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# Wellens Syndrome In Elderly Female: An Ecg Based Warning Of Impending Infarction

**Dr. Vemuri Satwick[1], Dr. Viknesh Prabu[2], Dr. Anis Preethi[3]**
[1]Junior Resident, General Medicine, Sree Balaji Medical College and Hospital, Chennai., satwickv1499@gmail.com
[2]Assistant Professor, General Medicine, Sree Balaji MedicalCollege and Hospital, Chennai., drhappy03@gmail.com
[3]Assistant Professor, General Medicine, Sree Balaji Medical College and Hospital, Chennai., anisaruldas@gmail.com

## ABSTRACT

*Wellen's syndrome is a critical electrocardiographic pattern indicative of significant proximal left anterior descending (LAD) artery stenosis, representing a pre-infarction state. The authors report a 76-year-old hypertensive woman presenting with exertion-induced, non-radiating chest pain. ECG during a pain-free interval showed biphasic T waves in V2–V3 with elevated troponin I. Coronary angiography confirmed 95% LAD stenosis. The patient underwent successful percutaneous coronary intervention (PCI) and was started on dual antiplatelet and statin therapy. Early identification of this ECG pattern is crucial, as stress testing is contraindicated due to the high infarction risk. This case underscores the diagnostic importance of Wellen's syndrome and the role of early invasive management.*

***Keywords***: *Wellen's syndrome, left anterior descending artery syndrome, electrocardiogram findings, myocardial infarction prevention, angioplasty, chest pain evaluation.*

## BACKGROUND

Wellen's syndrome, also known as left anterior descending (LAD) T-wave inversion syndrome, is an electrocardiographic (ECG) pattern indicating critical proximal LAD artery stenosis and a pre-infarction state.[1] It was observed that in approximately 16% of patients with unstable angina, there is a 75% risk of anterior myocardial infarction if untreated.[2] The typical ECG findings include biphasic (type A) or deeply inverted (type B) T waves in leads V2–V3, seen during pain-free periods.[3]

The absence of precordial Q waves, isoelectric or minimally elevated ST segments, and normal or mildly elevated cardiac enzymes further characterise the syndrome.[1] Stress testing is contraindicated as it can provoke extensive infarction.[3] Early recognition and prompt coronary angiography with revascularisation are essential for preventing progression to myocardial infarction. When diagnosed and treated early, outcomes are notably improved.[4]

Herewith a case of Wellen's syndrome is presented to illustrate the importance of early diagnosis and timely intervention in preventing myocardial infarction.

## CASE PRESENTATION

A 76-year-old woman with known history of systemic hypertension for the past 20 years, managed with Telmisartan H 40/12.5 mg once daily, presented to the emergency department with complaints of retrosternal chest pain. Patient had chest pain on exertion for two months which aggravated since previous night but with no pain upon arrival. There were no associated symptoms, such as orthopnea, paroxysmal nocturnal dyspnoea, palpitations, headache, giddiness, blurred vision, or diplopia. On examination, the patient was conscious, oriented, and afebrile, although pallor was present. Her vital signs were as follow: blood pressure- 140/79 mmHg; pulse rate-73 bpm; oxygen saturation- 96% on room air; and capillary blood glucose- 132 mg/dL. Systemic examination revealed no significant findings.

ECG showed a normal sinus rhythm and axis, with biphasic T waves noted in leads V2 and V3 (Figure 1).

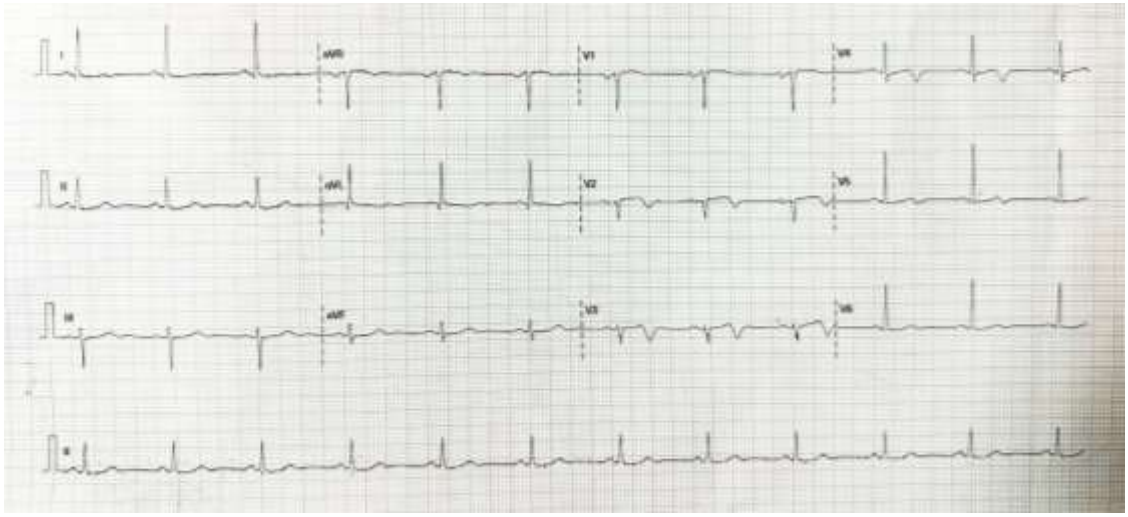

**Figure 1: ECG findings**

Troponin I levels were elevated, prompting immediate medical management with loading doses of aspirin (300 mg), clopidogrel (300 mg), and atorvastatin (80 mg). A 2D echocardiogram revealed apical hypokinesia with a left ventricular ejection fraction of 51%. Given these findings, a cardiologist consultation was obtained and coronary angiography was performed. Reports revealed 95% stenosis in the LAD, with mild disease noted in the left circumflex (LCX) and right coronary arteries (RCA). The angiographic findings emphasised the urgent need for revascularisation to prevent myocardial infarction. Thus, the patient underwent percutaneous transluminal coronary angioplasty (PTCA), after which she remained stable and was initiated on dual antiplatelet therapy and statin therapy.

