

Electrophysiologic Characteristics and Ablation Results of Tachycardia Substrates Originating from the Coronary Sinus in Children

Ergül Y.(1), Özgür S.(2), Şahin G.T.(2), Kafalı H.C.(2), Güzeltaş A.(2)

Saglik Bilimleri University, Mehmet Akif Ersoy Thoracic and Cardiovascular Surgery Center, Department of Pediatric Cardiology/Electrophysiology, Istanbul, Turkey(1); Saglik Bilimleri University, Mehmet Akif Ersoy Thoracic and Cardiovascular Surgery Center, Department of Pediatric Cardiology, Istanbul, Turkey(2)

BACKGROUND: Epicardial accessory pathways (APs) and focal atrial tachycardia (FAT) may originate from the coronary sinus system and transcatheter ablation through the coronary sinus is required. However, care must be taken due to the proximity of vital structures like coronary artery branches during ablation procedure. There is only limited data about ablations through coronary sinuses in children when compared to adults. We aimed to share our six year experience in ablations through coronary sinus.

PATIENTS and METHODS: From January 2011 to November 2017, 18 patients (10 female, 55.5%) underwent ablation of arrhythmia substrates through coronary sinus. EnSite 3D-electroanatomic mapping system (St. Jude Medical Inc., St. Paul, MN, USA) was used in all patients with limited fluoroscopic exposure.

RESULTS: The mean age and weight of the patients were 11.13 ± 3.12 (4.48-18) years and 39.24 ± 13.45 (17-83) kg, respectively. In four of the patients, FAT was ablated through the proximal portion of the coronary sinus. In the remaining 14 patients, manifest epicardial APs were ablated through the coronary sinus. Interestingly, the APs were evaluated as high-risk pathways for all patients except two. Coronary sinus aneurysm was detected in five (28%) patients. In these patients, deep QS pattern was remarkable in lead D-III on surface ECG whereas the same pattern was not found in any of the remaining patients. In 6 patients only cryoablation and another 6 patients only radiofrequency ablation were sufficient for completion of process. But in the remaining patients, combinations were needed. The average procedure time: 196 ± 48.6 (120-320) minutes and the fluoroscopy time was 9.66 ± 9.39 (0-34.5) minutes. Mean follow-up period after the procedures was 10.8 ± 7 (2.6-19.2) months. In only one patient with FAT, the arrhythmia has recurred, which later on successfully ablated with cryoablation again. Acute and long term success rate was 18/18 (100%).

CONCLUSION: Coronary sinus itself can be the origin of many different types tachycardia. It can also be used to reach the epicardial foci. Both RF or cryoablation can be used for ablation through it. However, if during RF ablation will be used, one should keep in mind that coronary artery injuries and venous system perforations are more likely and must pay attention to the anatomy of the coronary sinus.