CATHETER ABLATION OF A RIGHT ATRIAL APPENDAGE TO RIGHT VENTRICULAR CONNECTION

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INTRODUCTION

Atrial appendage to ventricular accessory pathways are uncommon. It can be congenital or acquired (surgically created). Epicardial approach may be required for successful ablation of such pathway due to epicardial course. We report a successful endocardial ablation of 'epicardial accessory pathway' (AP) connecting the right atrial appendage (RAA) to right ventricular outflow tract (RVOT).

CASE PRESENTATION

A 19-year-old boy with dysmorphic facies, cleft palate, pectus excavatum, mental retardation and a structurally normal heart presented with recurrent palpitations and a history of failed RFA. The 12-lead sinus rhythm ECG suggestive of ventricular pre-excitation. The LBBB morphology- prominent r (8mm) and deep S (40mm) in V1 and failed previous ablation suggested unusual location of accessory pathway. An orthodromic AVRT was reproducibly inducible.

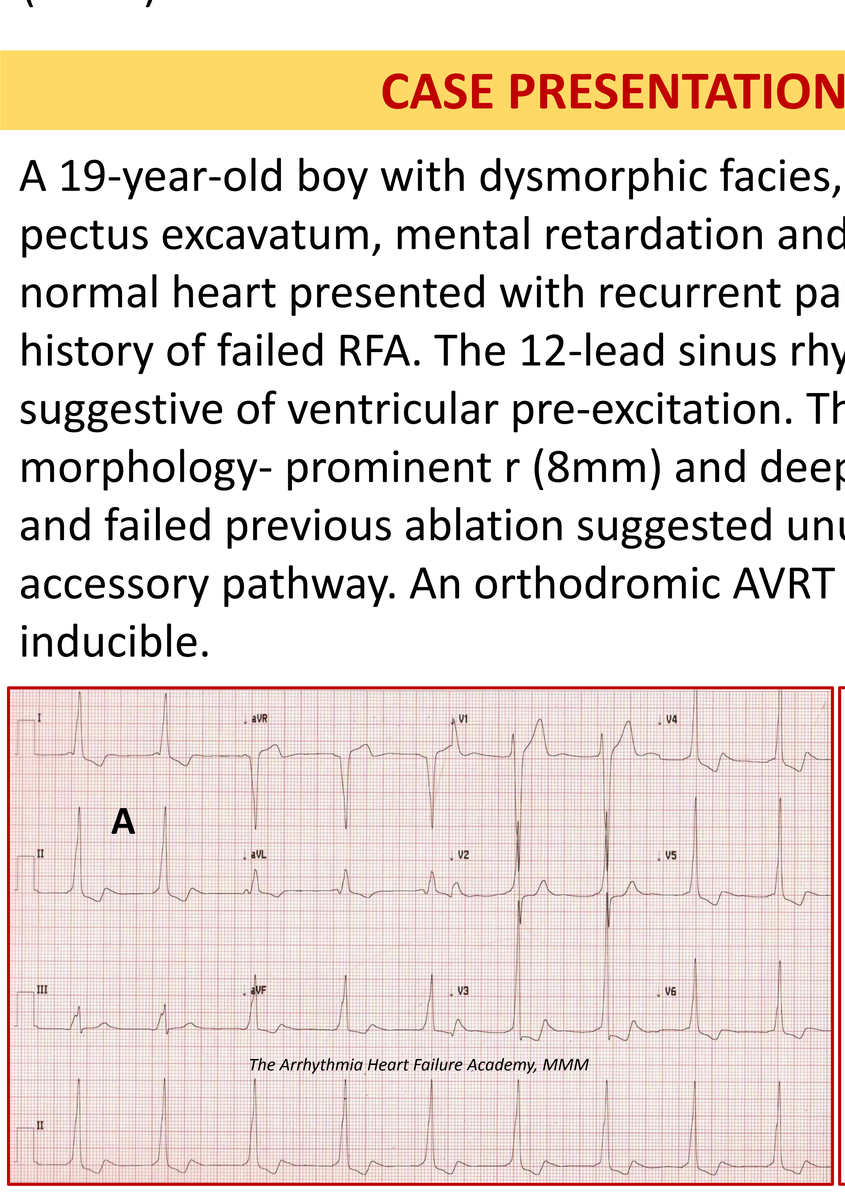

Figure A:Baseline ECG showing preexcitation

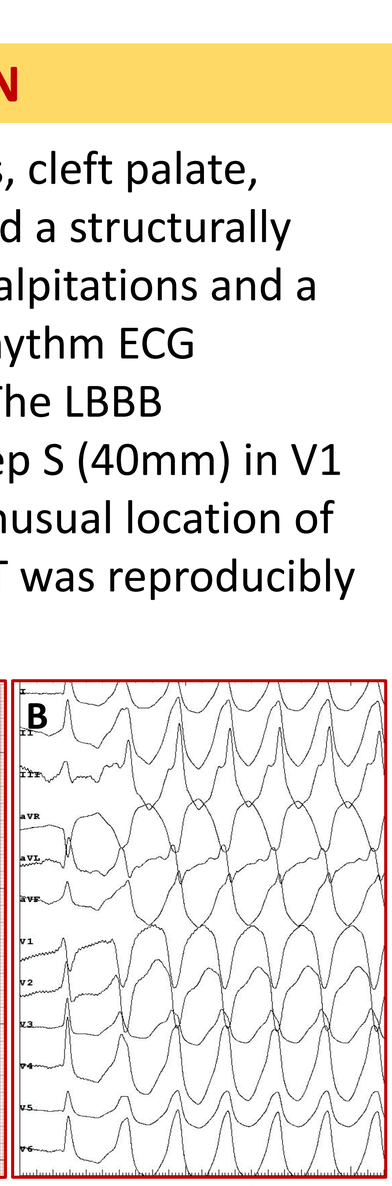

Figure B: Maximal preexcitation during atrial pacing

