

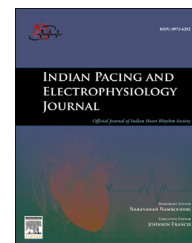
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Catheter ablation of accessory pathway between the right atrial appendage and the right ventricle: A case report

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Introduction

Accessory pathways are muscular connections that bridge atrio-ventricular (A-V) rings. For patients with symptomatic WPW syndrome catheter ablation has become the treatment of choice. These pathways occasionally insert in the epicardial aspect of the A-V rings or along the coronary venous musculature. Rarely, these pathways are located at unusual sites distant from the A-V rings.

Case report

We present a case of 13-year old girl with structurally normal heart referred to our institute with history of repeated episodes of paroxysmal supraventricular tachycardia of six months duration. The polarity of the delta waves suggested a right anterior or anterolateral accessory pathway (Fig. 1).

The study was done under CARTO 3D electroanatomic mapping guidance, keeping the possibility of epicardial pathway (as recent attempts of ablation by conventional mapping failed). The study was carried out with one quadripolar catheter for the His region and one mapping catheter. Orthodromic reentrant tachycardia (ORT) was easily and repeatedly induced with programmed extrastimulation, with a cycle length of 350msecs. Mapping was performed during sinus rhythm (SR) as well as during tachycardia. Earliest atrial activation during ORT was in right anterolateral region. Good

signals were obtained with fused A and V in a relatively broad area in anterolateral tricuspid annulus (Fig. 2). However, multiple radiofrequency (RF) energies (10–30 s; 43°C; 30 W) at these sites, using 3.5 mm tip, 7.5F (Biosense Webster's Navistar, D curve) catheter failed to terminate the tachycardia.

While maneuvering the catheter for further mapping, there was a transient bump and elimination of preexcitation for a single beat in the right atrial appendage (RAA) (Fig. 3b). Though the EGM in Fig. 3a seemed to have predominantly A and what looked like only a far-field V, RF energy delivered at this site eliminated preexcitation (Fig. 4a). Similar signals were obtained in the RAA during previous ablation attempts, but each time it was confused with only A and thus the diagnosis was missed.

Further lesions were consolidated at adjacent sites (120 s; 43°C; 30 W) without complications (Fig. 4a, b, c and d). Post ablation no preexcitation was present and no tachycardia was re-induced.

Discussion

This unusual type of accessory pathway with atrial insertion into the atrial appendage is due to epicardial connections between the appendage and the adjacent ventricle. They can be congenital or acquired (surgically created) [1,2]. Several cases of supraventricular tachycardias have been documented due to surgically acquired accessory pathways,

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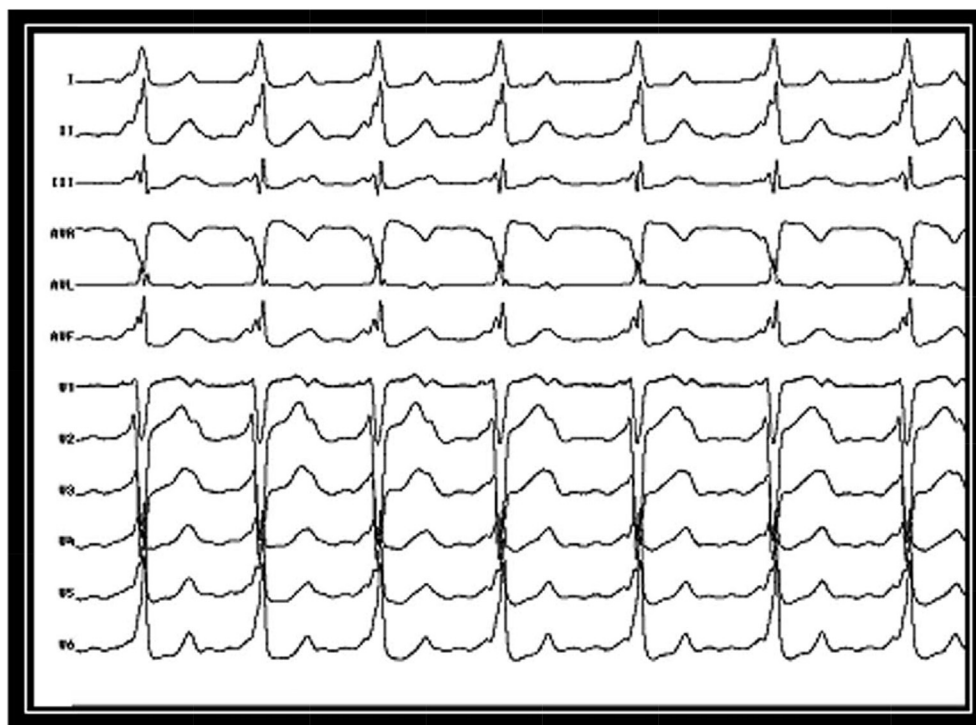


