Successful Ablation of Atrioventricular Nodal Re-entry Tachycardia at the Apex Triangle of Koch

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Introduction: Atrioventricular nodal re-entry tachycardia (AVNRT) is a common tachycardia. Radiofrequency ablation in AVNRT is safe and effective, whilst giving a very high successful rate up to 99%. In small percentage of patient however developed atrioventricular (AV) block as it may injure the AV node. We describe a case of successful AVNRT ablation near the apex of triangle of Koch.

Methods: A case of 60 years old lady who referred for documented supraventricular tachycardia (SVT) ablation. No prior echocardiography done pre procedure. Three femoral vein punctures were done and inserted 7F and two 6F sheaths. Two quadripolar catheters 6F and 5F were placed at right ventricular (RV) apex and His bundle respectively. Non irrigated ablation catheter 4mm tip 7F was placed at high right atrium (RA). Tachycardia with cycle length of 300ms was easily induced by atrial pacing. Right ventricular overdrive pacing (RVOP) manoeuvre at 280ms required more than 1 beat to follow which showed VAV pattern, with post pacing interval minus tachycardia cycle length more than 115ms (PPI-TCL >115ms) and VA interval 30ms. His-refractory ventricular premature beat (HRVPB) showed no reset. These findings consistent with typical slow-fast AVNRT. Slow pathway potential was mapped using ablation catheter (Figure 1).

Result: Multiple radiofrequency ablation (RFA) was delivered at 30-40W, 60ºC for 30s. Decent accelerated junctional rhythm was seen during ablation. Post ablation, the tachycardia was still inducible. Slow pathway potential was then mapped at different site such as roof of CS ostium. We finally mapped just below the His catheter which suggest apex of triangle of Koch (Figure 2). Despite catheter position very close to His, no His signal in ablation catheter (Figure 3). Successful ablation delivered at 40W, 45ºC for 30s gave decent accelerated junctional rhythm. Temperature and power were achieved, there was a dropped in impedance the first moment of ablation. Tachycardia was not inducible after 30 minutes ablation. Post ablation ECG showed sinus rhythm with no evidence of heart block. Total duration of procedure was 4 hours.

Conclusion: Ablation of typical AVNRT sometimes can be challenging. Finding a good slow pathway potential will lead to successful ablation. In this case, although the position of ablation catheter very close to His catheter, the EGM did not show His potential. Ablation did not cause AV block as shown in this case.