



Giant T Waves to Recognize: About Two Cases

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ABSTRACT

De Winter syndrome is a rare electrocardiographic pattern first described in 2008, representing an equivalent to ST-elevation myocardial infarction (STEMI) and indicative of acute proximal occlusion of the left anterior descending (LAD) artery. Despite its clinical significance, it remains underrecognized, leading to diagnostic delays and increased morbidity. We report two male patients with cardiovascular risk factors who presented with acute typical anginal pain and characteristic ECG findings of upward-sloping ST depression and prominent T waves. Coronary angiography confirmed critical proximal LAD occlusion, and immediate percutaneous coronary intervention (PCI) with drug-eluting stents resulted in significant clinical improvement. This report highlights the need for heightened clinical awareness and early recognition of this pattern to ensure timely reperfusion therapy and improve patient outcomes.

Keywords: De Winter syndrome, STEMI, T waves, Coronary angiography

INTRODUCTION

De Winter RJ first described the De Winter syndrome in a case series in 2008 as an indicator of proximal or subtotal occlusion of the left anterior descending (LAD) artery [1]. It is considered an equivalent of ST-elevation myocardial infarction (STEMI) and is present in approximately 2% of anterior infarctions. However, it remains underrecognized by clinicians, which is associated with high morbidity and mortality.

This underrecognition underscores the importance of continuous education and awareness campaigns targeting emergency and cardiology departments. Through two observations, we aim to emphasize the ST/T De Winter complex as an important diagnostic indicator of proximal LAD occlusion, illustrating its clinical significance and outcomes.

CASE OBSERVATIONS

We report two male patients, aged 61 and 40, with cardiovascular risk factors such as active smoking and dyslipidemia. Both presented to the emergency department with acute, typical anginal pain. Physical examinations were unremarkable, and both were hemodynamically stable.

Electrocardiograms (ECGs) during the acute phase showed sinus rhythm with upward-sloping ST depression >2 mm followed by tall, pointed, and symmetric T waves in the precordial leads (V2 to V6) and ST elevation of 1 mm in lead aVR [Figure 1].

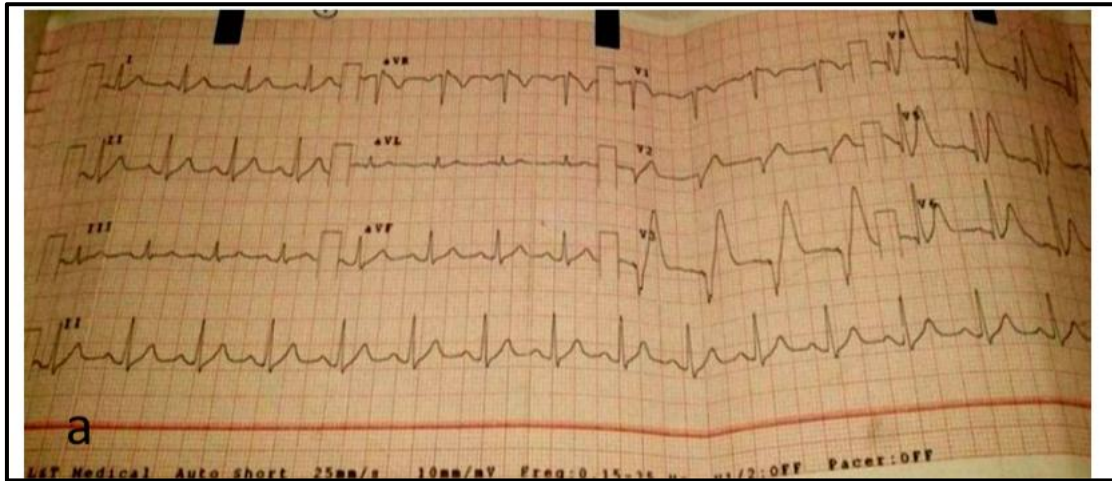


Figure 1: ECG shows a 2 mm ST depression in leads V2 to V6 with tall, symmetric T waves and a 1 mm ST elevation in lead aVR.

This unique pattern, often misinterpreted as non-ischemic or nonspecific, requires heightened clinical suspicion for accurate recognition.

In the first patient, this pattern evolved after two hours into anterior ST elevation [Figure 2].

