Clinical research of Left Ventricular Endocardial Pacing in Cardiac Resynchronization Therapy

Introduction: The purpose of this research was to evaluate the efficacy, safety of cardiac resynchronization therapy (CRT) with interatrial septum or interventricular septum puncture implanted into the left ventricular endocardial electrode.

Methods: A retrospective analysis of 6 heart failure patients with coronary venous malformation or CRT nonresponse diagnosed at the First Affiliated Hospital of USTC, Division of Life Sciences and Medicine, University of Science and Technology of China from 2014-08 to 2018-10, with left ventricular endocardial electrodes implanted through interatrial septum or interventricular septum puncture. Among them, 4 patients underwent interatrial septum puncture and 2 patients interventricular septum puncture. The QRS duration was obtained before and after operation, and left ventricular ejection fraction (LVEF), left ventricular end-diastolic diameter (LVEDD), left ventricular end-systolic diameter (LVESD), left atrial anterior and posterior diameter (LAD) and NYHA class were measured, and the parameters of left ventricular electrode (threshold, impedance) were also measured after 3, 6, 12 and 24 months.

Result: 6 patients underwent successful implantation of left ventricular endocardial electrodes through interatrial septum or interventricular septum puncture. There were no serious complications during operation. The QRS duration was significantly narrower than before. LVEF was significantly increased and LVEDD was significantly reduced within 24 months. However, LVESD and LAD were unchanged, and the parameters of left ventricular electrodes (threshold, impedance) were relatively stable. Meanwhile, no obvious abnormal events were found such as diaphragmatic stimulation, thromboembolism, hemorrhage and ventricular arrhythmia, and the patient's heart function was significantly improved. None was deaths.

Conclusion: The left ventricular endocardial electrode was successfully inserted through the interatrial septum or interventricular septum puncture, and certain clinical efficacy was obtained.