

WELLENS' SYNDROME IN A FEMALE PATIENT PRESENTING TO EMERGENCY ROOM AFTER RESOLVING EXERCISE-INDUCED CHEST PAIN

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SUMMARY – Wellens' syndrome, also known as the left anterior descending (LAD) coronary T wave syndrome, is a potentially under-recognized syndrome in emergency room, which can have potentially fatal consequences. It usually consists of typical electrocardiography (ECG) finding in precordial leads that represents significant stenosis of the proximal LAD. Although the syndrome is not included in indications for primary percutaneous coronary intervention (patients with typical ECG findings are usually pain free at the time of recording), every patient with suspicion of typical Wellens' syndrome should be seen by interventional cardiologist and considered for emergency cardiac catheterization. A case is reported of a patient with no previous medical history of coronary disease and with only one risk factor for cardiovascular disease that presented to emergency room with typical Wellens' syndrome.

Key words: *Coronary diseases – diagnosis; Coronary diseases – pathophysiology; Electrocardiography; Coronary stenosis – diagnosis; Emergency treatment; Female; Case report*

Case Report

A 44-year-old female with a history of elevated blood cholesterol levels and no other risk factor for coronary artery disease presented to emergency department after resolving exercise-induced chest pain (second floor steps). In the past 2 weeks, she had exercise induced chest pain which was severe and started retrosternally with propagation into the neck, lower jaw and left arm. The pain resolved after few minutes at rest. Her past medical history was unremarkable. At the time of examination, the patient was pain free, her vital signs were: blood pressure 130/80, heart rate

72/min, body temperature 36.6 °C and respiration rate 12/min. Physical examination was unremarkable except for silent systolic murmur heard over the upper left sternal border (1-2/6). Except for elevated blood cholesterol levels, her laboratory results were normal, including cardiac markers and troponin levels. The first electrocardiogram (ECG) at emergency room (ER), performed 10 minutes after resolving chest pain, showed sinus rhythm, 72/min, biphasic T wave in V2 and negative in V3, and aVL as a finding that could represent critical proximal left anterior descending artery (LAD) stenosis, also known as Wellens' syndrome (Fig. 1). The next ECG taken 15 minutes later showed resolving of T waves in V2 and V3 (normal ECG finding).

The patient was referred to the interventional cardiologist and transferred to catheterization laboratory. After premedication at ER (clopidogrel loading dose 600 mg, aspirin 300 mg, and diazepam 5 mg),

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Fig. 1. ECG in precordial leads upon admission to emergency room (10 minutes after resolving of pain).

coronary angiography was performed. Coronary angiogram showed 95% stenosis of the proximal (ostial) LAD without significant narrowing of the circumflex ostium (Figs. 2-4). Sirolimus eluting stent (Cypher) was deployed in the distal part of the LMA and proximal LAD (Fig. 5). After the procedure, the patient felt well, had no chest pain during hospital stay and there was no periprocedural myocardial damage (negative troponin after the procedure). The patient was discharged from the hospital 3 days after the procedure.

Fig. 3. Coronary angiogram (LAO/Cran projection) of the left coronary artery: critical stenosis of the proximal left anterior descending artery (LAD); from this projection, mid-LAD may also be involved. →

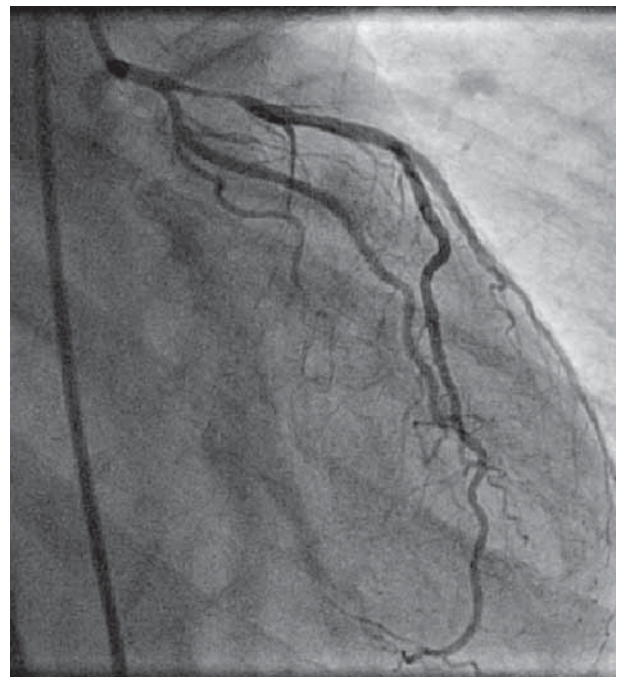
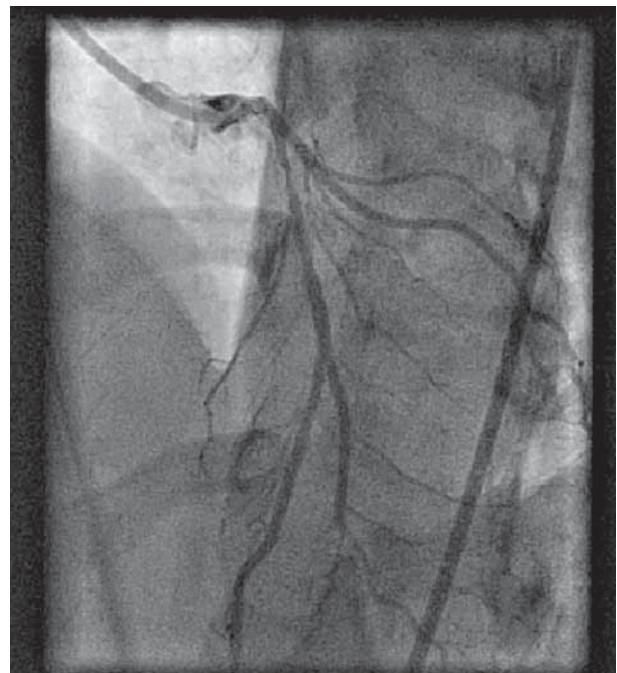


Fig. 2. Coronary angiogram (RAO/CAUD projection) of the left coronary artery: critical stenosis (95%) in the very proximal segment of LAD. The entire proximal segment of the artery is involved, including the ostium of LAD without significant disease of the main stem and ostium of the ACx.



