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# Consider widow maker sign on electrocardiogram as an acute STEMI equivalent: A case report.

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**ABSTRACT: Background**
Wellens' Syndrome is a potentially unrecognized critical proximal LAD stenosis with possible fatal consequences. It is also known as LAD coronary T-waves syndrome or Widow Maker. It can be associated with extensive acute anterior wall myocardial infarction and has a lethal outcome within a few days after the onset of symptoms. It usually consists of typical ECG findings in the pre-cordial leads that represents a significant proximal LAD stenosis in patient with unstable angina.

**Key Words:** ECG, Widow Maker, Angiography, Critical proximal LAD stenosis

## I. INTRODUCTION:

Wellen's syndrome occurs in a group of patients who have unstable angina presenting with chest pain and precordial T wave changes. Most cases of wellen's syndrome doesnot show raised cardiac enzymes. It is a sign of critical proximal LAD stenosis. Recognition of wellen's syndrome is vital, considering that 75% of patients develop an extensive acute anterior wall myocarial infarction within few days after the onset of symptoms. This is a pre-infarction condition of coronary artery disease with a high likelihood of developing acute myocardial infarction within a few days to weeks when unintervened[1].Identifying the syndrome carries significant diagnostic and prognostic value.It is more specific for MI than the rest of the pathologies leading to negative T waves and should be alarming for emergency physicians[2, 3].

This case report describes a patient with wellen's syndrome because of the urgency of treating this syndrome and potential fatality. It is important to recognize the ECG pattern when evaluating patients presenting with chest pain.

## II. CASE REPORT

A 67years female presented to our Cardiology OPD as referred from Pulmonology OPD with the complaints of, on and off left sided chest pain for few days, pricking type lasting 5-6 minutes. She added she experienced chest pain while exertion but sometime occurred while she was resting. She has a habit of smoking 8-10 cigarettes per day.She was a previously known case of COPD for which she received regular treatment. During physical examination, his vitals and cardiovascular examination were normal. ECG showed sinus tachycardia @106bpm with biphasic T wav at leads V1-V5. Cardiac enzymes (CPK-MB and Troponin-I), Blood glucose level and echocardiography screening were within normal limit. We was considered as awellen'ssyndrome and admitted to CCU for observation as she was pain free during presentation at the OPD. At 2 hours, repeated cardiac enzymes which again came normal. Coronary angiogram showed 90-95% proximal LAD stenosis. PCI was performed with stent implantation. Just before PCI, Patient was loaded with Aspirin 300mg, clopidogrel 300mg and 8000 units regular heparin. she was discharged with Aspirin 150mg OD, Clopidogrel 75mg BD, Rosuvastation 20mg OD, Isosorbidemononitrate 10mg BD, Losartan 25mg OD and Metoprolol Succinate 12.5mg ODafter the procedure.

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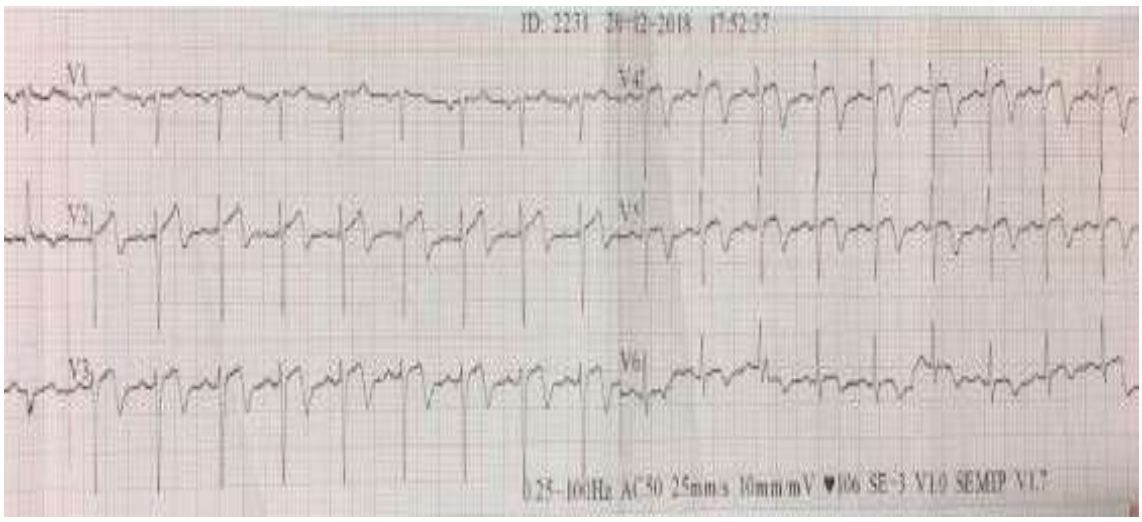


