Elementary analysis of His-Purkinje system pacing in patients who underwent cardiac resynchronization therapy with failure of the LV lead placement via coronary sinus

*Hongxia Niu*
*Yiran Hu*
*Ming Gu*
*Wei Hua*

**Introduction**: His-Purkinje system pacing (HPSP) is a physiological pacing therapy. We aimed to explore the clinical application of in patients who underwent cardiac resynchronization therapy (CRT) with failure of the LV lead placement via coronary sinus (CS).

**Methods**: Pacing parameters and cardiac function indicators of 7 CRT patients undergoing HPSP with failure of the LV lead placement successfully from December 2017 to March 2019 were retrospectively analyzed in this study.

**Result**: Among them, 3 underwent His-bundle pacing, another 4 underwent left bundle branch area pacing. The His-bundle (HB) capture threshold was $2.03 \pm 0.42\,\text{V}/1.0\,\text{ms}$ at implant and $2.00 \pm 0.35\,\text{V}/1.0\,\text{ms}$ at 3-month follow-up. However, the LBBAP capture threshold was $0.75 \pm 0.25\,\text{V}/0.4\,\text{ms}$ at implant and $0.63 \pm 0.10\,\text{V}/0.4\,\text{ms}$ at 3-month follow-up. Besides, the average QRS duration ($175.7 \pm 13.5$ vs $125.4 \pm 9.6\,\text{ms}; \, P<0.001$), left ventricular ejection fraction ($31.7 \pm 6.6$ vs $41.0 \pm 6.4\% ; \, P=0.005$), left ventricular end-diastolic diameter ($71.0 \pm 6.9$ vs $63.0 \pm 7.4\,\text{mm}; \, P=0.001$) and six-minute walk distance test ($306.6 \pm 32.5$ vs $391.9 \pm 69.8\,\text{m}; \, P<0.001$) were significantly improved at 3-month follow-up.

**Conclusion**: HPSP, as an alternative for patients undergoing CRT with failure of LV lead placement, can ameliorate electrical dyssynchrony and improve cardiac function in patients with heart failure.