Fig. 1 – Twelve-lead ECG with manifest accessory pathway.

following atriofundibular anastomosis, after a Fontan connection [2]. Isolation of these types of pathways require multiple RF energies may be due to its true epicardial location. In addition trabeculations in the appendage prevent adequate contact between the catheter and the tissue. Thus, RF ablation at this site may not be amenable endocardially and an

epicardial, surgical or percutaneous approach may be required [3]. Soejima et al. have reported successful ablation of such pathway endocardially in an adult [4]. To the best of our knowledge, this is a first case report in a child with congenital RAA to right ventricular accessory pathway which was successfully ablated endocardially with irrigation tip catheter.

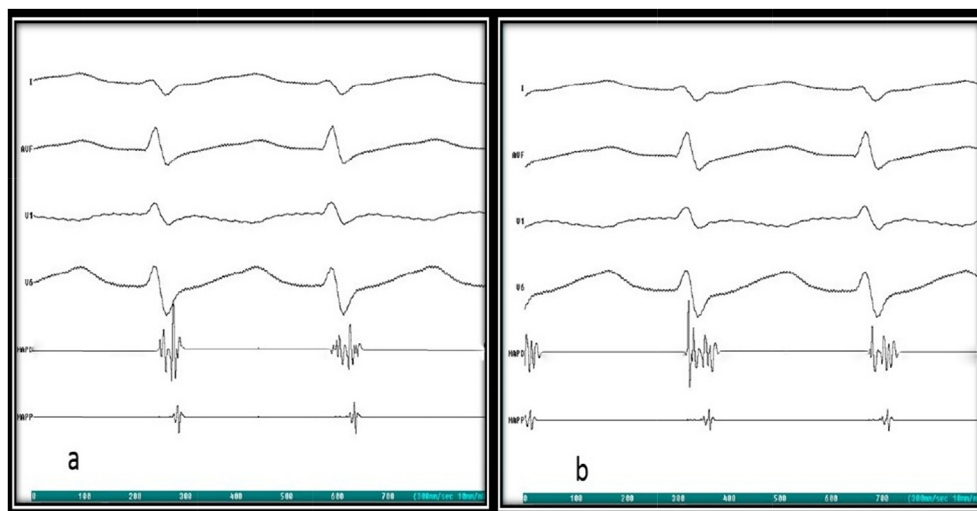


Fig. 2 – a, b shows surface ECG (lead I, aVF, V1 and V6) and intracardiac signals (MAPD and MAPP) recorded at anterior tricuspid annulus at two different sites, during tachycardia. Although early activation with fused A and B are seen at both sites, radiofrequency energy failed to terminate the tachycardia. MAPD- mapping catheter distal pair; MAPP- mapping catheter proximal pair.

