A safe and simple approach to avoid fast junctional rhythm during ablation in patients with atrioventricular nodal reentrant tachycardia

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Introduction: Fast junctional rhythm (JR) during slow pathway modification for atrioventricular nodal reentrant tachycardia (AVNRT) is a predictor of serious atrioventricular block. This study investigated the boundary to avoid fast JR during ablation with 3D electroanatomical mapping in AVNRT patients.

Methods: Participants were 129 consecutive patients with common AVNRT who received anatomical ablation to an antegrade slow pathway at our institution between August 2013 and March 2019. Successfully ablated sites with JR were evaluated in terms of distances and angles in the left and right anterior oblique views (LAO and RAO, respectively) to the proximal His bundle (His) site using 3D mapping. We divided JR by heart rate: JR1 \( \geq 150 \text{ bpm} \) and JR2 \(< 150 \text{ bpm}\).

Result: Average age was 61 ± 16 years; 41.1% of patients were male. The distance from the most proximal His to the JR1 and JR2 site was not significantly different (11.9 ± 4.4 vs. 10.7 ± 4.5 mm, \( p = 0.24 \)). JR1 predominantly appeared closer to the left ventricle than JR2 in LAO (110.5 ± 19.1 vs. 77.5 ± 18.6°, \( p < 0.01 \)), and was more posterior from the proximal His in RAO (30.8% vs. 6.8%, \( p < 0.01 \)). The vertical line drawn down from the proximal His in the LAO view was a good indicator of JR1 appearance (sensitivity and specificity 84.6% and 81.6%, respectively).

Conclusion: The vertical line drawn down from the proximal His in the LAO view can be employed as a boundary to avoid fast JR during ablation in AVNRT.