Nonselective His-bundle pacing in a 3-year-old boy with postoperative complete atrioventricular block

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Introduction: His-bundle pacing has been proved to be an effective strategy for pacing related ventricular dyssynchrony. However, small size of His-bundle and right atrium in young children could prohibit the procedure or make it challenging. Our study aim is to report a successful nonselective His-bundle pacing (NS-HBP) in a 3-year-old boy with postoperative complete atrioventricular block (CAVB).

Methods: nil

Result: A 3-year-old boy with a history of d-transposition of the great arteries and ventricular septal defect receiving surgical repair and postoperative CAVB under epicardial single chamber pacemaker (Figure A) presented with vomiting. CAVB without ventricular pacing was documented owing to epicardial lead fracture. Emergent temporary right ventricular pacing catheter was inserted. Echocardiography showed left ventricular dilatation with dyssynchrony. Considering pacing related cardiomyopathy, cardiac resynchronization therapy via HBP was planned. C315HIS sheath was inserted to right atrium via left axillary vein. No His-bundle signal was recorded by 3830 lead or quadripolar catheter. Para-Hisian region was identified by pacemapping. Lead was actively fixed and threshold of HB capture was 2.5V at 1 ms. NS-HBP was achieved (Figure C). Redundant right atrial loop was created and generator (VVIR, Metronic Ensura) was connected (Figure B). No more ventricular dyssynchrony was noted by echocardiography with good weight gain after HBP.

Conclusion: The NS-HBP is feasible and safe for postoperative CAVB with ventricular dyssynchrony in young children with congenital heart disease.