Permanent ventricular-side His bundle pacing achieved by the approach of radiographic landmarks in bradycardia patients

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Introduction: His bundle pacing is a physiological pacing therapy, but His bundle pacing in ventricular side (vHBP) is not well investigated. This study was to investigate the feasibility of permanent vHBP implantation guided by the radiographic marker of the tricuspid valve annulus (TVA).

Methods: Permanent vHBP was attempted in 30 patients (50% men, age 64 ± 15 years) with symptomatic bradycardia and indicated for pacemaker implantation. The TVA revealed by right ventriculography was used as an anatomic landmark for localizing the site for vHBP under the TVA. Procedural feasibility, vHBP pacing parameters, the effect of vHBP lead on tricuspid valve function, and procedure-related complications were evaluated.

Result: Permanent vHBP was successfully achieved under the TVA in 28 of 30 patients (93.3%). The vHBP threshold was 1.00 ± 0.42V@1ms (range: 0.4-1.9V@1ms) at implant and remained stable (0.97 ± 0.41V@1ms, P =0.643) after median six months follow-up. Permanent nonselective vHBP was implemented in 92.9% (26/28) of patients, in which the capture threshold for His bundle and local myocardial tissue were 1.03±0.43V@1ms and 1.05±0.73V@1ms, respectively. Two patients had selective vHBP, each with capture threshold 0.7V@1ms. There were no procedure-related complications or significantly worsening tricuspid regurgitation during follow-up.

Conclusion: Permanent vHBP, mostly nonselective, was purposely achieved with a 93.3% success rate and with a low and stable pacing threshold in bradycardia patients. Location of the TVA revealed by right ventriculography can be used as a landmark to identify the site of vHBP, making implantation outcome almost predictable.