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Case Report

Partial Unroofed Coronary Sinus Associated With Upper Septal Ventricular Tachycardia and Atrioventricular Nodal Reentrant Tachycardia

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Abstract

A 58 year old gentleman with complaints of palpitations and documented tachycardia was found to have a dilated right atrium, right ventricle and coronary sinus, which were due to partial unroofed coronary sinus without a left superior vena cava. He had upper septal ventricular tachycardia and atrio-ventricular nodal reentrant tachycardia, which was successfully treated by radiofrequency ablation.

Key words: partial unroofed coronary sinus; dilated coronary sinus; tachycardia

Case Report

A 58 year old gentleman with history of palpitations and baseline bi-fascicular block (Right bundle branch block with left axis deviation) and documented regular tachycardia of the same QRS morphology as the sinus rhythm QRS, was planned for an electrophysiology (EP) study. Pre-procedure trans-thoracic echocardiogram showed dilated coronary sinus (CS) and mildly dilated right atrium (RA) and right ventricular (RV) and normal left ventricular function. There was no evidence of a routine shunt lesion. Color Doppler imaging showed turbulence in the CS, which could not be further, characterized (**Figure 1a**). Cardiac magnetic resonance imaging (MRI) showed presence of a dilated CS, RA and RV. No left superior vena cava (SVC) was seen and there was partial unroofed CS, with shunt from left atrium (LA) to CS (**Figure 1c** and **1d**). All pulmonary veins were draining normally into the left atrium and further no other shunt lesion was seen. There was no evidence of myocardial disease. Cardiac catheterization showed presence of a 1.5:1 left to right shunt, with normal pulmonary arterial pressures. Angiography showed CS extending posterior to the LA till its mid portion and opening with a wide mouth into the right atrium (**Figure 1b**). Coronary Angiography showed normal coronaries and coronary venous drainage except for dilated CS.

Upper septal ventricular tachycardia (**Figure 2a, 2b** and **2c**) and atrio-ventricular nodal reentrant tachycardia (**Figure 3a** and **3b**) induced on EP study were successfully treated. No

further treatment was advised for the congenital anomaly. Patient remains asymptomatic on 6 month follow up.

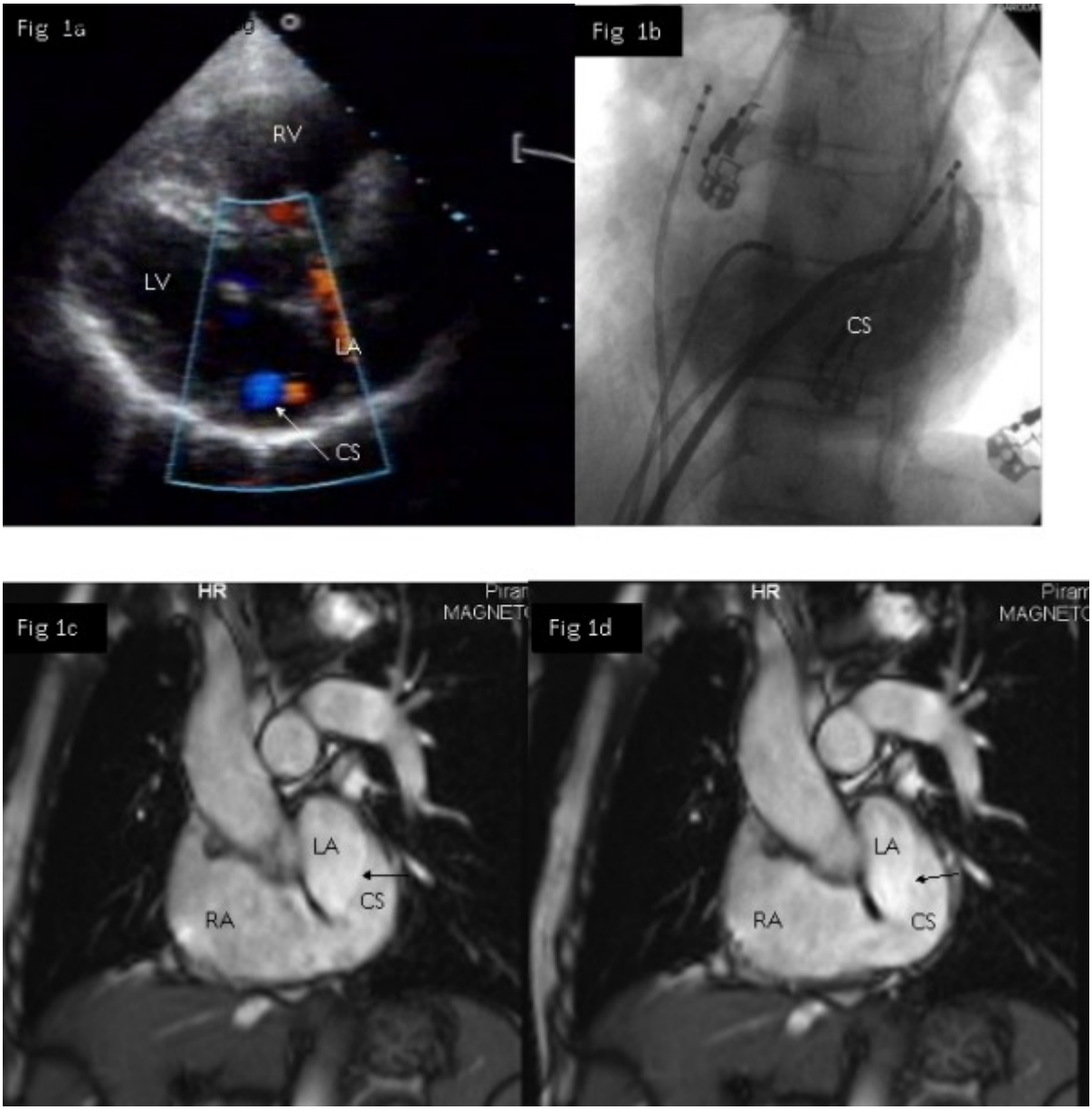

Figure 1. Dilated coronary sinus due to partial unroofing into left atrium. Figure 1a. Modified PLAX view on trans-thoracic echocardiography showed dilated coronary sinus with turbulence within it (marked with white arrow). Figure 1b. Coronary sinus angiography in LAO view showed a large coronary sinus opening with a wide mouth into the RA. Figure 1c. Cardiac MRI showing presence of large coronary sinus with clear differentiation between LA and CS in one of the planes (marked with black arrow). Figure 1d. Cardiac MRI showing presence of partial unroofed coronary sinus (marked with black arrow).

Discussion

The large distal coronary sinus in this patient was due to partial unroofing with a left to right shunt of 1.5:1 from the LA which was well imaged on cardiac MRI. There was no evidence of other structural anomaly including a left SVC on imaging modalities. Isolated partial unroofing to the coronary sinus with a left to right shunt is a rare anomaly. [1-3] Unroofed coronary sinus or coronary sinus diverticulums have been associated with accessory pathway and related tachycardia. [4,5]

The presence of baseline bifascicular block and both ventricular tachycardia and AVNRT can