CASE PRESENTATION

# De Winter syndrome – clinical case

Catalin Usurelu[1], Elvis Botu[1], Daniel Blajan[1]

**Abstract:** Acute coronary syndromes comprise of a wide range of clinical presentations and various electrocardiographic patterns. Some of these electrocardiographic patterns define a subset of patients with extensive or proximal coronary artery disease and as such with a worse outcome. Early recognition of these patterns may change the course of therapy and require a faster invasive approach.
**Keywords:** acute coronary syndrome, anterior descending artery, de Winter

**Rezumat:** Sindroamele coronariene acute cuprind un spectru larg de manifestări clinice şi aspecte electrocardiografice variate. O parte dintre aceste aspecte electrocardiografice corespund unui subset de pacienţi cu afectare coronariană extensivă sau proximală şi ca atare cu un prognostic mai sever. Recunoaşterea rapidă a acestor subtipuri electrocardiografice poate să modifice conduita terapeutică şi să conducă la o abordare invazivă mai precoce.
**Cuvinte cheie:** sindrom coronarian acut, artera descendentă anterioară, de Winter

## INTRODUCTION

Introduction of coronary angiography in common cardiology practice allowed the right correlation of the electrocardiographic appearance and anatomical localization of lesions, thus making possible the description of new electrocardiographic patterns in the wide spectrum of acute coronary syndromes.

## CASE REPORT

We describe the case of a 46-year-old smoker male patient, with dyslipidemia, without prior cardiovascular history who came to the emergency department for an ongoing thoracic pain with typical characters of angina at four hours from debut. The initial examination showed a hemodynamically stable patient with a blood pressure of 135/80 mmHg and a pulse of 78 bpm; the electrocardiogram shows sinus rhythm with 1 mm ST depression in leads V2-V5 (Figure 1). Myocardial necrosis markers were in normal range.

The echocardiographic evaluation shows a moderate left ventricular dysfunction with an estimated global ejection fraction of 45% because of hypokinesia of the apex, the interventricular septum and the lateral wall in their apical third; we excluded an aortic dissection, there was no pericardial fluid and the estimated pulmonary pressures were in normal range.

The patient is transferred in the monitoring area and therapy with dual antiplatelet, statin and nitrate are started with prompt relieve of angina. Two hours after the initial episode the angina reappears, and the electrocardiogram shows 2 mm ST depression in leads V1-V6 associated with positive symmetric T waves and 1 mm ST elevation in lead aVR (Figure 2).

We decided emergency coronary angiography showing acute thrombotic occlusion of the left anterior descendent artery in the mid segment and non-significant plaques in the right and circumflex arteries (Figure 3).

We performed emergency angioplasty of the left anterior descendent artery with initial thrombus aspiration and stent implantation with a final TIMI 3 distal flow. The evolution of the electrocardiogram afterwards shows negative T waves in leads V1-V5 (a common aspect in the evolution of an acute myocardial infarction patients) (Figure 4).

[1] Department of Cardiology, Arges Emergency County Hospital, Romania

**Contact address:**
Catalin Usurelu, MD
Department of Cardiology, Arges Emergency County Hospital
Aleea Spitalului Street, no. 36, Arges, Romania.
E-mail: usurelu.catalin@gmail.com

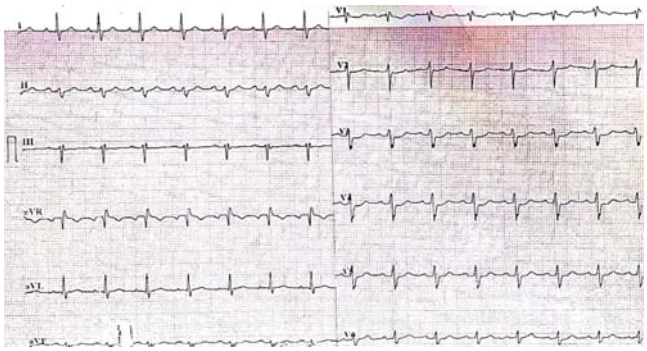

**Figure 1.** ECG: sinus rhythm with 1 mm ST depression in leads V2-V5.

anterior leads) and has been described in the literature as the De Winter syndrome[1,2]. The electrocardiographic evolution respects the diagnostic criteria of the De Winter syndrome, characterized by post infarction T wave inversion. It is important to mention that this aspect may precede or follow the typical changes that appear in myocardial infarction (ST elevation).