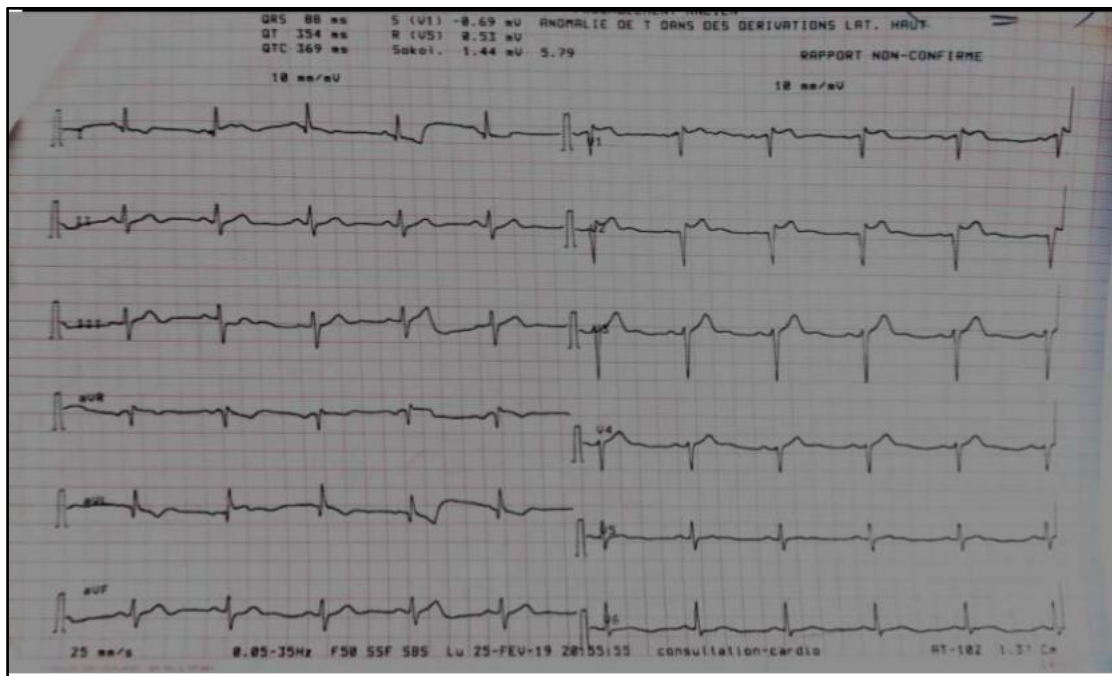


Figure 2 : ECG shows a 2 mm ST-segment elevation in the anteroseptal leads.

High-sensitivity troponin levels were significantly elevated with a rising trend. Echocardiography revealed apical akinesia and hypokinesia of the mid segments of the anterior and anteroseptal walls, with moderately reduced left ventricular ejection fraction (LVEF).

Both patients were administered loading doses of antithrombotics, beta-blockers, and statins. Coronary angiography revealed:

- In one case: triple-vessel disease with a significant 90-99% proximal LAD stenosis and additional mid-LAD lesions.
- In the second case: thrombotic occlusion of the proximal LAD [Figure 3].



Figure 3: Coronary angiography showing a thrombotic occlusion of the proximal LAD artery.

Both cases underscore the necessity of prompt decision-making. Successful percutaneous coronary intervention (PCI) with drug-eluting stents was performed in both patients, achieving TIMI 3 flow restoration. Post-PCI echocardiography showed significant improvement in regional wall motion and overall LVEF during follow-up, reflecting the efficacy of early intervention.

DISCUSSION

The De Winter syndrome is a rare electrocardiographic pattern considered an equivalent of STEMI without apparent ST elevation, indicative of acute proximal LAD occlusion. This pattern, although subtle, carries significant implications for patient outcomes, emphasizing the need for accurate diagnosis and rapid intervention.

Key diagnostic criteria include:

- Upward-sloping ST depression of 1 to 3 mm at the J point, terminating in tall, positive, symmetric T waves in the precordial leads.
- Secondary criteria: 0.5 to 1 mm J-point elevation in lead aVR, mild ST depression in inferior leads, typically narrow or slightly widened QRS complexes, R-wave flattening, or fragmentation [2].

Early recognition of this pattern can facilitate timely revascularization, minimizing myocardial damage. The electrophysiological mechanism responsible for this ECG pattern remains unclear. Recent studies have explored potential mechanisms, including anatomical variations in Purkinje fiber pathways that may cause conduction delays and ischemia-related suppression of ATP-sensitive potassium channels. There is also ongoing debate regarding the role of myocardial metabolic shifts during acute ischemia in altering repolarization patterns. Further research is needed to clarify these pathways and their implications for treatment strategies [3].

The De Winter pattern may precede or follow typical changes seen in myocardial infarction. Both cases reported here demonstrate that rapid identification and intervention are paramount. Early invasive evaluation and revascularization remain the cornerstone of management, although specific guidelines for this pattern are yet to be established [4].

CONCLUSION

The De Winter ECG pattern serves as a crucial STEMI equivalent. Recognizing this novel presentation ensures that patients receive immediate and appropriate reperfusion therapy, ultimately improving outcomes. Broader dissemination of this knowledge among healthcare professionals is vital to reduce diagnostic delays and associated morbidity.

References

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