

Impact on right ventricular performance in patients undergoing permanent pacemaker implantation: left bundle branch pacing versus right ventricular septum pacing

Xinyi Huang¹, Manxin Lin¹, Shu-fen Huang¹, Jincun Guo¹, Linlin Li¹, Simei Chen¹, Kunhui Huang¹, Jian Wu¹, Maolong Su¹, and Binni Cai¹

¹Xiamen University

May 23, 2022

Abstract

Background: The novel method of left bundle branch pacing (LBBP) has been reported to achieve better electrical and mechanical synchrony in the left ventricle than conventional right ventricular pacing (RVP). However, its effects on right ventricle (RV) performance are still unknown. **Methods:** Consecutive patients undergoing dual-chamber pacemaker (PM) implantation for sick sinus syndrome (SSS) with normal cardiac function and a narrow QRS complex were recruited for the study. The pacing characteristics and echocardiogram parameters were measured to evaluate RV function, interventricular and RV synchrony, and were compared among ventricular pacing-on and native-conduction modes. **Results:** A total of 84 patients diagnosed with SSS and an indication for pacing therapy were enrolled. Forty-two patients (50%; mean age 65.50 ± 9.30 years; 35% male) underwent successful LBBP and 42 patients (50%; mean age 69.26 ± 10.08 years; 33% male) RVSP, respectively. Baseline characteristics were similar between the two groups. We found no significant differences in RV function [RV-FAC (Fractional Area Change)%, 47.13 ± 5.69 vs. 48.60 ± 5.83 , $p=.069$; Endo-GLS (Global Longitudinal Strain)%, -28.88 ± 4.94 vs. -29.82 ± 5.35 , $p=.114$; Myo-GLS%, -25.72 ± 4.75 vs. -25.72 ± 5.21 , $p=.559$; Free Wall St%, 27.40 ± 8.03 vs. -28.71 ± 7.34 , $p=.304$] between the native-conduction or LBBP capture modes, while the RVSP capture mode was associated with a significant reduction in the above parameters compared with the native-conduction mode ($P < .0001$). The interventricular synchrony in the LBBP group was also superior to the RVSP group significantly. **Conclusion:** LBBP is a pacing technique that seems to associate with a positive and protective impact on RV performance.

Hosted file

Impact of LBBP on RV.docx available at <https://authorea.com/users/484420/articles/570224-impact-on-right-ventricular-performance-in-patients-undergoing-permanent-pacemaker-implantation-left-bundle-branch-pacing-versus-right-ventricular-septum-pacing>



