

Implantable Cardioverter-Defibrillator Implantation and His Bundle Pacing: A Feasible Approach in Heart Failure with A Narrow QRS Complex

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Aims

The combined use of an implantable cardioverter-defibrillator (ICD) and His-Purkinje conduction system pacing may be an alternative to ICD and no-pacing in patients with symptomatic heart failure not candidates to cardiac resynchronization therapy (CRT) due to a narrow QRS complex.

Methods

Between October 2021 and November 2022, His bundle pacing (HBP) was attempted at our Institution in patients with New York Heart Association functional class II or III, electrocardiographic (ECG) signs of conduction disorders despite QRS duration <130 ms who underwent ICD implantation for standard indications. The HBP lead was connected to the left ventricle port of a CRT-D device. Patients also received a right atrial lead and a right ventricular defibrillator lead. After lead and generator implantation, AV delay was optimized based on ECG evaluation.

Results

Sixteen patients (median age 69 years [interquartile range, 57-72], 94% men) underwent ICD and HBP implantation. Most of the patients had ischemic cardiomyopathy (56%) and the median left ventricle ejection fraction was 30% (30%-37%). At implant, the ECG showed sinus rhythm for 14 (88%) and atrial fibrillation for 2 patients (12%). The QRS duration was 109 ms (89-119) with the following conduction disorders: right bundle

branch block (69%), PR interval >200 ms (19%) and incomplete left bundle branch block (12%). All implantations were successful with a median procedural and fluoroscopy time of 80 min (64-98) and 11 min (9-16), respectively. HBP did not affect QRS duration ($p=0.524$). At 3-month follow-up, HBP was confirmed with a stable pacing threshold for all patients except for one (6.3%) who reported HBP lead dislodgment that required implant revision. The percentage of HBP was 90% (69%-98%).

Conclusions

Ventricular pacing delivered via the His bundle is feasible in patients with heart failure and ICD indication with a narrow QRS complex despite conduction disorders. More clinical research is needed to assess the impact of this approach on ventricular function, heart failure progression, and quality of life.