

Conduction property in left nodal extension to the atrioventricular node.

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Introduction

It has been speculated that another slow pathway with different conduction property might be involved in the mechanism of developing some form of atrioventricular nodal reentrant tachycardia (AVNRT). Left nodal extension (LNE) is considered to work as another possible slow pathway, but there is limited information about the conduction property of LNE. A previous study (Gonzalez et al. Circulation 2002) reported that pacing at distal coronary sinus (CS) induced left atrial input to the atrioventricular node (AVN), but the study failed to examine the input in patients with dual AVN physiology. In the present study, we tried to reveal the characteristics of LNE conduction with the same method.

Method

Children who received radiofrequency catheter ablation for the treatment of supraventricular tachycardia were enrolled in the study. Cases after receiving ablation in the septal area were excluded. Constant (A1, 6 to 8 beats) and following extrastimulus pacing (A2) from the right atrial appendage (RAA) were conducted during sinus rhythm without ventricular preexcitation. When sudden increase of AH interval after 10 ms reduction in the A1A2 interval was obtained (AH jump), CS distal pacing was started with the same protocol. CS pacing was repeated until AH jump was obtained at the same A1A2 interval. AH and HV intervals during constant pacing (FP-AH and FP-HV) and those obtained at the time of AH jump (SP-AH and SP-HV) were compared between the two protocols.

Results

A total of 10 children with dual AVN physiology were included in the study. During constant pacing, CS pacing induced significantly shorter FP-AH than RAA pacing (74.2 ± 14.1 ms vs 89.1 ± 20.0 ms, $P = 0.03$). CS pacing also significantly shortened SP-AH (236.7 ± 84.5 ms vs 260.0 ± 82.7 ms, $P < 0.01$). Meanwhile, CS pacing did not alter FP-HV and SP-HV.

Conclusion

Shortened FP-AH and SP-AH during CS pacing indicated different fast and slow inputs to the AVN from RAA pacing. SP-AH during CS pacing might associate with LNE conduction, which is consistent with anatomical studies demonstrating that the length of LNE is shorter than that of posterior nodal extension.