Extensive mapping, with the aid of fluoroscopy and 3-D Electro-Anatomic mapping St Jude EnSite Precision™, along the tricuspid annulus during maximal preexcitation and AVRT did not yield satisfactory A-V potentials for ablation. Mapping was also performed in the aortic cusps. Mapping within the right atrial appendage (RAA) yielded the most satisfactory signals including sharp AP potentials. The RAA anatomy was diligently defined using angiogram and 3-D mapping. RF lesions (40 W; 43°celcius; 8 seconds) using Therapy™ M-BD Ablation Catheter, St Jude during sinus rhythm resulted in split of A-V potentials and loss of pre-excitation. Overdrive atrial and ventricular pacing demonstrated absence of AP. There was no inducible tachycardia. At one-year follow-up, there was no recurrence.

The location of the successful site of ablation is indicative of congenital epicardial A-V connection, atrial appendage being the atrial end and adjoining right ventricular outflow tract as the ventricular end. At follow-up, there were no preexcitation and the patient remained in sinus rhythm.

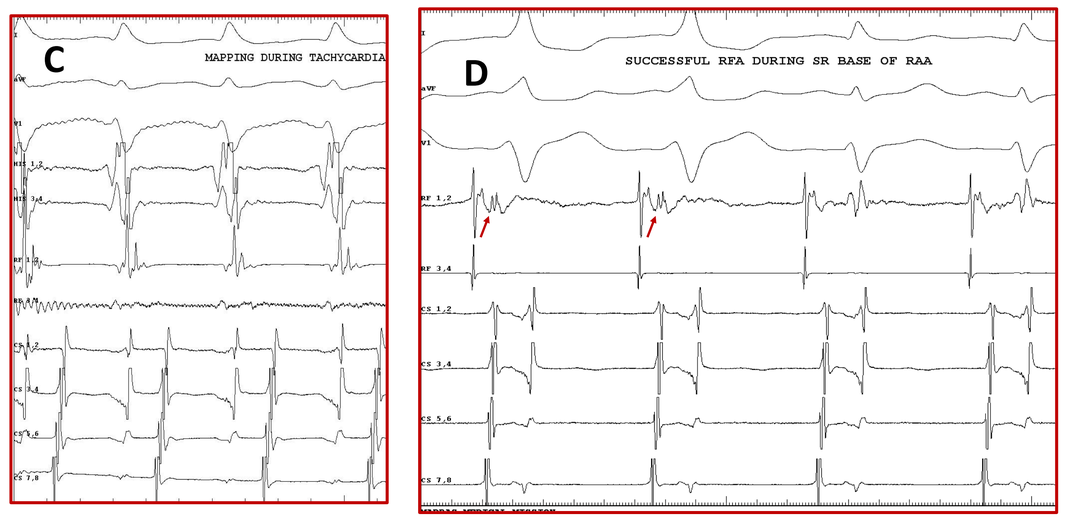

Figure C: Mapping of right atrial appendage during tachycardia
Figure D: Separation of A and V within few seconds of RF energy

