

Case Report

A Case of Acute Coronary Syndrome and De Winter ECG Pattern. Reflections on Management for a Limited Resource Setting.

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Abstract

We describe a case of acute coronary syndrome and de Winter electrocardiographic pattern treated with a pharmaco-invasive approach. We discuss the treatment plan and controversies in management of similar cases in limited resource setting especially the role of fibrinolysis.

Introduction:

The De-Winter electrocardiographic (ECG) pattern was initially described by De Winter et al in 2008 and consists of 1-3 mm ST segment depression in the precordial leads with tall symmetrical T waves and associated with ST elevation of 1-2 mm in aVR, in the majority of cases(1). Patients who present with a similar pattern in the context of acute coronary syndrome pose a challenge to the treating physician especially when invasive coronary angiography is not immediately available.

Case presentation:

We describe a 55-year-old male with history of Diabetes Mellitus on oral

hypoglycemics who experienced central chest heaviness associated with diaphoresis and vomiting. He presented to our emergency room two hours after symptom onset. His blood pressure was 120/75 mmHg and heart rate was 96 beats per minute (bpm) with normal cardiac and lung examinations. His first ECG showed tall T waves in the precordial leads (Figure 1a) and ST segment depression and T wave inversion in lead III and aVF (Figure 1b). He was loaded with Aspirin and Clopidogrel, 300 mg of each, and started on subcutaneous Enoxaparin 10 U/kg 12-hourly. Sublingual Nitroglycerine and intravenous Morphine were also administered.

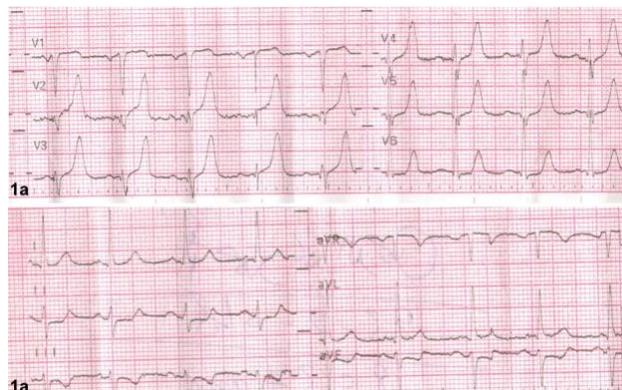


Figure 1. (1a) ECG at initial presentation showing tall peaked T waves in the precordial leads. (1b) ST depression in inferior leads with T wave inversion in lead aVF and III

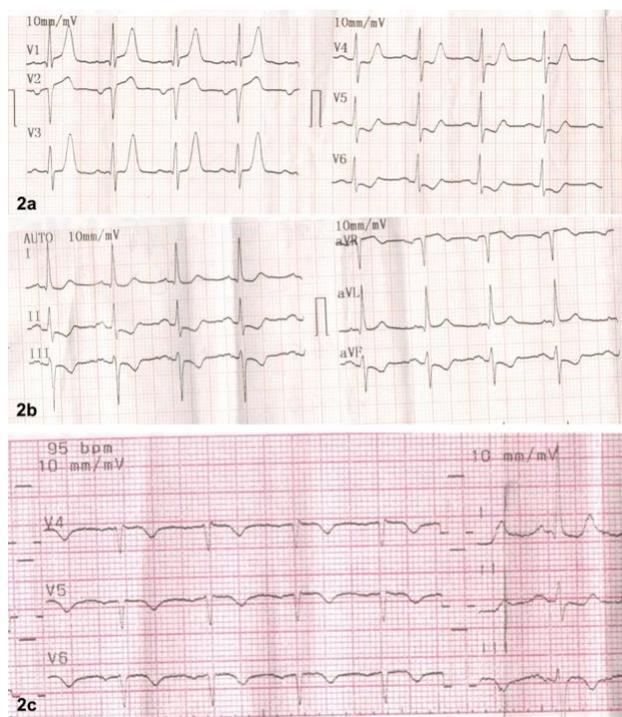


Figure 2 (2a) ST Depression in V ST depression in V4-V6, maximum at V4 with ST depression of 2 mm, and tall T waves in V3-V4. Lead V1 and V2 were misplaced. (2b). Limb leads showing ST depression with T wave inversion in inferior leads (II, III, aVF) (2c) Posterior

leads performed. Lead V7-V9 did not show significant ST segment elevation.

Initial blood test results showed elevated Troponin with normal blood counts and serum electrolytes. Chest pain persisted, and an ECG was repeated after 30 minutes, which showed tall waves in V3 & V4 and positive T waves in V5 & V6. ST depression of more than 1 mm was noted from V4-V6 (Figure 2a). ST depression with T wave inversion was noted in inferior leads with ST elevation of 1 mm in aVR (Figure 2b). Posterior ECG leads did not show any significant ST segment elevation (Fig 2c). Patient received thrombolysis with streptokinase and was referred for coronary angiography, which was performed 36 hours later and revealed a hazy critical 90 % ostial LAD stenosis and total occlusion of the vessel at mid segment (Figures 3a & 3b). Percutaneous coronary intervention (PCI) was undertaken. Both proximal and mid vessel lesions were pre-dilated and successfully stented with 3.5 x 15 mm and 2.75 x 33 mm Everolimus drug eluting stents, respectively.