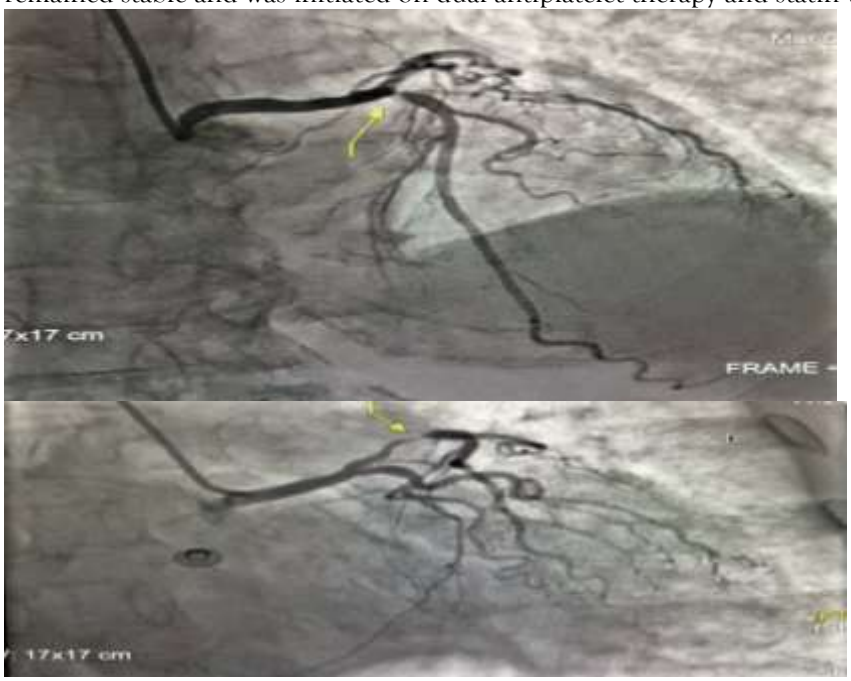


**Figure 2: CAG findings**

## DISCUSSION

This case shows the classic presentation of Wellen's syndrome, a critical pre-infarction condition characterised by specific ECG changes and significant proximal LAD artery stenosis. The importance of early recognition and timely intervention in such cases cannot be overstated, as delay can result in anterior wall myocardial infarction and potentially fatal outcomes.

This patient was an elderly female (76 years) with hypertension, who had no symptoms other than chest pain, and there were no significant findings in her systemic examination. ECG recordings demonstrated

biphasic T waves in leads V2 and V3. Age≥65 years and hypertension are important risk factors for Wellen's syndrome.[5] The syndrome is mostly asymptomatic and usually associated with a new onset of chest pain.[6]

The T-wave abnormalities during pain-free intervals are the early sign of critical LAD obstruction, this abnormality is the main diagnostic criterion for Wellen's syndrome.[7] There are 2 types of Wellen's pattern, type A is characterised by biphasic T waves in leads V2–V3, and type B is identified by deep, symmetrical T-wave inversions in the same leads.[6]

Apart from T-wave abnormalities, the syndrome is not associated with any pathological Q waves or significant ST elevation. Several Wellen's cases have been reported with abnormal T waves, absence of Q waves, and normal R-wave progression. Ramanathan et al. state that these are the essential features of Wellen's syndrome.[8]

This patient had elevated troponin I levels and 95% stenosis of the LAD artery, confirmed by coronary angiography. The Wellen's ECG pattern is strongly associated with critical LAD.[7] Coronary angiography is the definitive diagnostic tool for identifying Wellen's syndrome, and most angiogram reports highlight the association between proximal LADs and 95% stenosis among patients with Wellen's syndrome. About 12% of the Wellen's syndrome patients are associated with elevation of cardiac enzymes, thus increasing the risk for infarction.[9]

Wellen's syndrome cannot be cured by medical management alone, but early revascularisation should be attempted to prevent myocardial infarction.[10] As there is a 75% chance of infarction for patients managed medically alone, early percutaneous coronary intervention (PCI) is recommended for obtaining better outcome.[5,7] Thus, an immediate measure for PTCA was taken as soon as the patient received her angiogram reports in our case and was stabilised with medications following successful PTCA.

## CONCLUSION

Wellen's syndrome is a vital ECG marker of significant proximal LAD stenosis and a predictor of anterior myocardial infarction. Recognition of this characteristic T-wave abnormalities during asymptomatic period is crucial. Coronary angiography is essential for confirmation, and prompt PCI significantly improves clinical outcomes.

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