

Cardiac Resynchronization Therapy Is Appropriate for All Patients Requiring Chronic Right Ventricular Pacing The CON Perspective

Emile G. Daoud, MD, FHRS

KEYWORDS

- Cardiac resynchronization therapy • Right ventricular pacing • Atrioventricular block • Heart failure

KEY POINTS

- Cardiac resynchronization therapy (CRT) is not appropriate for all patients requiring chronic right ventricular (RV) pacing, particularly patients with a preserved left ventricular ejection fraction (LVEF).
- There is no evidence that CRT either reduces mortality or reduces symptoms when used in patients with preserved LVEF.
- Although trials with short follow-up report that CRT prevents a decrease in LVEF, the absolute change is small and not associated with adverse clinical outcomes.
- Implantation of a biventricular pacing system is associated with longer procedure time, increased fluoroscopy exposure and a high rate of lead complications and malfunction.
- In patients requiring RV pacing who have a preserved LVEF, the risks of CRT compared with potential benefits suggest the appropriate pacing system is DDD pacing and not biventricular pacing.

Case History

A 59-year-old man with a history of diabetes and hypertension presents with exertional dyspnea and fatigue (Fig. 1). The electrocardiograph shows a sinus rate of 115 bpm and complete heart block with a junctional escape rate of 37 bpm with little change in the ventricular rate with ambulation. Transthoracic echocardiogram shows a left ventricular ejection fraction of 56%. Laboratory studies are normal. You recommend a biventricular pacing system.

The author has nothing to disclose.

Cardiac Electrophysiology Section, Internal Medicine, Wexner Medical Center, The Ohio State University, 473 W 12th Avenue, DHLRI Suite 200, Columbus, OH 43210, USA

E-mail address: emile.daoud@osumc.edu

Card Electrophysiol Clin 7 (2015) 445–453

<http://dx.doi.org/10.1016/j.ccep.2015.05.008>

1877-9182/15/\$ – see front matter © 2015 Elsevier Inc. All rights reserved.

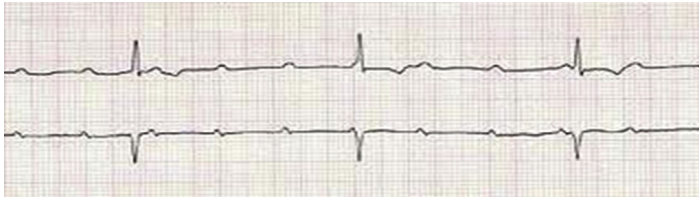


Fig. 1. Telemetry strip of a 59-year-old man who presented with fatigue and dyspnea. His left ventricular ejection fraction is 56%. What device do you recommend?

IS CARDIAC RESYNCHRONIZATION THERAPY APPROPRIATE FOR ALL PATIENTS?

This case is a common clinical scenario and the management seems rather straightforward: implant a dual chamber pacemaker. However, considering the numerous benefits of cardiac resynchronization therapy (CRT), some clinicians would recommend a biventricular (BiV) pacing system. The rationale for this recommendation is based on the numerous studies that have demonstrated the adverse hemodynamic effects of a left bundle branch block (LBBB) activation pattern, either owing to a native left bundle conduction delay or owing to the identical physiology created by single site right ventricular (RV) pacing, as in the presented case. In patients with heart failure (HF), LBBB activation has been associated with adverse LV remodeling with increased LV dimensions and functional mitral regurgitation, increased oxygen demand and reduced regional perfusion, with a subsequent decrease in cardiac output and contractility.¹⁻³

Correction of the adverse effects of an LBBB activation with CRT has been successful. In HF patients with an LBBB pattern (native or owing to single site RV pacing), CRT has resulted in favorable reversed remodeling with improvement in EF, and a reduction in HF symptoms, HF hospitalizations, and total mortality.⁴⁻¹⁰ With this evidence, should CRT then be used for all patients who require single-site RV pacing? Consistent with randomized clinical trials, the American College of Cardiology/Heart Rhythm Society/American Heart Association/American Society of Echocardiography/Heart Failure Society of America/Society for Cardiovascular Angiography and Interventions/Society of Cardiovascular Computed Tomography/Society for Cardiovascular Magnetic Resonance appropriate use criteria recommend the use of CRT in patients with HF despite optimal medical therapy, QRS duration of at least 120 ms and left ventricular ejection fraction (LVEF) of 35% or less.¹¹ Stratified by the QRS duration, recommendations include CRT even for patients with New York Heart Association (NYHA) class I symptoms, but only in the presence of a depressed EF. However, there is no compelling evidence to

support the use of CRT in all patients who require chronic RV pacing, and in particular not for patients with preserved EF and absence of HF. For these patients, the recommendation remains a dual chamber pacemaker.

In general, clinical care is focused on achieving at least 1 of 3 goals: reduce mortality, improve symptoms, and/or prevent disease. When considering CRT for patients requiring RV pacing and who have a preserved LVEF (ie, no HF), the essential question is: will CRT therapy offer one of these benefits to a satisfactory degree that CRT should become standard of care in patients requiring high percent RV pacing? This article discusses why the answer to this question is *no*.

Mortality

In the majority of CRT studies, the primary endpoint was the composite of HF hospitalization and total mortality. However, only a minority of randomized, multicenter CRT trials that enrolled patients with HF despite optimal medical therapy, depressed LVEF, and a prolonged QRS duration demonstrated a survival benefit. Of a total of 8474 randomized patients, summarized in [Table 1](#),⁴ a mortality benefit was noted in only 2 of the trials, Cardiac Resynchronization—Heart Failure (CARE-HF) and Resynchronization—Defibrillation for Ambulatory Heart Failure Trial (RAFT), which enrolled 2612 patients. For the remaining 12 trials, which included 5862 patients, there was no mortality benefit associated with CRT. The most compelling evidence for a decrease in total mortality with CRT is based on metaanalysis and supports the greatest survival impact is among patients with a wide QRS, depressed LVEF, and NYHA class II, III, and IV.⁴ However, it important to note that, based on clinical trials enrolling patients with reduced LVEF and mild/no HF symptoms (RAFT, Multicenter Automatic Defibrillator Implantation Trial with Cardiac Resynchronization Therapy [MADIT-CRT], Resynchronization reVERses Remodeling in Systolic left vEntricular dysfunction [REVERSE], CONTAK-CD, Multicenter InSync ICD Randomized Clinical Evaluation [MIRACLE] ICD II), BiV pacing did not reduce mortality in patients with NYHA class I symptoms.¹² Last, a study by Yu and colleagues¹³

Download English Version:

<https://daneshyari.com/en/article/2896632>

Download Persian Version:

<https://daneshyari.com/article/2896632>

[Daneshyari.com](https://daneshyari.com)