Cardiac resynchronization provides significant benefits for heart failure patients

Despite recent decreases in the rates of death from cardiovascular disease, mortality after discharge from the hospital remains high among survivors of acute myocardial infarction who have substantial left ventricular dysfunction. In approximately 30 percent of heart failure patients, the two ventricles contract asynchronously, or out of phase with one another. The lack of synchronization further reduces the pumping efficiency of an already damaged heart. Patients experience an ejection fraction that is even lower than would be expected given the heart’s weakened condition.

In Cardiac Resynchronization Therapy (CRT, also known as Atrial-Synchronized Biventricular Pacing), a specialized pacemaker is used to control the contractions of both heart ventricles and the right atrium rather than only the right ventricle and atrium as conventional pacemakers do. Among patients who have congestive heart failure due to dilated cardiomyopathy, CRT has been shown to:

• Improve symptoms and quality of life
• Reduce hospitalization
• Reduce mortality
• Reverse heart remodeling, in some cases
• CRT may even prevent initial heart remodeling

Indications for CRT
Patients who are on optimal medical therapy for congestive heart failure and are still experiencing significant symptoms may be candidates for CRT. Indications include:

• NYHA (New York Heart Association) classification III or IV symptoms
• QRS complex (ECG representation of electrical impulse as it is being distributed within the heart) greater than 120 ms
• LVEF (left ventricular ejection fraction) less than 35 percent
• LVEDD (left ventricular end-diastolic diameter) greater than 3.5 cm/m2

QRS duration has been shown to be an independent predictor of mortality among heart failure patients.

(over)
Patients with wider QRS (> 200ms) have five times greater mortality risk than those with the narrowest QRS (<90ms). Resting ECG is a powerful yet accessible and inexpensive marker of prognosis in patients with dilated cardiomyopathy and congestive heart failure.

**Patient evaluation**
In addition to thoroughly evaluating each patient for optimal resynchronization therapy, program physicians carefully reassess the overall heart failure status of each patient referred to the program. Patients undergo echocardiographic assessment of the characteristics of their dyssynchrony as well as hemodynamic performance evaluation by nuclear scintigraphic techniques. The program puts special emphasis on recognizing the unique characteristics of each patient’s dyssynchrony and tailoring the timing of the pacing device to optimize individual outcomes.

**CRT treatment at UCLA**
The UCLA Cardiac Arrhythmia Center specializes in identifying patients who would benefit from CRT therapy and in placing the devices. Numerous approaches exist to placing these devices and UCLA is at the forefront of developing novel methods to achieve “site specific” pacing (placing the pacing leads in the dyssynchronous regions).

Since around 30 percent of heart failure patients treated with CRT don’t respond adequately to the treatment, the UCLA Cardiac Arrhythmia Center has developed an optimization program to help patients attain maximum benefit from biventricular pacing. CRT patients who have failed to respond to the device implant are referred into the optimization program where the very latest strategies are used to optimize and enhance the function of the device.

**Patient referral**
Any heart failure patient who has indications for CRT can be referred to the UCLA Cardiac Arrhythmia Center. An assessment of the patient’s suitability for the therapy will be made and the decisions reviewed with the referring physicians. In addition, any patient currently with a CRT device who is not responding adequately to the treatment can be referred to the Arrhythmia Center and will be directed to the CRT optimization program.

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To refer a patient or for more information, please call (310) 206-2235.