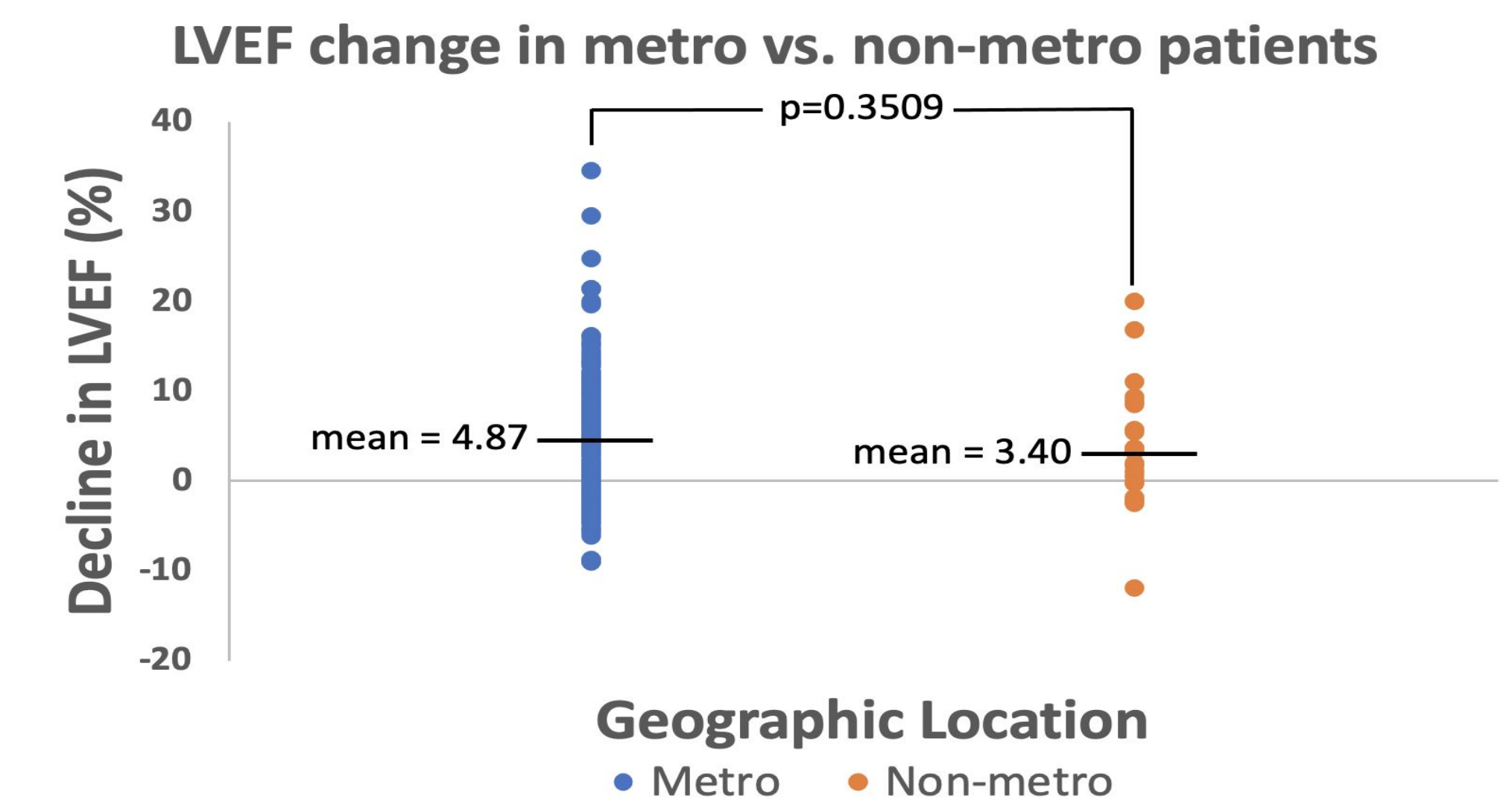


Figure 2. Comparison of LVEF decline to geographic location. Patients living in metro locations showed a 4.87 ± 7.4 average LVEF decline while patients living in non-metro locations showed a 3.40 ± 6.9 average LVEF decline. A T-Test did not find a significant difference between metro and non-metro LVEF decline at an alpha of 0.05 (P = 0.3059).

CONCLUSION

In this preliminary study, with a small number of patients, we observed a difference in point estimate; however, a significant difference in LVEF decline between breast cancer patients living in metro and non-metro geographic locations was not reached 6 months after initiation of doxorubicin-based chemotherapy. Future studies are needed with larger sample sizes to determine a significant difference in metro and non-metro LVEF decline.

DISCLOSURE INFORMATION

No disclosures.