

No significant changes from baseline were observed in any of the parameters in the control group. The investigators concluded that high-intensity interval aerobic training, combined with strength exercise, may benefit aortic dilatation capacity, augment systolic pressure, and improve LV diastolic function and QoL.

Researchers Recommend Septal vs Apical Pacing Following the Results of a Randomized Study

Written by Dennis Bittner

Right ventricular apical (RVA) pacing can lead to mechanical dyssynchrony in the left ventricle, increasing atrial fibrillation and the incidence of heart failure. Right ventricular septal (RVS) pacing may attenuate the mechanical dyssynchrony and has been proposed as an alternative, but data from rigorous studies are limited. S. Azzaz, S. Kacem, S. Ouali, and colleagues, Sahloul Teaching Hospital, Sousse, Tunisia, conducted a randomized study to determine whether RVS pacing is superior to RVA pacing in pacemaker (PM) implantation by comparing left ventricular (LV) function and dyssynchrony parameters resulting from interventricular septal vs RVA pacing.

Patients with high-degree atrioventricular block who were candidates for dual-chamber PM implantation were randomized to either apical (group A) or septal (group B) right ventricular lead placement. Levels of LV function and dyssynchrony were determined by echocardiography at the time of PM implantation and 6 months later. Patients with coronary artery disease, prominent valvular heart disease, and/or cardiomyopathies were excluded from the study. Lead implantation was performed under fluoroscopy control. A total of 57 patients were randomized to group A (n=29) and group B (n=28). In the overall population, the mean age was 69 years, about 50% were male, 60% had hypertension, and 20% had diabetes; 95% experienced cumulative ventricular pacing. Follow-up data at 6 months were available for 48 patients. All analyses are exploratory.

Postprocedure and at 6 months, septal pacing was associated with a significantly lower Tei index (a global parameter of cardiac function combining systole and diastole information) than apical pacing. In addition, the E/A ratio was significantly higher in septal compared with apical pacing, and global longitudinal strain (GLS) was improved with septal compared apical pacing. Multiple parameters were nominally different between the groups after the procedure and at 6 months; radial and longitudinal dyssynchrony and septal-to-lateral wall

delay were nominally higher in the apical group compared with the septal group.

Although statistically significant differences in dyssynchrony were not present, the investigators said that the septal pacing seemed to be associated with better global LV function and that they recommend septal as an alternative to apical stimulation. The investigators also said that GLS continued to be better in the septal group (-15.8 vs -14.4; $P=.003$) 6 months after PM implantation. The Tei index continued to be seen as lower in the septal group compared with the apical group (0.43 vs 0.57, respectively; $P=.002$).

RT3D TEE Superior to 2D TEE in the Diagnosis and Treatment of Mitral Periprosthetic Leaks

Written by Maria Vinall

A major advantage of real-time 3D transesophageal echocardiography (RT3D TEE) is its ability to provide realistic and comprehensive views of cardiac valves and congenital abnormalities [Lang RM et al. *J Am Col Cardiol.* 2006]. It also allows immediate feedback on the effectiveness of surgical interventions. Bruno Bochar-Villanueva, MD, Department of Cardiology, University General Hospital of Valencia, Valencia, Spain, discussed the results of a single-center study in which RT3D TEE was superior to 2D TEE in the assessment of mitral periprosthetic leaks and in guiding percutaneous closure of these leaks.

The diagnosis and treatment of periprosthetic mitral valve is challenging. This case series comprised 26 patients (mean age, 69.6 years; 65% women) diagnosed with significant mitral periprosthetic leak by transthoracic echocardiography between March 2011 and February 2014. Both 2D and RT3D TEE were performed on all patients and the results were analyzed for the number of leaks, leak location(s), the effective regurgitant orifice area (EROA) by proximal convergence method (2D), and direct planimetry using multiplanar reconstruction software (3D). The sphericity index was obtained by the ratio between the largest and smallest diameters of the leak.

The most common leak location was posterior (13 patients), followed by septal (6 patients), lateral (5 patients), and anterior (2 patients). EROA could not be calculated in 9 patients using 2D TEE but was calculable in all patients using RT3D TEE. In addition, when calculated using RT3D TEE, the EROA was significantly ($P<.01$) greater ($0.31 \pm 0.19 \text{ cm}^2$) than that when calculated using 2D TEE ($0.24 \pm 0.13 \text{ cm}^2$). The sphericity