Transvenous Pacemaker Implantation in the Pediatric Population at a Tertiary Care Referral Hospital from South India: A Decade-long Experience.

Sinam Inaotan Singha
Deepak Padmanabhan
Bharatraj Banavalikar
Sanjai P V
Milan Kumar Ghadei
Muzaffar Ali
Jayaprakash Shenthar

Introduction: Transvenous pacemaker implantation in pediatric population is uncommon. We describe our acute and long-term outcomes of transvenous pacemaker implantation in pediatric population.

Methods: We reviewed the database of permanent pacemaker implantation records at Sri Jayadeva Institute of Cardiovascular Sciences and Research, Bengaluru, South India, and selected patients <18 years of age who underwent transvenous permanent pacemaker implantation. Data on the age and weight of the patient, the indication for implant, the procedural details, acute procedural success, and outcomes on follow-up including clinical symptoms and signs of venous occlusion, lead displacement and lead fracture were extracted.

Result: Between 2009 and 2018, 81 patients (males:females - 44:37) with a mean age of 10.39 ± 5.33 years (9 months to 18 years) and mean body weight of 28 ± 5.3 kilograms (4.5 to 43 Kgs) underwent transvenous permanent pacemaker implantation. 39 patients (48%) were < 10 years of age. The indications for the implant were congenital AV block - 53 patients (65%), post-operative CHB - 16 patients (20%), sick sinus syndrome - 7 patients (9%) and other causes - 5 patients (6%). Venous access was achieved with extrathoracic axillary vein puncture in 42 (52%), cephalic cutdown 38 (47%), and subclavian puncture in 1 (1%). The pulse-generator was placed in the infraclavicular subpectoral pocket in 65 (80%) patients and in the prepectoral pocket in 16 (20%) patients. Single-chamber pacemakers were implanted in 62 (77%) patients and dual-chamber pacemakers in 19 (23%), all using bipolar leads. Age-stratified distribution of the type of device implantation is depicted in figure 1. During a mean follow-up of 54 months ± 30.8 months, there were no adverse events including the clinical evidence of venous occlusion, pulse-generator erosion, device malfunction, lead dislodgement, raised pacing threshold and death. There was no pulse-generator replacement during the follow-up period.

Conclusion: Transvenous permanent pacemaker implantation in pediatric patients is feasible and safe with good acute and long-term outcomes.