Atresia of the Coronary Sinus Ostium With Anomalous Drainage Into Innominate Vein: Implications for CRT

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INTRODUCTION

Atresia of the coronary sinus ostium (ACSO) is a rare abnormality and is associated with drainage of the cardiac veins retrogradely via an anomalous and persistent left sided venous system (PLSV) or directly into the left atrium.

It becomes significant in cases where coronary sinus needs to be cannulated for CRT or EP study.

CASE PRESENTATION

51-year-old female was referred for implantation of cardiac resynchronization therapy – defibrillator (CRT-D).

She underwent successful placement of bipolar right atrial lead and right ventricular lead via left axillary approach but were unable to cannulate the coronary sinus (CS) from the right atrium despite multiple attempts.

A left subclavian and innominate venogram was performed via left axillary sheath that showed a patent vein of Marshall draining coronary sinus with an atretic ostium of the CS (Fig.1).

PMH: Nonischemic cardiomyopathy NYHA Class III, EF 20%, LBBB with QRS duration of 168 ms (Fig.2).

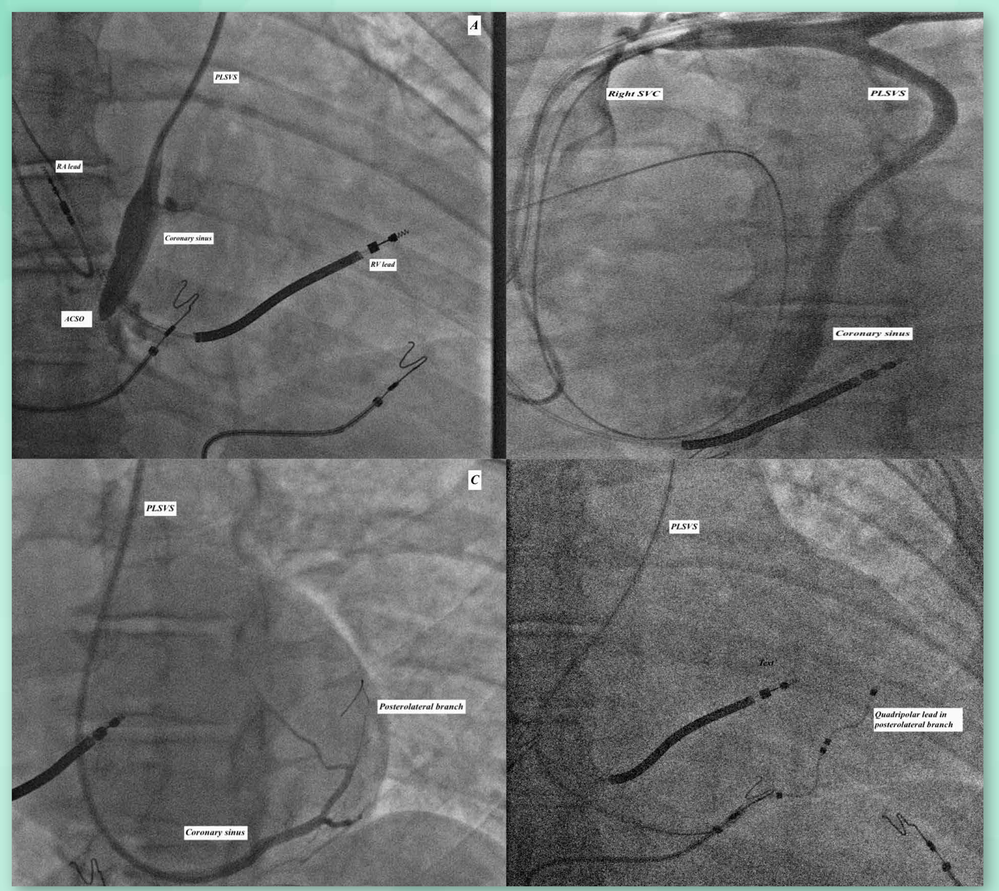

Figure 1: A: Coronary sinus contrast injection revealing atresia of the coronary sinus; **B:** Left subclavian injection revealing persistent left sided venous system; **C:** Coronary sinus injection revealing posterolateral branch; **D:** Quadripolar lead placed in posterolateral branch of the coronary sinus

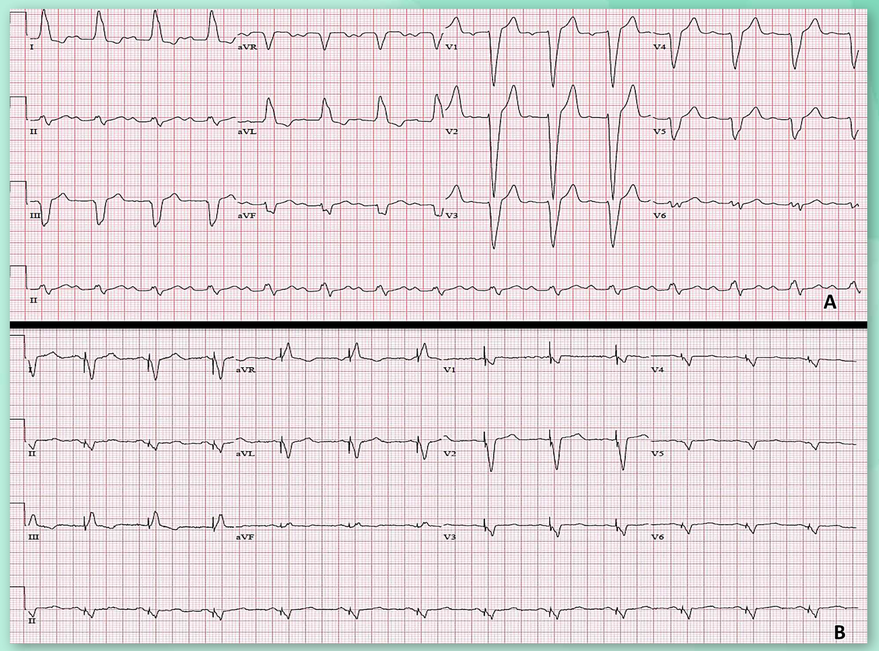

Figure 2: A: Baseline electrocardiogram showing sinus rhythm with left bundle branch block (QRS duration 168ms); **B:** Sinus rhythm with biventricular pacing (QRS 132ms)

DECISION MAKING

Given the necessity for CRT-D due to her NYHA Class III CHF with wide QRS, it was decided to place the LV lead via the persistent vein of Marshall.

Multiple attempts were made to cannulate the great cardiac vein but failed to advance the wire so posterolateral branch was then sub-selected and quadripolar LV lead was placed (Fig.1).

The thresholds and impedance of all the leads were good and post implantation electrocardiogram was acceptable.

CONCLUSIONS

A repeat echocardiogram 3 months later showed EF improvement to 45%

ACSO is a rare congenital abnormality that is associated with PLSV and could be incidentally discovered during CS cannulation.

Although challenging, left ventricular lead placement for CRT could be achieved through left sided venous system by adopting an interventional approach.

NO DISCLOSURES

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