

EP CASE REPORT

A visually striking calcific band causing monomorphic ventricular tachycardia as a first presentation of constrictive pericarditis

Kian Sabzevari^{1*}, Eva Sammut², and Palash Barman¹

¹Bristol Heart Institute, UH Bristol NHS Trust UK, UK; and ²Bristol Heart Institute, UH Bristol NHS Trust UK & University of Bristol, UK
* Corresponding author. Tel: 447794900287; fax: 441173425926. E-mail address: k.sabzevari@doctors.org.uk

Introduction

Constrictive pericarditis (CP) is a rare condition caused by thickening and stiffening of the pericardium manifesting in diastolic dysfunction and enhanced interventricular dependence. In the developed world, most cases are idiopathic or are associated with previous cardiac surgery or irradiation. Tuberculosis remains a leading cause in developing areas.¹

Most commonly, CP presents with symptoms of heart failure and chest discomfort. Atrial arrhythmias have been described as a rare presentation, but arrhythmias of ventricular origin have not been reported.

Case report

A 49-year-old man with a background of diabetes, hypertension, and hypercholesterolaemia and a body mass index of 49 presented with chest discomfort and signs and symptoms of heart failure over a few weeks. Routine investigations showed evidence of congestive cardiac failure and a peak troponin T of 1104 ng/L. Coronary angiography showed unobstructed coronary arteries. Resting electrocardiogram showed sinus rhythm with partial right bundle branch block. While on the ward, he experienced recurrent syncope and non-sustained ventricular tachycardia (VT) and was transferred to our tertiary cardiac centre for further management.

Transthoracic echocardiogram was suboptimal due to body habitus but suggested global mild left ventricular dysfunction and a dilated, akinetic right ventricle with septal flattening. He was unable to tolerate cardiac magnetic resonance imaging. Gated cardiac computed



Figure 1 (A) The 12 lead electrocardiogram during sustained ventricular tachycardia is shown; (B and C) Different projections of three-dimensional reconstructions of cardiac computed tomography demonstrating a striking band of calcification around the annulus; (D) Carto 3D[®] mapping—the left hand panel (i) demonstrates a sinus beat with late potentials at the point of ablation in the coronary sinus, the right hand panel (iii) shows the pacemap with a 89% match to the clinical tachycardia [matching the morphology seen on 12 lead ECG (A)], and the middle panel (ii) displays the three-dimensional voltage map. The red arrows highlight the area of calcification (B and C) corresponding to low voltage areas on the three-dimensional map (D).

tomography demonstrated extensive pericardial calcification and thickening from the basal to mid third of the left ventricle extending into the right ventricular outflow tract and proximal anterior main pulmonary artery (*Figure 1B and C*). Multiphase cinematic imaging confirmed impaired biventricular diastolic filling with ventricular interdependence. A diagnosis of chronic calcific CP was made. He tested negative for human immunodeficiency virus, Q fever, Brucella and had a negative autoimmune profile.

After discussion, pericardectomy was performed. The procedure was challenging, and an island of pericardium on the anterior left ventricle remained. Pericardial histology showed vascular fibrosis and scattered groups of chronic inflammatory cells. Tissue results were negative for granulomatous inflammation and malignancy, and cultures negative for mycobacterium.

A dual-chamber implantable cardioverter-defibrillator (ICD) was inserted, and the patient was discharged on a beta blocker and amiodarone along with standard heart failure medications. He was re-admitted several weeks later with sustained VT. Interrogation of the device suggested more than 1700 VT episodes, mostly self-terminating but 192 required anti-tachycardia pacing.

Inpatient VT ablation was performed under general anaesthetic using CARTO 3D mapping (*Figure 1D*). Epicardial access was not attempted given recent cardiac surgery. Detailed mapping of the right and left ventricle showed no obvious bipolar or unipolar scar. A 90% pacemap was found in the epicardial coronary sinus in the left ventricular summit, adjacent to the pericardial calcification seen on initial imaging, permitting successful ablation and complete suppression of his VT.

He has remained well since with no further ventricular arrhythmia on remote device interrogation at 4 month follow-up.

Discussion

This represents the first documented report of VT secondary to chronic CP with a very striking band of calcification around the annulus. In this case, the patient was managed successfully with pericardectomy, ICD implantation and VT ablation via the coronary sinus.

Conflict of interest: none declared.

Reference

1. Welch TD. Constrictive pericarditis: diagnosis, management and clinical outcomes. *Heart* 2018;**104**:725–31.