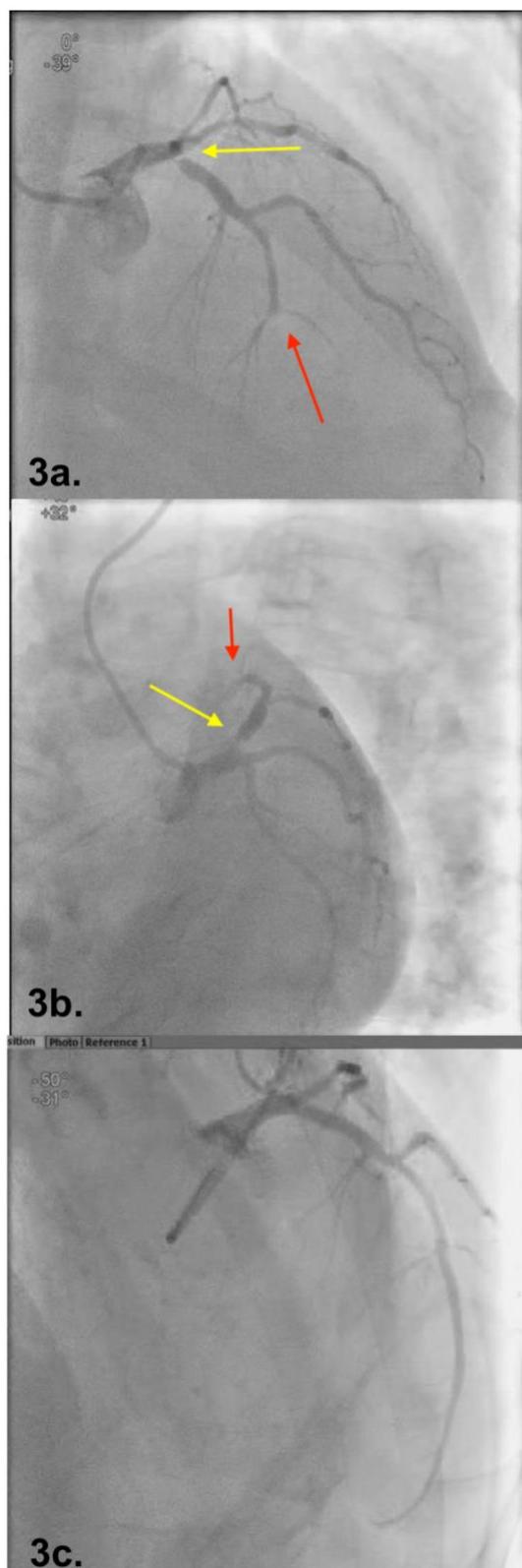


Figure 3 (3a) AP cranial view of the left coronary system. Yellow arrow shows

site of ostial critical stenosis. Red arrow shows site of total mid segment occlusion. (3b). LAO caudal view of the left coronary system. Yellow arrow shows site of critical ostial disease. The lesion appears hazy in this view. Red arrow shows the site of mid total occlusion. (3c) RAO cranial view after deployment of proximal and mid LAD stents.

Discussion:

De Winter et al described this distinctive ECG pattern during LAD territory ischaemia, in the absence of compromise of the posterior or posterolateral coronary circulation and normal serum potassium levels. It occurred in 2% of anterior myocardial infarction cases and was associated with proximal LAD occlusion (1). It has also been described with mid LAD disease (2) and left main occlusion (3).

De Winter pattern has been recognized by several authors as being a STEMI equivalent and an indication to initiate immediate reperfusion therapy (1) (4) and has been shown to have a positive predictive value of 95.2%- 100% for acute arterial occlusion (5). However, de Winter ECG pattern has not been included in the criteria for fibrinolysis, neither in the European nor the US guidelines, but the 2013 updated American College of Cardiology

Foundation/American Heart Association guidelines for the diagnosis and management of STEMI do refer to de Winter ECG pattern as one of the ECG patterns that require emergency referral for invasive coronary angiography (6).

In the case described above, there were two lesions in the LAD; a subtotal occlusive lesion in the ostial LAD and a totally occlusive lesion in the mid segment. Though flow was not restored in the mid LAD, the decision to administer fibrinolysis appears to have been appropriate in retrospect. Immediate access to coronary angiography is not available in many limited resource countries and fibrinolysis remains the only available revascularization option (7, 8)

Conclusion:

Patients presenting with acute coronary syndrome with de Winter ECG pattern should be referred for immediate coronary angiography with a view to performing primary PCI. In settings where no immediate angiography is available, fibrinolysis should be considered.

References:

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