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Catheter ablation of idiopathic fascicular ventricular tachycardia in children; Five years single center experience

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Objectives: Idiopatic fascicular ventricular tachycardia(FVT) is characterized by relatively narrow QRS tachycardia with right bundle branch block on ECG. It generally affects young-male population. It has a reentrant mechanism using Purkinje network as a one of its components. The data of the FVT ablation technics and results in childhood is still limited. The aim of this study is to present our experience in children with FVT ablation.

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 128 patients ablated for ventricular arrhythmias (PVC/ VT) ablation. Among them, 19 patients ablated with posterior fascicular VT diagnosis were included the study.Catheter ablations were performed with EnSite-3D mapping system guidance and limited fluoroscopic exposure.

Results: The mean age was 12.6±4.0(1.4-19.5) years, and the mean weight was 50.0±20.8(10.5-100) kilogram.Fifteen patients(78.9%) were male. Palpitations(89.4%) and fatigue(15.7%) were the most common symptoms. Interestingly, 6 patients(32%) were referred to our center with the diagnosis of supraventricular tachycardia with bundle branch block. False tendon was found in 8 patients(42.1%).According to ECG findings; posterior FVT 17(89.4%) and anterior FVT 2(10.6%) was diagnosed.
During the EPS, FVT was stimulated with basal stimulation in 7 patients, and medication(orciprenaline and/or dobutamine) was required in 12. Reentrant FVT was most frequently inducted with proximal coronary sinus catheter atrial stimulation(47.3%).Among patients with posterior FVT;typical-AVNRT(n=2) and upper-septal FVT(n=1) were also stimulated.Average VT cycle length was 322±66 ms(200-450) and VT was sustained during EPS in 15 patients(78.9%). Mapping and ablation was performed was performed during VT in 13 patients(68.9%), remaining 6 were ablated in sinus. Mean number of radiofrequency application was 8.2±3.9(3-15).The mean fluoroscopy time was 4.5±1.9(2.1-8.5)minutes and the mean procedure time was 151.9±39.0 minutes (range, 102-240).There was no complication. Ablation was acutely successful in all(19/19, 100%) cases.The mean follow-up period after ablation was 19.8±16.1(2-48) months and VT recurred in one patient. Therefore the cumulative ablation success was 94.7 %(18/19).

Conclusion: Radiofrequency catheter ablation is an effective and reliable method for the treatment of IFVT in childhood. Despite difficulties of VT induction during EPS, recurrence rate is relatively low.