

may be reflective of the patient's complex anatomy and the severity of disease. One death was reported >30 days postsurgical treatment. Total repair of TOF at CEDIMAT was associated with low morbidity and mortality rates, and it appears to be a reasonable therapeutic strategy for TOF. More follow-up is needed to establish long-term treatment outcomes and to determine the risk that is associated with complications, such as right ventricular dilatation and severe rhythm disturbances. Findings from this review are promising and demonstrate that TOF strategies that are currently being utilized in the Dominican Republic confer low mortality risk.

CRT and Optimizing Cardiac Function with Echocardiography

Cardiac resynchronization therapy (CRT) devices are often used to treat heart failure and cardiac dysrhythmias. Leads that are placed in the cardiac muscle create electrical pulses that stimulate coordinated contractions within the atrium, right ventricle, and left ventricle, which fosters optimal diastolic filling and systolic contraction. Optimization of CRT devices enriches cardiac health, as demonstrated by improved ejection fraction and NYHA functional class, as well as extended distance that is covered during the 6-minute hall walk. John R. Dylewski, MD, FACC, South Miami Heart Center, Miami, Florida, USA, discussed various ways of optimizing CRT devices and how to make the most of imaging modalities, such as echocardiography.

Atrioventricular (AV) delay may be optimized using 2-dimensional echocardiography to evaluate mitral regurgitation and septal wall motion. Ideally, AV delay should be the shortest possible to allow for maximal ventricular filling while reducing mitral regurgitation and increasing left ventricular function. However, if AV delay is too short, E/A wave diastasis may ensue, resulting in almost no atrial kick. The atrium contracts too late; so, the AV delay should be increased. Conversely, E/A wave fusion occurs when the AV delay is too long. Thus, an excess of atrial kick with little or no E wave occurs, and truncation of A wave may occur by premature closure of the mitral valve. AV optimization results in improved diastolic function.

Echo-driven V-V optimization improves systolic function and is also vital to the management of CRT devices. Using the parasternal long axis view of M-Mode echocardiographic imaging, the timing between septal and posterior wall contractions should be coordinated. When the ventricles are synchronized, V-V optimization has been achieved.

Optimal delays do change over time. Therefore, it is important to check timing, recalibrate rhythm, and ensure optimization regularly. Timing is everything, and cardiac rhythm synchronization can greatly influence the burden of disease.

Additional ECG Leads May Not Provide Benefit in Detecting Brugada Syndrome

In a preliminary study, the use of additional electrocardiogram (ECG) leads was no more sensitive than standard 12-lead ECG assessment in detecting the signature ECG pattern of Brugada Syndrome (BrS), including right bundle branch block (RBBB), persistent ST-segment elevation in precordial leads V1 to V3, and normal QT interval.

BrS is a rare genetic disorder that increases the risk of sudden cardiac death (SCD). Diagnosis requires the detection of Type 1 ST-segment elevation, either spontaneously present or induced by a challenge with a class I antiarrhythmic (eg, ajmaline, flecainide). Traditional 12-lead ECG has a low sensitivity for Type 1 Brugada ECGs and may not detect the presence of this life-threatening syndrome. New research is focused on improving the detection of BrS with novel ECG lead placement.

Multichannel continuous ECG recording in the third intercostal space has been shown to be more sensitive for the diagnosis of Type 1 Brugada ECG than either repeated 12-lead ECGs or multichannel continuous ECG in the standard position [Shimeno K. *J Cardiovasc Electrophysiol.* 2009]. In the current study, Raymond Massay, BSc (Hons), MBBS, FRCP (Lon), University of the West Indies, Cave Hill, Barbados, and colleagues compared standard 12-lead placement with ECG using multiple leads that were positioned to view the right ventricular outflow tract (RVOT) in the detection of BrS.

The trial enrolled 15 patients from a private cardiology practice in Barbados. All patients had a history of syncope, a family history of SCD, and previously documented Brugada-type ECG findings. Neither ajmaline nor flecainide were unavailable as a challenge agent. Instead, patients were given procainamide 10 mg/kg IV over 10 minutes. Both standard ECG and ECG using the additional leads were recorded during drug administration and for 5 minutes thereafter.

Dr. Massay found no Brugada ECG patterns by either conventional or additional lead placement. Procainamide was well tolerated, with no arrhythmias, hypotension, or allergic reactions reported. A larger trial of patients who are