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Electrophysiologic characteristics and catheter ablation results of tachycardia-induced cardiomyopathy in children with structurally normal heart.

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Objectives: Tachycardia induced cardiomyopathy (TIC) is a rare but curable form of cardiomyopathy. For this reason, an early diagnosis is crucial. The data about TIC ablation in childhood are limited. The aim of this study is to present electrophysiologic characteristics and catheter ablation results of TIC in children with structurally normal heart.

Patients and Methods: We reviewed retrospectively records of 945 transcatheter electrophysiological study (EPS)-ablation procedures done in our clinic between November 2013-November 2018, and found a total of 25 (10 females, 40%) patients who underwent EPS and ablation due to TIC. The EnSite™3-D mapping system (St. Jude Medical Inc., St. Paul, MN, USA) was used in all patients.

Results: The mean age of the patients was $6,96 \pm 5,92$ years (median: 5,84 and range: 2 months-17,8 years) and the mean body weight was $27,96 \pm 23,63$ (median: 22 kg, range: 2.5-85) kg respectively. Tachycardia substrates were as follows; focal atrial tachycardia (n=8), concealed accessory pathways (n=4), permanent junctional reciprocating tachycardia (n=4), Wolff-Parkinson-White preexcitation/syndrome (n=3, one patient intermittent), atypical atrioventricular nodal reentry tachycardia (aAVNRT; n=2), ventricular arrhythmia (n=2), multifocal atrial tachycardia + atrial flutter (n=1), Mahaim Tachycardia (n=1). Successful ablation was performed in 23/25 patients (26/28 substrate), and 10 cryoablations and 15 RF ablations were used. Mean procedural time was $1688 \pm 57,8$ (median: 170, range: 72-310) minutes and fluoroscopy was used in 19/25 patients (76%) with a mean duration of $7,83 \pm 9,94$ (median: 3,57, range: 0-39.4). During a median follow-up of $22,2 \pm 13,55$ months (median: 17; range: 4-54), tachycardia recurrence was observed in 2 patients, which had successful repeated RF ablation procedure. Overall success rate was 23/25 patients (92%) and 26/28 (93%) substrates. There were three complications overall; one transient pericardial effusion (during transseptal puncture in a 12 years old FAT patient), and one permanent incomplete RBBB (in a patient 3 months old, with a right anteroseptal/parahisian AP), and the last one transient ST elevation during ablation (in an 11 years old patient with FAT, L-UPV). Average left ventricular EF and FS values of patients before the ablation were $38,8 \pm 7,1\%$ (26-48%) and $23,3 \pm 4,8\%$ (12-30%) respectively. In a mean period of two months later, the mean EF and FS values reached $53,6 \pm 12,7\%$ (35-70%) and $32,4 \pm 4,9\%$ (19-40%) respectively.

Conclusion: Transcatheter ablation is an effective and safe method for the treatment of TIC, even in small children and infants.