Feasibility of Leadless Pacemaker Therapy after Transvenous Extraction of Infected Cardiac Implantable Electronic Devices

Momiji Sakaguchi
Masahiko Goya
Tetsuo Sasano

Introduction: The incidence of cardiac implantable electronic device (CIED) infections is increasing because the numbers of CIED implantation procedures and generator replacements are growing, owing to widening indications and aging device recipients. Leadless pacemaker (LPM) is an alternative strategy to conventional pacing systems after pacemaker extraction, but safety and feasibility of its use after CIED infection have not been confirmed. In this study, we sought to assess the safety and efficacy of LPM implantation after extraction of infected CIEDs.

Methods: We retrospectively analyzed data from consecutive patients who underwent LPM (Micra, Medtronic, Minneapolis, MN) implantation after transvenous lead extraction (TLE) to treat pacemaker infection in a single tertiary care center.

Result: A total of 17 patients were identified and included in the present analysis. The mean age of the patients was 85 ± 6 years. The indications for pacing were sinus node dysfunctions in eight, atrioventricular conduction block in seven, and bradycardia associated with permanent atrial fibrillation in two patients. The mean age of the pacing leads was 90 ± 60 months. All but one of the 17 patients were diagnosed with local pocket infection, while the remaining patient had pocket infection with concomitant bacteremia. Wound cultures were positive for Staphylococcus aureus in six, Corynebacterium in three, Pseudomonas aeruginosa in two, Coagulase-negative Staphylococcus in two, and other bacteria in three patients. The patient with bacteremia suffered Staphylococcus aureus infection. Complete removal was achieved for all leads without any major complications. LPM was implanted successfully without any adverse events 12 [Interquartile range: 10-16] days after the TLE procedure. No patient experienced LPM or pocket related re-infections during a mean follow-up of 9.2 ± 6.8 months. Device electrical parameters remained stable throughout this period. Three patients died during follow-up. The causes of death were unrelated to any recurrent infection or LPM therapy.

Conclusion: LPM implantation after TLE to treat CIED infections is safe and effective. This approach presents a feasible alternative to conventional transvenous pacing system in patients with pacemaker infection.