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Palpitation in a young man with underlying preexcitation. What is the mechanism?



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A 35-year-old gentleman with manifest preexcitation consistent with right posterolateral accessory pathway underwent EP study for recurrent palpitation. In view of underlying preexcitation the most likely diagnosis entertained for the narrow QRS tachycardia is an orthodromic AV reentrant tachycardia [AVRT]. On careful analysis it is noted that a premature P wave [*] is initiating the narrow QRS tachycardia with a PR jump. During the narrow QRS tachycardia distinct pseudo "S" pattern [*] in the inferior leads is evident [panel A] and it is consistent with typical AVNRT. With AVRT there is sequential atrio-ventricular activation and we expect an RP interval of more than 90 ms. Moreover, the RP interval is remaining fixed suggestive of RP or VA linking making AT less likely. (see Fig. 1)

The intracardiac electrogram [EGM] during the initiation of tachycardia is provided in panel B. It confirms the observation of premature atrial beat [PAB] inducing the narrow QRS tachycardia

with an AV delay. The mechanism of the tachycardia is confirmed to be AVNRT by ventricular overdrive pacing [VOP] which showed V-A-H-V response on cessation of pacing, longer PPI, which is noted to be 115 ms more than tachycardia cycle length [TCL] and S – A minus V – A of more than 85 ms¹ [1].

This case highlights the importance of careful analysis of ECG in interpreting and understanding tachycardia mechanism. With manifest preexcitation on the surface ECG and documented narrow QRS tachycardia one could have made the diagnosis of orthodromic AVRT. However careful interpretation of ECG during tachycardia has provided insights on the probable mechanism. Patient underwent uneventful slow AV nodal pathway ablation. An orthodromic AVRT involving right posterolateral bypass tract was also inducible. The accessory pathway was mapped to 8'O clock of tricuspid annulus and successfully ablated.

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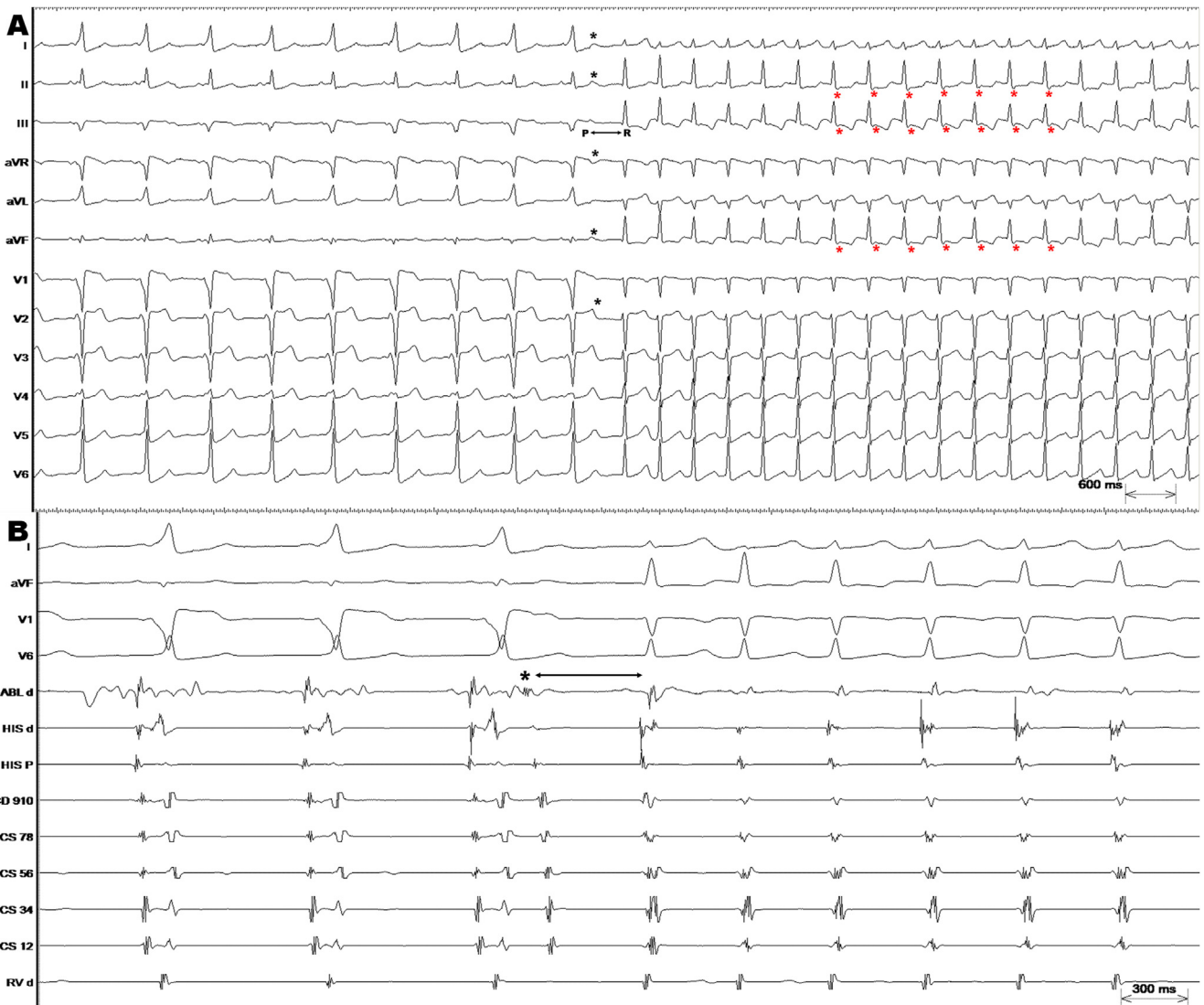


Fig. 1. Panel A – Surface electrocardiogram during initiation of narrow QRS tachycardia with annotations. Panel B – Selected surface electrocardiogram [I, aVF, V1, V6] and selected intracardiac electrograms during initiation of the narrow QRS tachycardia.

Disclosures

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Declaration of competing interest

None.

Reference

[1] Veenhuizen GD, Quinn FR, Wilton SB, Clegg R, Mitchell LB. Diagnostic pacing maneuvers for supraventricular tachycardia: part 1. *Pacing Clin Electrophysiol* 2011;34(6):767. 82.