Thus, we want to underline the importance of this rare clinico-electrocardiographic syndrome first described in the literature by De Winter in 2008 (Table 1). We can see this electrocardiographic change

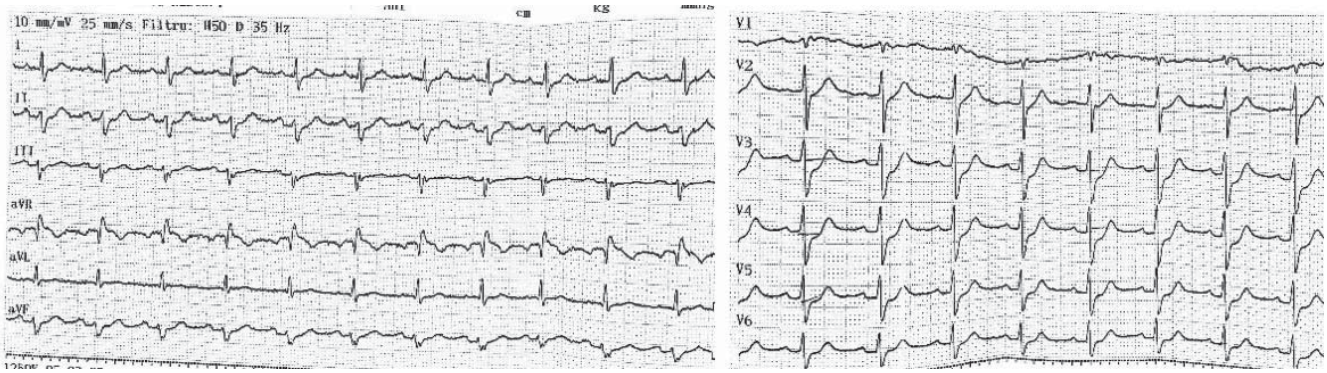


**Figure 2.** ECG shows 2 mm ST depression in leads V1-V6 associated with positive symmetric T waves and 1 mm ST elevation in lead aVR.

**Figure 3.** Coronary angiography: acute thrombotic occlusion of the left anterior descendent artery in the mid segment and non-significant plaques in the right and circumflex arteries.

## DISCUSSION

The particularity of this case is the electrocardiographic aspect during angina, with ST depression and positive T waves in the leads corresponding to the territory of the left anterior descendent artery, later correlated with the angiographic findings.

This electrocardiographic aspect can be considered as an intermediate between the usual changes we see in left anterior descendent subocclusion (ST slight elevation and T wave inversion in leads V2-V3 with aVR ST elevation – also described as the Wellens syndrome) and the changes that characterize acute left anterior descendent occlusion (hyper acute T waves in the in about 2% of the patients with acute left anterior descendent occlusion and some authors proposed this pattern as an equivalent of anterior ST elevation acute myocardial infarction. Thus it is of paramount importance the rapid recognition of these cases that require urgent coronary angiography and reperfusion therapy (some authors advocating even a role for

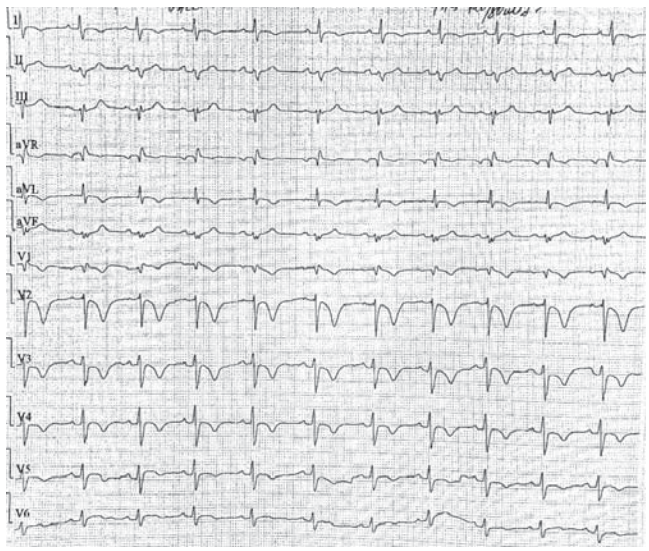


**Figure 4.** ECG afterwards shows negative T waves in leads V1-V5.

**Table 1**

| | De Winter syndrome diagnostic criteria |
|---|---|
| 1 | ≥1 mm ascendant ST depression in precordial leads |
| 2 | absence of ST elevation in the same leads |
| 3 | ST elevation more than 0,5-1 mm in aVR |
| 4 | A typical acute myocardial infarction change with ST elevation may precede or follow the aforementioned changes |
| 5 | High, prominent, symmetric T waves in precordial leads |

thrombolysis in this cases when rapid reperfusion via angioplasty cannot be achieved in a timely manner). Along with ST elevation in the precordial leads and the Wellens syndrome (another named syndrome associated with critical lesion of the left anterior descendent)[3] these electrocardiographic changes in the presence of angina are to be considered cardiological emergencies and treated as such.

## CONCLUSIONS

The de Winter syndrome is a rare electrocardiographic pattern that defines a particular high-risk group of acute coronary syndrome patients for whom early invasive assessment and prompt revascularization is the first therapeutic option and may even be lifesaving.

**Conflict of interest:** none declared.

## Reference

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