Normal resting ECG as a predictor of accessory pathway in Ebstein’s anomaly, and tips for ablation

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Introduction: Ebstein's anomaly (EA) is a congenital heart disease characterized by low implantation of tricuspid valve and commonly associated with Right Bundle Branch Block (RBBB) pattern contributing to nearly 1% of all congenital heart lesions. Around 30% of EA population may have pre-excitation, ablation of accessory pathway (AP) in EA is quite difficult because of anatomy abnormality. In this report, we aim to show in EA condition, the absence of RBBB may predict the presence of accessory pathway and several approaches for AP ablation in EA.

Methods:

Results: We present 2 cases identified with EA and manifested with episodes of supra-ventricular tachycardia (SVT). The clinical findings and ablation sites are reported. All 2 cases presented with normal resting ECG with absent RBBB and narrow complex tachycardia with RBBB-like morphology. Case 1 showed resting ECG with sinus rhythm and minimal pre-excitation with no RBBB pattern. The tachycardia episodes were QRS complex with RBBB-like pattern and superior axis. Case 2 showed a resting ECG with absent of pre-excitation and no RBBB. The tachycardia episodes showed QRS complex with RBBB-like pattern and normal axis. Detailed mapping revealed an accessory pathway located in the right posteroseptal region. Mapping during sinus rhythm showed the shortest AV time at the 6 to 7 o'clock position in the 30 left anterior oblique view. Programmed extra-stimuli showed no evidence of a decremental conduction in both cases. Because of anatomical variation in EA, RCA angiogram was performed to locate tricuspid annulus. Femoral approach was used to ablate the accessory pathway in case 1. However, in case 2 after failed inferior approach, ablation procedure was performed from the jugular vein access for catheter stability. During radiofrequency energy application, the 12 lead ECG changed to a complete RBBB which is a classic finding in EA. No tachycardia was inducible after ablation in both cases.

Conclusion: Concealed AP may manifest with normal resting ECG in EA patients. The RBBB pattern was revealed after AP ablation. In difficult cases, RCA angiogram could be performed to locate the tricuspid annulus and jugular vein approach may be an alternative for catheter stability during ablation.