Suitability of leadless pacemaker for complete atrioventricular block after transcatheter aortic valve replacement

Ryo Tateishi  
Akira Mizukami  
Tetsuya Kobayashi  
Hironobu Sumiyoshi  
Takuya Kawakami  
Yoshiiro Hanyu  
Yuki Shimizu  
Jiro Hiroki  
Hirofumi Arai  
Kenji Yoshioka  
Syunsuke Kuroda  
Shu Yamashita  
Daisuke Ueshima  
Iwatsuka Ryota  
Makoto Suzuki  
Akihiko Matsumura

Introduction: Complete atrioventricular block (CAVB) is a major complication of transcatheter aortic valve replacement (TAVR). However, patients who undergo TAVR are sometimes frail and have difficulty transvenous pacemaker placement immediately after TAVR. Moreover, because some reports indicate CAVB after TAVR is transient unlike conventional CAVB, leadless pacemakers may be a suitable option. Therefore, we analyzed the ventricular pacing rate and safety about leadless pacemaker implantation in CAVB patients after TAVR.

Methods: We retrospectively enrolled 27 consecutive CAVB patients (5 after TAVR, 22 without TAVR) who were treated with leadless pacemaker MicraTM at our institution. Four patients were excluded due to a lack of follow-up data, leading to 4 patients in the group of CAVB after TAVR, and 19 patients in the group without TAVR.

Result: In total, 23 patients (54.1% male, mean age 82.8±9.8 years old) were included in analysis. After median of 74 (IQR 65 – 93) days after implantation, the ventricular pacing rate was assessed. CAVB patients after TAVR had significantly lower ventricular pacing rate compared to patients without TAVR (12.8% [8.8-25.4] vs. 96.6%[58.4-100.0], p=0.044). With chronological assessment, the ventricular pacing rates of all CAVB patients after TAVR were shown to gradually decrease. During the follow-up period, 4 patients in the group of CAVB after TAVR have no complications associated with leadless pacemaker implantation.

Conclusion: Our study demonstrates that the ventricular pacing rate of CAVB patients after TAVR was smaller than that of usual CAVB patients. In consideration of the gradual decrease in ventricular rate and invasiveness of procedures, leadless pacemakers may be suitable for complete atrioventricular block after transcatheter aortic valve replacement.