Reversible Change of Atrioventricular Block in Permanent Pacemaker Patients after Transcatheter Aortic Valve Implantation

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Introduction: One of the most frequent complications of transcatheter aortic valve implantation (TAVI) is the occurrence of atrioventricular (AV) conduction disturbances secondary to AV node or His bundle injury leading to permanent pacemaker implantation (PMI). The objective was to quantify the rate of ventricular pacing (VP) and investigate the need for PMI after TAVI.

Methods: From February 2016 to September 2019, all patients who had PMI following TAVI performed at Juntendo University Hospital were included. Indications for PMI were >1 episode of symptomatic complete atrioventricular block (CAVB) including paroxysmal AVB. An electrophysiologic study (EPS) was performed to evaluate AV conduction at the same time of PMI. VP percentage at the first pacemaker interrogation was measured within a month after PMI.

Result: Out of 119 TAVI patients (Age: 84±5yo, Male/Female 1/10, Sinus rhythm/Atrial fibrillation 10/1), 11 patients (9.2%) had PMI. Balloon-expandable valves and self-expandable valves were 8/82 (9.8%) and 3/37 (8.1%) respectively. CAVB was observed just after TAVI in 7 of 11 patients, and a few days after in 4 of 11 with pre-existing right bundle branch block in 5 out of 11 (45%). PMI was performed a week (6.9±2.8 days) after TAVI, and a below the His bundle block was recorded in 5 of 8 (63%) in the EPS just before PMI. At the first pacemaker interrogation, less than 1% VP was observed in 5 of 11 including below the His bundle block patients in 3 of 5.

Conclusion: Our data suggest that AV conduction disorders even in patients with malignant AVB in the EPS after TAVI may occur reversible change by healing inflammation and edema around the prosthetic valve.