



JACC Heart Failure

JUNE 2014
VOLUME 2, No. 3

**MINI-FOCUS ISSUE:
HEART FAILURE AND
ELECTROPHYSIOLOGY**

Inside This Issue

Prognostic Benefit of Optimum Left Ventricular Lead Position in Cardiac Resynchronization Therapy: Follow-Up of the TARGET Study Cohort (Targeted Left Ventricular Lead Placement to guide Cardiac Resynchronization Therapy) 205

Anna C. Kydd, Fakbar Z. Khan, William D. Watson, Peter J. Pugh, Munmohan S. Virdee, David P. Dutka

An optimum left ventricular (LV) lead position in cardiac resynchronization therapy is associated with an improved clinical outcome. The site of latest mechanical activation may be identified using speckle-tracking echocardiography to guide LV lead implantation, avoiding regions that exhibit low strain amplitude, indicating scar. Extended follow-up (median: 39 months) confirms that optimal LV lead placement is associated with improved survival (log-rank $p = 0.003$). A suboptimal LV lead position is an independent predictor of mortality (hazard ratio: 1.8; $p = 0.024$). These initial results should now be confirmed in a multicenter randomized clinical trial to ensure maximal clinical and prognostic benefit from device therapy in heart failure.

Is Heart Rate Important for Patients With Heart Failure in Atrial Fibrillation? 213

Damien Cullington, Kevin M. Goode, Jufen Zhang, John G. F. Cleland, Andrew L. Clark

This study investigated the relationship between resting ventricular rate and mortality in patients with chronic heart failure (CHF) and reduced left ventricular ejection fraction (LVEF) who were in sinus rhythm (SR) or atrial fibrillation (AF). Slower heart rates are associated with better survival in patients with CHF in SR, but it is not clear whether this is true for those in AF. We assessed 2039 outpatients with CHF and LVEF $\leq 50\%$ undergoing initial assessment, of whom 24% ($n = 488$) were in AF; and 841 outpatients reassessed after attempted treatment optimization, of whom 22% ($n = 184$) were in AF. The median survival for those in AF was 6.1 years (interquartile range [IQR]: 5.3 to 6.9 years) and 7.3 years (IQR: 6.5 to 8.1 years) for those in SR. In univariable analyses, patients with AF had a worse survival (hazard ratio [HR]: 1.26, 95% confidence interval [CI]: 1.08 to 1.47; $p = 0.003$) but after covariate adjustment, survival rates were similar. After adjusting Cox regression models, there was no association between heart rate (per 10 beats/min increments) and survival in patients with AF before (HR 0.94, 95% CI: 0.88 to 1.00, $p = 0.07$) or after (HR: 1.00, 95% CI: 0.99 to 1.00, $p = 0.84$) therapy optimization. For patients in SR, higher heart rates were associated with worse survival, both before (HR: 1.10, 95% CI: 1.05 to 1.15, $p < 0.0001$) and after (HR: 1.13, 95% CI: 1.03 to 1.24, $p = 0.008$) therapy optimization. In patients with CHF and a reduced LVEF, slower resting ventricular rate is associated with better survival for patients in SR but not for those with AF.

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The Association Between Atrial Fibrillation and Sudden Cardiac Death: The Relevance of Heart Failure

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Kyndaron Reinier, Eloi Marijon, Audrey Uy-Evanado, Carmen Teodorescu, Kumar Narayanan, Harpriya Chugh, Karen Gunson, Jonathan Jui, Sumeet S. Chugh

The purpose of this study was to evaluate the role of congestive heart failure (CHF) in the association between atrial fibrillation (AF) and sudden cardiac death (SCD). Recent studies have reported the possibility of an independent association between AF and SCD. The authors hypothesized that a history of CHF is a significant confounder of this association. In a prospective case-control analysis from the community (Oregon-SUDS [Sudden Unexpected Death Study], 2002 to 2012), SCD cases (n = 652) with clinical records available (including electrocardiography and/or echocardiography) were compared with age- and sex-matched control patients with coronary artery disease. The association between AF and SCD was analyzed using multivariable logistic regression and propensity score matching. Cases (age 67.3 ± 11.7 years, 65% male) were more likely than control patients (age 67.2 ± 11.4 years, 65% male) to have a history of AF ($p = 0.0001$), myocardial infarction ($p = 0.007$), CHF ($p < 0.0001$), stroke ($p < 0.0001$), and diabetes ($p < 0.0001$). In multivariate analysis without considering CHF, AF was a significant predictor of SCD (odds ratio [OR]: 1.6; 95% confidence interval [CI]: 1.2 to 2.0; $p = 0.002$). However, in a model that included CHF, the AF-SCD association was no longer significant (OR: 1.1; 95% CI: 0.8 to 1.5; $p = 0.45$), whereas CHF was a significant predictor of SCD (OR: 3.1; 95% CI: 2.4 to 4.1; $p < 0.0001$). Results based on propensity score matching were consistent. The authors' findings suggest that a history of CHF, including both systolic and diastolic symptomatic dysfunction, may partially explain the AF-SCD association.

EDITORIAL COMMENT

Atrial Fibrillation and Sudden Cardiac Death: Is Heart Failure the Middleman?

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Jonathan P. Piccini, James P. Daubert

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