

ST-Elevation Myocardial Infarction in Situs Inversus Dextrocardia: A Case Report

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SUMMARY

ST-elevation myocardial infarction (STEMI) in situs inversus dextrocardia is a rare combination and poses many challenges in terms of diagnosis and management. These include the early detection of dextrocardia as well as the interpretation of the ECG. In addition, percutaneous coronary intervention could be challenging in the setting of dextrocardia because of difficulty in cannulating the coronary arteries, selection of catheters, catheter manipulation, image acquisition and interpretation.

Keywords: dextrocardia, situs inversus, STEMI, acute myocardial infarction, percutaneous coronary intervention.

INTRODUCTION

Situs inversus dextrocardia is a rare congenital anomaly that produces a “mirror image” of the heart and viscera. The incidence is estimated to be around 0.1 to 0.2/1000 population¹. Affected individuals usually have a structurally normal heart but may pose diagnostic and management challenges in acute coronary syndrome.

CASE REPORT

A 45-year-old gentleman presented with sudden onset of central chest pain associated with diaphoresis and shortness of breath. He was an active smoker (>30 pack years) with a past medical history of Type 2 diabetes mellitus and bronchial asthma. He arrived at the emergency department of a district hospital (in Sarawak) within 2 hours from the onset of chest pain. His blood pressure at presentation was 84/48mmHg, heart rate 43bpm, afebrile, oxygen saturation (SaO₂) 100% under room air and pain score 10/10. His left sided ECG showed complete heart block with ST elevation in leads II, III, aVF and ST depression in V1 and V2. (Figure 1A) Chest X-ray was reported as a ‘rotated film’. (Figure 1C) A diagnosis of inferoposterior ST-elevation myocardial infarction (STEMI) was made. He was given T. aspirin 300mg, T. clopidogrel 300mg, T. simvastatin 40mg, subcutaneous enoxaparin 60mg and IV tenecteplase 35mg (body weight 69kg). IV fentanyl 50mcg and IV morphine 3mg were also given.

One hour after thrombolysis, his pain score reduced to 5/10. Blood pressure was 133/94mmHg (no inotropes), heart rate 75bpm, and SaO₂ of 100%. Left sided ECG showed resolution of complete heart block but with <50% resolution of ST elevation in leads II, III and aVF. He was immediately transferred to our cardiology centre for rescue percutaneous coronary intervention (PCI).

He arrived 3 hours later (340km by road). His blood result for Creatinine Kinase Myocardial Band (CK-MB) was 273.5ng/ml, Creatinine Kinase >4267IU/ml and serum creatinine 87umol/L. He was immediately transferred to the invasive cardiac laboratory for rescue PCI.

Figure 1.

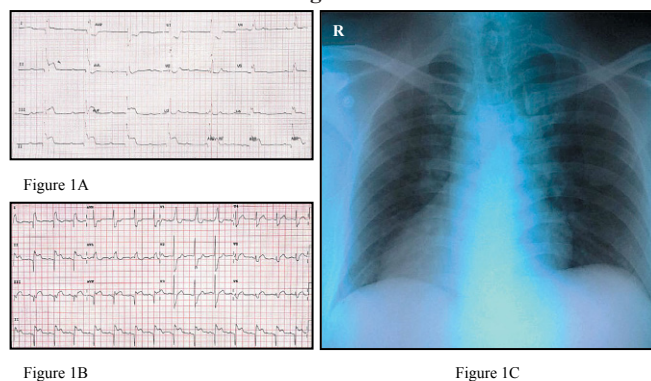


Figure 1A: Standard left sided ECG showing complete heart block, RBBB, ST elevation in II, III, aVF and ST depression in V1 and V2. Note the reversed polarity of both atrial and ventricular.

Figure 1B: Right sided ECG before PCI: resolution of complete heart block but incomplete resolution of ST elevation in II, III, aVF. Note that the atrial polarity is normalized but the ventricular polarity is still reversed (only the precordial leads were reversed but the limb leads in standard position)

Figure 1C: Chest x-ray revealed right sided cardiac silhouette, right sided aortic knuckle and inverted bronchial situs.

Coronary angiography was done via a right trans-radial approach using a 5F Optitorque™ Tiger diagnostic catheter (Terumo IS, Somerset, US). While passing the catheter to the aorta, the operator noticed that the patient had dextrocardia