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Non-arrhythmic pre-excitation-induced cardiomyopathy

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1. Introduction

Ventricular pre-excitation is a prevalent finding affecting 0.2% of the population [1]. The first report of an accessory pathway connecting the atria to the ventricles was described as a case report by Wilson in 1915 only 13 years after Einthoven recorded the human heart electrical activity with a string galvanometer for the first time [2].

Wolf Parkinson White syndrome (WPW) has been implicated as a cause for syncope, sudden cardiac death, palpitations, and tachycardia-induced cardiomyopathy (TIC). There have been reports of non-arrhythmic dilated cardiomyopathy associated with WPW in the pediatric population [1–3]. We describe a case of accessory pathway-induced dilated cardiomyopathy in an adult with full recovery of left ventricular (LV) function post-ablation.

2. Case

A 44 year-old male was referred to the electrophysiology (EP) service for assessment of WPW. He had a history of syncopal event three years prior, along with infrequent palpitations. He additionally had a history of idiopathic cardiomyopathy, which was incidentally found on an echocardiogram as part of his workup for syncope. He was otherwise asymptomatic, New York Heart Association class I. He was appropriately treated with ACE-inhibitors and beta-blockers. There were no documented arrhythmias. A 48 hour holter monitor showed pre-excited QRS throughout monitored period with no evidence of sustained arrhythmias or any premature ventricular contractions.

His electrocardiogram showed sinus rhythm with evidence of a right free wall accessory pathway (Fig. 1a). An echocardiogram revealed an ejection fraction of 40% calculated using Simpson's method with inferior and inferolateral wall hypokinesis and left ventricular end diastolic dimension of 5 cm (Fig. 2). Coronary angiography was normal, as well as cardiac biomarkers. He had been on perindopril and carvedilol with no improvement in his EF. Considering his previous syncope and infrequent symptoms of palpitations, he underwent an EP study.

The patient presented to the EP laboratory approximately 9 months after his initial diagnosis of idiopathic cardiomyopathy. Immediate pre-ablation echocardiography confirmed depressed LV function. A right free wall accessory pathway was identified in the EP lab with site of successful ablation at 10-11 o'clock on the tricuspid annulus (Fig. 3). There was no inducible arrhythmia in the lab, antegrade and retrograde effective refractory period of the AP were 400/320 msec and 600/280msec respectively. No complications were noted.

Post-ablation ECG showed resolution of delta waves (Fig. 1b). At one month follow-up, his EF had improved to near normal at 52% measured using Simpson's method. His LV end diastolic dimension reduced to 4.5 cm and no regional wall motion abnormality could be identified (Fig. 4).

3. Discussion

Ventricular pre-excitation occurs when the ventricular

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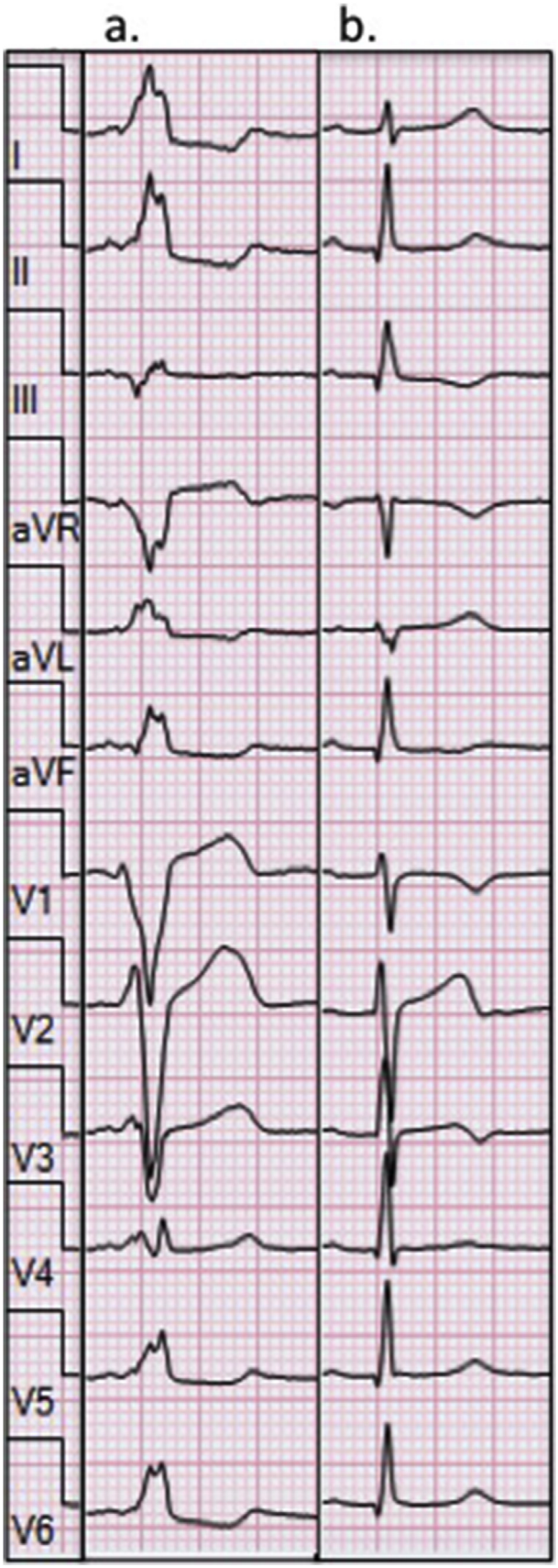

Fig. 1. a. Sinus rhythm with short PR interval and fully pre-excited QRS with negative delta in V1, positive delta in leads II, aVF, isoelectric delta in lead III suggestive of right anterolateral free wall accessory pathway site of origin. b. loss of delta wave post ablation with narrow QRS and normal PR interval.

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