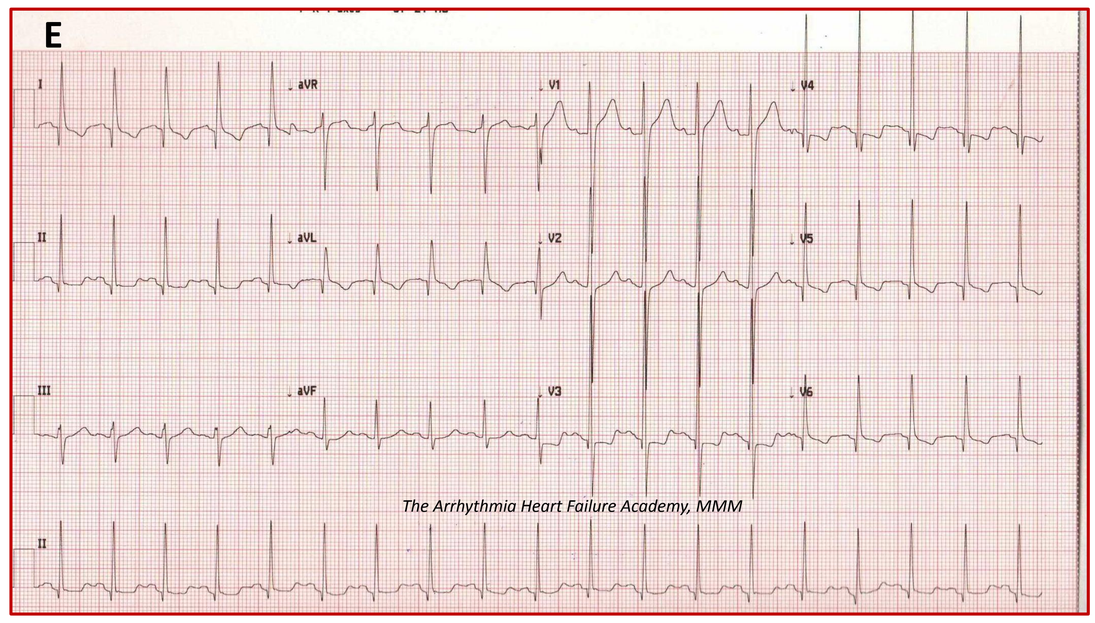

Figure E: At 6 month follow up no preexcitation was noted

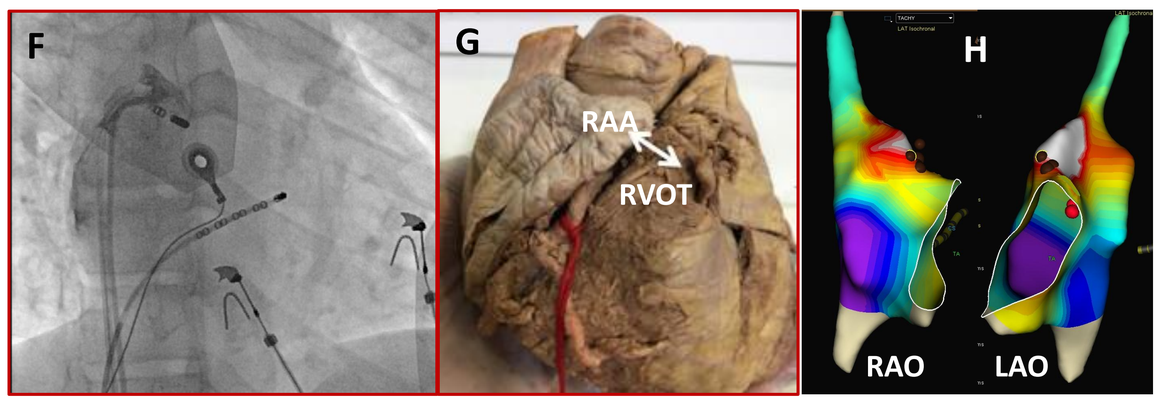

Figure F: RAA angiogram with ablation catheter in-situ
Figure G: Heart specimen showing proximity of RAA and RVOT
Figure H: 3D EAM map during tachycardia

CONCLUSION

One should suspect atrial appendage to ventricular connections if preexcitation shows atypical LBBB pattern (r ≥8mm and deep S ≥40mm) in V1 and inferior axis in limb leads especially in a case of previously attempted RF ablation.