Triple-site pacing for cardiac resynchronization in permanent atrial fibrillation: follow-up results from a prospective observational study

Authors

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Abstract

Aims
Cardiac Resynchronization Therapy (CRT) is associated with a particularly high non-response rate in patients with atrial fibrillation (AF). We aimed to assess the effectiveness of triple-site (Tri-V) pacing CRT in this population.

Methods and results
Prospective observational study of patients with permanent AF who underwent CRT implantation with an additional right ventricle lead in the outflow tract septal wall. After implantation, programming mode (Tri-V or biventricular pacing) was selected based on cardiac output determination. Patients were classified as responders if NYHA class was reduced by at least one level and echocardiographic ejection fraction (EF) increased ≥ 10%, and as super-responders if in NYHA class I and EF ≥ 50%. Forty patients (93% male, mean age 72 ± 10 years) were included. Thirty-three were programmed in Tri-V. The following results pertain to this subgroup. At baseline, 58% were in NYHA class III and 36% NYHA class II. At 1 year follow-up, Minnesota QoL score was reduced (36 ± 23 vs. 8 ± 6; P = 0.001) and the 6MWT distance improved (384 ± 120 m to 462 ± 87 m, P = 0.003). Mean EF increased (26% ± 8 vs. 39 ± 10; P < 0.001 at 6 months and 41 ± 10; P < 0.001 at 12 months). Responder rate was 59% at 6 months and 79% at 12 months. Super-responder rate was 9% at 6 months and 16% at 12 months. One year survival free from heart failure hospitalization was 87.9%.

Conclusion
Tri-V CRT yielded higher response and super-response rates than usually reported for CRT in patients with permanent AF using clinical and remodeling criteria.

Keywords

Cardiac resynchronization therapy, Multi-site pacing, Triple-site pacing, Heart failure, Atrial fibrillation, Cardiac output, QRS duration, Ejection fraction, Responder, Super-responder