

How should this information be used in practice? It appears that a positive scan of any magnitude in the presence of diabetes defines "high risk." Whether or not coronary angiography should be performed on this basis alone, regardless of the magnitude of the scan abnormalities, in all diabetic patients is controversial due to cost and risk. In addition, the relative efficacy of medical treatment, percutaneous intervention, and coronary bypass surgery in these patients has yet to be defined and is currently being investigated in clinical trials such as COURAGE and BARI-2D. Furthermore, data from the study by Giri and coworkers evaluated only symptomatic individuals and may not apply to asymptomatic patients being screened for coronary disease with stress perfusion imaging. ■

Congestive Heart Failure

Cardiac Resynchronization Therapy for Congestive Heart Failure

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There has been much recent interest in a new form of nonpharmacologic therapy to treat patients with congestive heart failure. This treatment, cardiac resynchronization, involves left ventricular or biventricular pacing that utilizes a specialized pacing lead introduced through the coronary sinus that is positioned onto the lateral wall of the left ventricle. Pacing of the right ventricle employs a standard endocardial lead. Using an atrial sensing lead, pacing of the ventricles is given in a synchronized manner to coordinate ventricular contractility. This form of therapy has reduced symptoms of congestive heart failure in patients with marked left ventricular dysfunction who also have a wide QRS complex during sinus rhythm. Most patients enrolled have had some form of left bundle branch block conduction delay. A timely review of cardiac resynchronization has been published by Leclercq and Kass.¹ Two new observations on cardiac resynchronization have recently been published.

Impact of Cardiac Resynchronization Therapy Using Hemodynamically Optimized Pacing on Left Ventricular Remodeling in Patients with Congestive Heart Failure and Ventricular Conduction Disturbances

Stellbrink C, Breithardt O-A, Franke A, et al.

J Am Coll Cardiol. 2001;38:1957–1965.

Stellbrink and colleagues studied the effects of 6 months of cardiac resynchronization therapy on left ventricular function using echocardiographic markers. Twenty-five patients with New York Heart Association (NYHA) functional Class III or IV heart failure were included. Ischemic heart disease was present in 7 patients and idiopathic dilated cardiomyopathy in 18 patients. Conduction delay by electrocardiographic criteria was classified as left

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bundle branch block in 21 (84%) patients, right bundle branch block in 1 (4%), and 3 (12%) patients had intraventricular conduction delay.

After 6 months of resynchronization therapy, NYHA functional Class improved from a baseline value of 3.0 ± 0.1 to 1.9 ± 0.7 . Echocardiographic data demonstrated that left ventricular end diastolic diameter was significantly reduced from 71 ± 10 to 68 ± 11 mm ($P = .027$). Further, left ventricular end systolic diameter decreased from 63 ± 11 to 58 ± 11 mm ($P = .007$). Both left ventricular end diastolic and end systolic volumes diminished. The authors concluded that cardiac resynchronization therapy may lead to a reduction in left ventricular volumes in patients with substantial congestive heart failure who also have conduction disturbances.

Long-Term Left Ventricular Pacing: Assessment and Comparison with Biventricular Pacing in Patients with Severe Congestive Heart Failure

Touiza A, Etienne Y, Gilard M, et al.

J Am Coll Cardiol. 2001;38:1966–1970.

Touiza and colleagues evaluated cardiac resynchronization treatment in 33 patients with advanced congestive heart failure. In particular, they compared the effects of left

ventricular pacing with biventricular pacing in patients who had left bundle branch block and congestive heart failure. Eighteen patients had left ventricular pacing only, and 15 received biventricular pacing. Of note, assignment of the patient to a particular form of pacing was not randomized and was done on the basis of physician preference.

Evaluation was done at 6 months, and during follow-up 7 (21%) patients died. Of the surviving patients, 9 of 12 in the biventricular pacing group and 8 of 14 patients in the left-ventricular-only pacing group were in NYHA

Class I or II for heart failure. Thus, the type of pacing did not make a difference in outcomes.

Cardiac resynchronization therapy is approved for a specific group of patients with refractory heart failure. Short-term results are encouraging, but its effect on mortality awaits further study. Regardless, it appears that many patients will have symptomatic improvement with this novel form of pacing. ■

Reference

1. Leclercq C, Kass DA. Retiming the failing heart: principles and current clinical status of cardiac resynchronization. *J Am Coll Cardiol.* 2002;39:194–201.