Hemodynamic measurements revealed that in healthy hearts, RVA pacing reduced LVdp/dt_{max} by 7.1% and by 6.9% with RVS as compared with normal intrinsic activation. With LVS pacing, LVdp/dt_{max} increased significantly vs RVA and RVS pacing.

In conclusion, during long-term follow-up, the LVS lead remained electrically and mechanically stable, and hemodynamic measures support LVS pacing to be preferable over RVA pacing. These researchers suggest that LVS pacing has the potential to be a better approach than RVA pacing in patients who need pacing for bradycardia.

Earlier Diagnosis of ARVD/C With Novel Software

Written by Mary Mosley

A novel methodology that performs 3D vector analyses of electrocardiograms to better determine the risk of sudden cardiac death (SCD) from arrhythmogenic right ventricular dysplasia/cardiomyopathy (ARVD/C) was developed and reviewed by Ivana I. Vranic, MD, PhD, University Clinical Center of Serbia, Belgrade, Serbia, in the European Heart Rhythm Association/Cardiostim Inventors Awards session. The objective of her work was to diagnose ARVC/D before it is manifest and traditional markers are observable and to follow disease progression.

ARVC/D is an inherited disease of the heart muscle that leads to ventricular arrhythmias because of electrical instability and to ventricular tachycardia and fibrillation that can cause SCD, particularly during sports activity. Furthermore, patients with ARVC often present with cardiac arrest or advanced heart failure, and early detection might help patients receive primary prevention and treatment for heart failure.

Early work by Prof Vranic included the observation and discovery of the V sign (formed by the confluence of the ductus arteriosus and aortic isthmus) on echocardiography as a characteristic specific to ARVC/D and the development of the ability to identify the Tau point on echocardiography. The Tau point is the specific location in the heart with the strongest influence of orthogonally opposed forces during the cardiac cycle and the location of early-induced apoptosis. Radionuclide ventriculography was used to verify the presence of ARVC/D in the silent phase; these patients had very low regional and global ejection fractions in the right ventricle compared with the left ventricle.

The novel software, called VCG Sophie, incorporates these findings and was evaluated in patients in an ARVC/D database established by Prof Vranic in Serbia. Vectorcardiography was discovered by the presence of the V sign and T sign, stated Prof Vranic. Data from 36 patients who had ongoing monitoring with echocardiography that measured subtle changes with 2D vector loops were analyzed with 3D vector analysis.

The VCG Sophie software has proven to be a powerful tool with a 90% sensitivity and 100% specificity to diagnose ARVC/D. Notably, this software can be used in any medical office in the world, stated Prof Vranic, and will be especially useful in those that do not have echocardiography and other technology. This software will allow for earlier diagnosis of ARVC/D and the prevention of SCD because of earlier treatment, concluded Prof Vranic.