"Tracking elusive signal" - WPW syndrome due to middle cardiac vein accessory pathway.

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Introduction: 18 year old girl was referred for recurrent palpitations on exertion. Surface ECG revealed pre-excitation syndrome with possible right sided accessory pathway. Electrophysiology (EP) study was planned after baseline evaluation. Routine investigations including 2D ECHO was normal.

Methods: Right femoral vein access achieved. Three catheters were placed in His bundle, Coronary sinus and right ventricle. SVT study revealed an accessory pathway and orthodromic atrioventricular reciprocating tachycardia (AVRT). Ventricular–Atrial (VA) as well as high right atrial (HRA) pacing did show an accessory pathway activation without a decrement property. Extensive mapping in AV junction was in vain and fortunately a fusion of atrioventricular conduction with an elusive high amplitude accessory pathway potential was obtained in the coronary vein approximately 5-10 mm from the coronary sinus ostium in an unstable catheter position. Intracardiac electrocardiogram of SVT showed the earliest atrial activation at CS7-8.

Result: Ablation catheter was vigilantly placed in the exact position with difficulty. The delta wave disappeared and the accessory pathway conduction was interrupted at 5 s after initiation of RF ablation (30W at 55 Celcius). Post-op imaging did not reveal any pericardial effusions and delta wave completely disappeared in surface ECG as well.

Conclusion: 25% of accessory pathways are said to be placed in postero-septal area. Extension in to coronary sinus and middle cardiac vein is a known but rare phenomenon. The so called pathway potential which was seen as a clear sharp spike in this case is quite difficult to demonstrate. Damage to venous system, adjacent structures (RCA ostium, compact AV node) should be born in mind. Coronary vein anomalies should be excluded (Eg: diverticulam).