Fig 1 showing ECG pattern for wellen's syndrome during presentation in the Cardio OPD in pain free state.


Fig 2: Coronary Angiography showing critical 90-95% proximal LAD stenosis with thrombus.

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Fig 3: Angiographic findings after stent placement.

## III. DISCUSSION

This case report illustrates the typical electrocardiographic feature of wellen's syndrome in a 67years woman with no previous history of coronary artery disease. In 1982, wellen and his colleagues first described a characteristic ECG pattern of T waves in the precordial leads that were associated with critical stenosis of proximal LAD.[4]These patient respond well with conservative medical management but they have poor prognosis with conservative treatment and often requires coronary angiography and angioplasty or coronary artery bypass surgery.

Wellen's syndrome criteria include -[5]

1. Recent history of episodes of chest pain
2. Chest pain with normal ECG
3. Normal or slight baseline elevation of cardiac enzymes
4. Symmetric deep inverted T wave or biphasic inverted T wave in V2- V5 or V6 during pain free period
5. No precordial pathological Q wave or loss of R wave
6. Minimal (less than 1mm) concave ST segment elevations in V2-V3
7. Critical proximal LAD stenosis in CAG.

This pattern of ECG changes in wellen's syndrome has been described in this case report in a female patient in a chest pain free period. T wave changes usually occur during pain free period when other evidence of ischemia or unstable angina may be absent. In wellen's syndrome, patient often present with intermittent chest pain and there is a characteristics T wave on the ECG during pain free period. For this reason, serial ECG or ECG monitoring should be done in patient with unstable angina in chest pain free period. During the period of chest pain, there can be pseudonormalisation and T waves become positive or depression or elevation of ST segment.

Majority (76%) of the patients with wellen's syndrome have typical ECG (type 1) feature showing deep, symmetrical T wave inversion in precordial leads V2-V3. It often involves leads V1-V4 and occasionally leads V5 and V6. One third of wellen's syndrome present with biphasic T waves in leads V2-V3 (type 2).[6]There are cases of wellen's syndrome where type 1 and type 2 alternate during observation and coronary angiography showed a critical proximal LAD stenosis. The recommendation of treatment for wellen's syndrome include early invasive approach that is emergency coronary angiography and angioplasty or surgical

revascularization.[7]becauseocclusion of proximal LAD can result in serious ventricular dysfunction thus placing the patient at risk of congestive heart failure and death.The ECG features of wellen's syndrome showed sensitivity, specificity and positive predictive value of 69%, 89% and 86% respectively. [8]

## IV. SUMMARY

The ECG characteristics of wellen's syndrome is highly specific for critical LAD stenosis. Physician should not only focus on ST segment changes in ECG interpretation of ischemia but need to take into account any T waves changes in patient with chest pain. It is therefore important to compare current and previous ECGs as this might provide clue to the diagnosis.The recommendation of treatment for wellen's syndrome is early intervention with either angioplasty or coronary artery bypass surgery.[9]

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