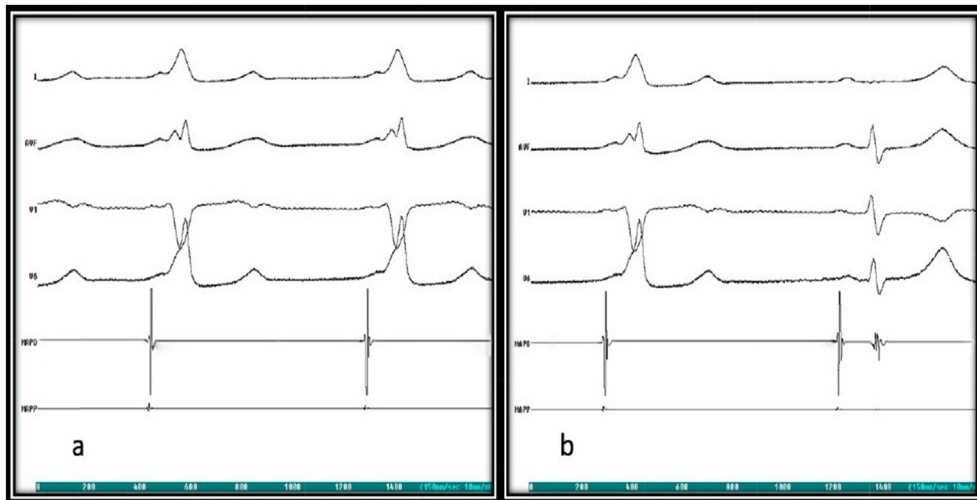


Fig. 3 – Surface ECG (lead I, AVF, V1,V6) and intracardiac EGM (MAPD and MAPP) recorded at the ablation catheter during sinus rhythm. a, ablation catheter in the right atrial appendage with EGM confused to have predominant A. b, at the same site while catheter maneuvering transient bump eliminated the preexcitation for a single beat and separated A and B (see the change in QRS morphology in the second beat). MAPD- mapping catheter distal pair; MAPP- mapping catheter proximal pair.

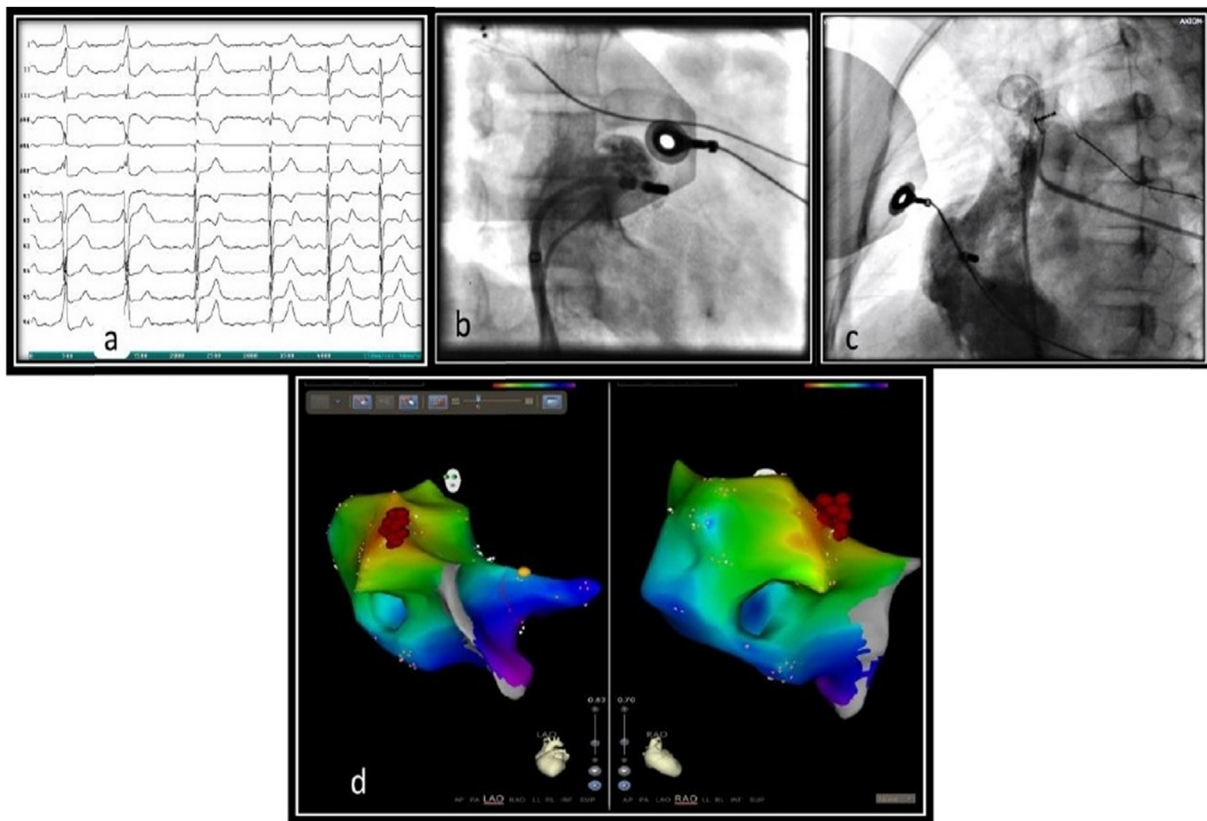


Fig. 4 – a, Twelve-lead surface ECG during radiofrequency energy in the RAA showing disappearance of preexcitation in the third beat. b/c, fluoroscopic RAO and LAO view showing ablation catheter in the RAA. d. CARTO LAO and RAO view post ablation showing site of ablation via red dots in RAA. RAA, right atrial appendage; RAO- right anterior oblique; LAO- left anterior oblique.

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All have none to declare.

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