Correlation Between Red Cell Distribution Width and Response to Cardiac Resynchronization Therapy in Chronic Heart Failure

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Background

High Red Cell Distribution Width (RDW) is linked to poor outcomes in advanced Heart Failure (HF). Whether or not RDW levels predict response to Cardiac Resynchronization Therapy (CRT) remains unclear. We examined the role of RDW in predicting clinical outcomes of HF following CRT insertion. Further, we examined if follow-up RDW levels correlated with response and mortality.

Methods

A retrospective chart review was carried out for all patients undergoing CRT insertion from April 2009 to April 2015. RDW was measured at baseline and three different time points after CRT insertion (3 months, 6 months, and 1 year). Comparisons were done according to the median RDW value (RDW > 14.1 vs. RDW ≤ 14.1). Our primary endpoints were significant reduction (≥ 15%) in Left Ventricular End Systolic Diameter (LVESD), HF readmissions, and all-cause mortality. The outcomes were examined over a median follow-up duration of 36 months.

Results

One-hundred and eighty-nine patients were eligible for the present analysis. Of which, the majority were males (72.5%) with a mean age of 59.5. Elevated baseline RDW was significantly associated with HF readmissions (29.3% vs. 9.5%; P = 0.001) but not with significant reduction in LVESD (30.4% vs. 46.9%; P = 0.064) or all-cause mortality (11.1% vs. 10.0%; P = 0.808). Multivariate analysis showed no independent role of RDW in predicting HF readmissions (OR=2.86, 95% CI 0.79-10.29, P = 0.108). Follow-up RDW levels remained persistently elevated in patients with poor reverse ventricular remodeling, HF readmissions, and all-cause mortality (See figure).

Conclusion

Baseline RDW had no independent role in predicting outcomes of advanced HF after CRT insertion. During follow-up, persistently elevated RDW correlated with HF morbidity and mortality.

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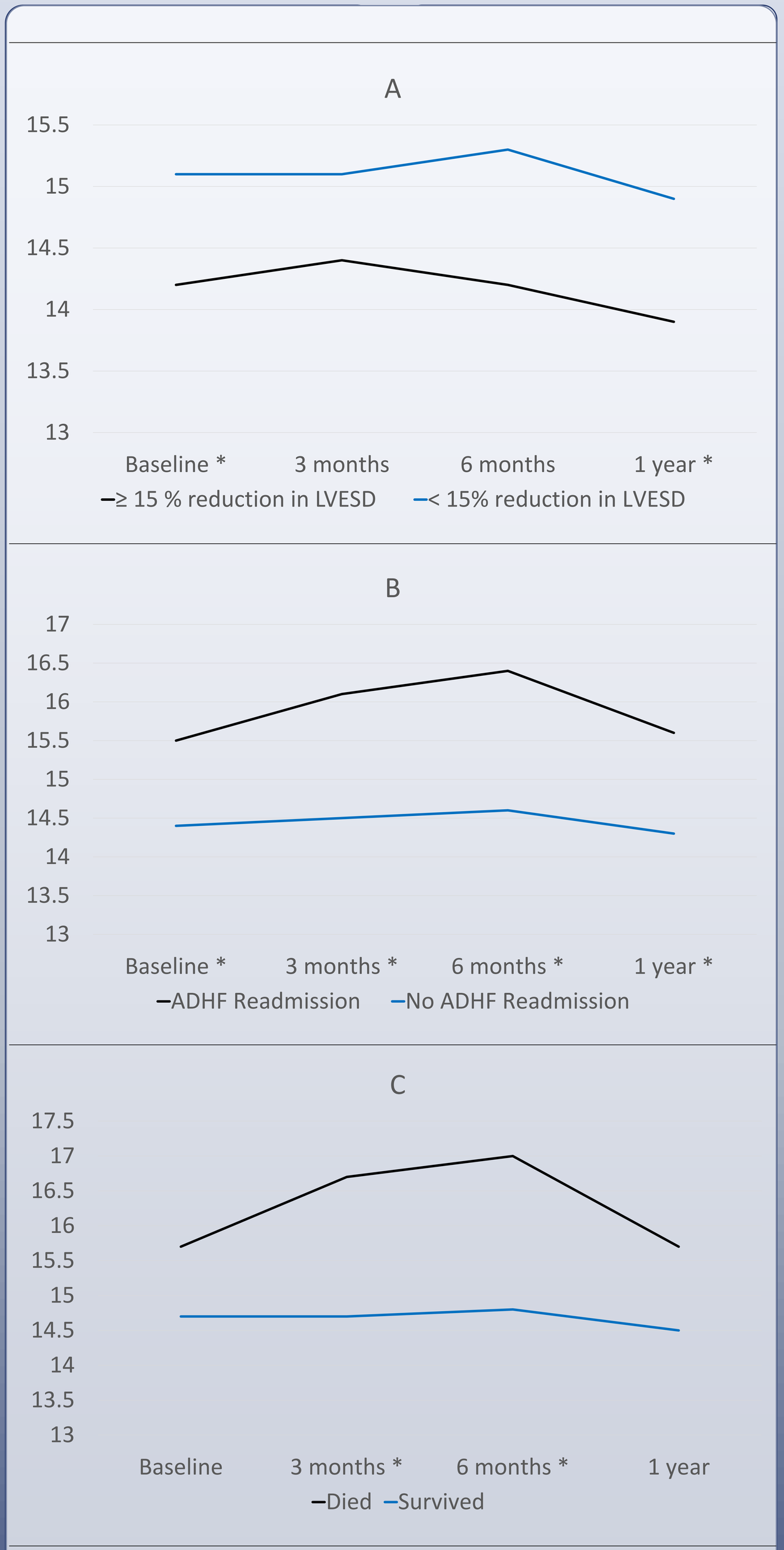

Figure. Differences in average RDW at baseline, 3 months, 6 months, and 1 year based on significant reduction in LVESD (A), ADHF readmission (B), and all-cause mortality (C).

Abbreviations: LVESD, Left Ventricular End Systolic Diameter; **ADHF,** Acute Decompensated Heart Failure.

* P-value < 0.05