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Volume 65, Issue 10S Arrhythmias and Clinical EP**CHANGES IN FOLLOW-UP LEFT VENTRICULAR EJECTION FRACTION ASSOCIATED WITH OUTCOMES IN PRIMARY PREVENTION ICD RECIPIENTS**

Poster Contributions

Poster Hall B1

Sunday, March 15, 2015, 3:45 p.m.-4:30 p.m.

Session Title: Arrhythmias and Clinical EP: VT

Abstract Category: 9. Arrhythmias and Clinical EP: VT

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Background: Heart failure patients who undergo cardioverter defibrillator implantation (ICD) may experience an improvement in ejection fraction (EF). However, it is unclear how improvement in EF affects subsequent risks for mortality and arrhythmias.

Methods: We conducted a prospective cohort study of 405 patients with repeated EF measures after implantation of primary prevention ICDs from 2003 to 2013. Study endpoints were appropriate ICD shock for rapid ventricular tachyarrhythmias and all-cause mortality.

Results: The average age was 58 years, 67% were male, and 56% were whites. EF decreased in 17.5%, improved in 48.9%, and was unchanged in 33.6% of the patients during the study. In multivariate Cox model, the hazard ratios for mortality were 4.01 (1.40, 11.49) and 0.44 (0.21, 0.90) comparing patients with an annual % change in EF < -15% or >15% to those with an annual % change in EF -5 to 5%, respectively (Table). During follow-up, 27% had EFs improved to >35%, and the risk of appropriate shock was decreased but not eliminated in those patients.

Conclusion: Close to 50% of our primary prevention ICD patients had an improved EF during follow-up, and 27% had EF improved to >35%. Changes in EF were inversely associated with mortality, and similarly, but not significantly, associated with appropriate shock. In patients whose EF improved to >35%, the risk of appropriate shock was decreased but not eliminated, suggesting that improvement in EF alone is not enough to warrant foregoing ICD generator replacement.

Table. Hazard ratio (95%CI) for mortality and appropriate shock associated with changes in left ventricular ejection fraction (EF) during follow-up

	All-cause mortality			Appropriate shock		
	Events / Total N	Model 1 *	Model 2 †	Events / Total N	Model 1 *	Model 2 †
Annual % change in EF ‡						
<-15%	7 / 21	4.60 (1.62, 13.02)	4.01 (1.40, 11.49)	1 / 18	3.56 (0.38, 33.36)	2.90 (0.25, 33.63)
-15 to -6%	11 / 50	0.82 (0.42, 1.59)	0.82 (0.39, 1.73)	3 / 37	1.12 (0.29, 4.32)	0.68 (0.14, 3.19)
-5 to 5%	32 / 136	Reference	Reference	8 / 108	Reference	Reference
6 to 15%	6 / 67	0.41 (0.17, 0.99)	0.48 (0.20, 1.19)	2 / 54	0.48 (0.10, 2.29)	0.23 (0.04, 1.23)
>15%	14 / 131	0.46 (0.23, 0.92)	0.44 (0.21, 0.90)	3 / 119	0.31 (0.06, 1.60)	0.19 (0.03, 1.45)
P-value for linear trend		0.003	0.003		0.08	0.07

* Model 1: Adjusted for age, sex, race, and baseline EF. † Model 2: Further adjusted for smoking status, body mass index, NYHA class, ischemic cardiomyopathy, atrial fibrillation, diabetes, hypertension, chronic kidney disease, and device type. ‡ Annual % change in EF: For all-cause mortality, annual % change in EF = [(last EF - baseline EF)/baseline EF] × 100/time between the two measurements; For appropriate shock, EF slope = [(last EF prior to 1st appropriate shock - baseline EF)/baseline EF] × 100/time between the two measurements.