An unusual case of pre-excitation and pre-syncope

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Introduction: A 24 year old girl presented with recurrent history of pre-syncope episodes for last 10 years. Patient had no other cardiovascular symptoms. She had structurally normal heart by echo. Baseline ECG showed sinus rhythm with pre excitation suggestive of right posteroseptal accessory pathway. A holter study done showed 2:1 AV block and intermittent CHB. CHB showed narrow QRS escape at 40-45 beats per minute. 1:1 broad QRS tachycardia at 130 beats per minute also noted during holter study. Three possibilities for this tachycardia were considered. 1. Sinus tachycardia conducting through accessory pathway 2. Atrial tachycardia conducting through accessory pathway 3. Atrio-ventricular re-entry tachycardia (AVRT) with anterograde conduction via accessory pathway and retrograde AV node conduction despite CHB. (It is theoretically possible in supra-Hisian AV block) Considering all the possibilities, patient was taken up for an electrophysiology (EP) study to clear the confusion.

Methods: Basal intervals Baseline ECG suggestive of manifest pre-excitation through right posteroseptal accessory pathway. Basal study showed AH 44 ms, HV 24 ms, SCL 900ms, earliest V during basal pre excitation recorded at CS proximal electrodes.

Result: Retrograde study Incremental ventricular pacing showed VA dissociation at 700ms. This ruled out AVRT with anterograde conduction via accessory pathway. Anterograde study On incremental atrial pacing, pathway was getting blocked at 510 ms. Programmed electrical stimulation from atrium revealed anterograde ERP of accessory pathway as 600:400 ms. Atrial pacing at a cycle length of 320 ms produced supra-Hisian complete heart block with narrow QRS escape rate of 45 beats per minute. Upon administration of atropine, anterograde conduction shifted to 3:2 pattern with beats getting conducted via AV node alone (narrow QRS) and AV node as well as via pathway (Pre excited QRS). Non conducted beats showed AH block. (See figure 1). No tachycardia was induced during EP study.

Conclusion: This young girl with history of pre-syncope for more than 10 years was found to have intermittent supra-Hisian complete heart block and modestly conducting right posteroseptal accessory pathway. Considering symptoms and intermittent CHB, she underwent dual chamber permanent pacemaker implantation. Her tachycardia noted in Holter was assumed to be due to sinus tachycardia getting conducted through accessory pathway. Since the pathway was not conducting fast enough to produce a life threatening arrhythmia, pathway ablation was not done. Her pacemaker interrogation showed no high rate events up to one year of follow up now. Her pre-syncope disappeared after pacemaker implantation.