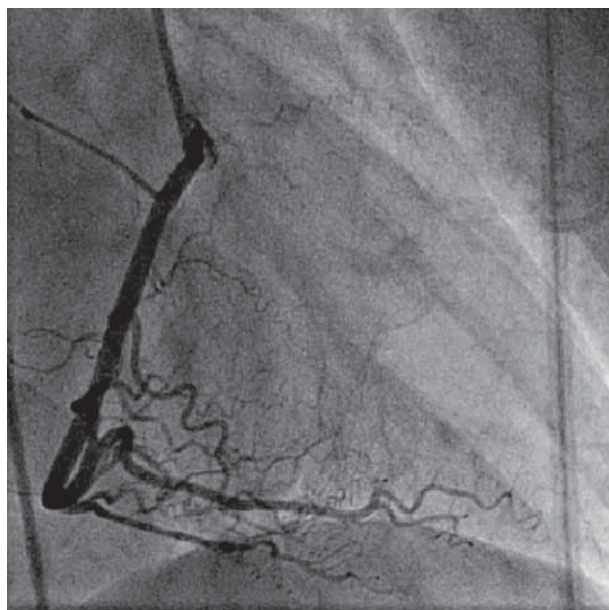


Fig. 4. Coronary angiogram (RAO projection) of the right coronary artery: there is no visible disease of the artery. Scant transseptal collaterals to the left anterior descending artery (LAD) are seen.

Discussion

We report on a 44-year-old female who had only one risk factor for developing coronary artery disease and presented to ER with typical ECG finding for Wellens' syndrome. In 1979, Gerson *et al.* described ECG finding of exercise-induced inverted terminal T-waves in the pericordial leads in patients with proximal LAD ischemia. They named it exercise-induced U-wave inversion despite the fact that this ECG abnormality appears to occur in the terminal portion of T-waves¹. In 1982, the same syndrome was

Table 1. Criteria for the diagnosis of Wellens' syndrome

- Prior history of chest pain
- Chest pain with normal ECG*
- Normal or minimally elevated cardiac enzymes
- No pathologic Q waves or loss of R waves
- ST segment that is isoelectric or minimally elevated in V2 and V3
- Symmetric and deep T wave inversion (75%) or biphasic T waves V2-V5 (25%)
- Significant proximal LAD stenosis

* in some atypical forms of Wellens' syndrome ECG changes also occur during pain episodes

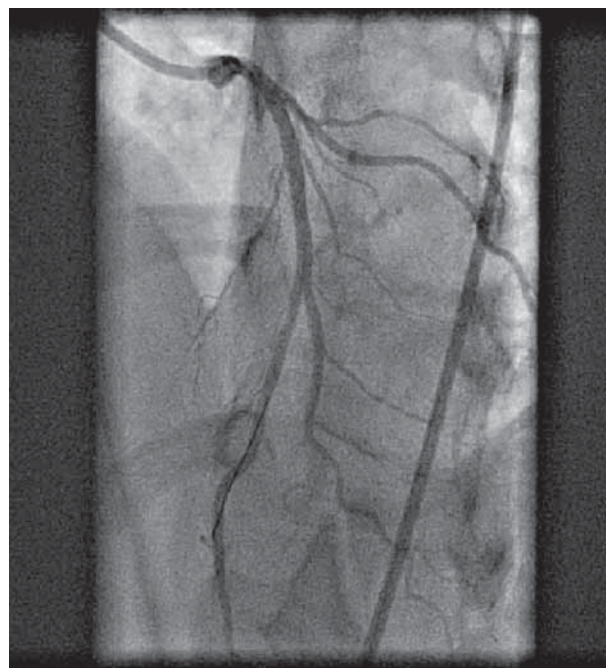


Fig. 5. Final coronary angiogram (LAO/CRAN projection) of the left coronary artery: after predilatation with two coronary wires (ACx protection), long sirolimus-eluting stent plaque-shift to the ACx was done. The procedure was completed with high-pressure balloon dilation with a very good result (no need for IVUS check).

described by Wellens and his group reporting on typical ST-T segment changes that could represent critical LAD stenosis². Among 145 patients involved, 26 (18%) showed this ECG pattern and of 16 patients with this pattern that were not operated on, 12 (75%) developed large anterior wall myocardial infarction in the next few weeks^{2,3}. The criteria for the diagnosis of Wellens' syndrome are listed in Table 1. In 75% of cases, T waves are deep and inverted, whereas in 25% of cases, as in our case, there are only biphasic T waves. Another important criterion is that there are no Q waves or loss of R waves present. The origin of these ECG changes remains obscure, as they can persist for months, but it is most likely that they represent reperfusion^{4,5}. In our case, the ECG changes resolved 30 minutes after resolving of chest pain. These data show that this syndrome is not rare in patients reporting symptoms of unstable angina, and the fact that medical therapy alone is in most cases insufficient to prevent development of large myocardial infarction

demands early recognition and coronary percutaneous intervention in these patients⁶. In our case, Wellens' syndrome was recognized early and the life-saving cardiac catheterization was performed before development of myocardial infarction.

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Sažetak

WELLENSOV SINDROM U BOLESNICE PRIMLJENE U HITNU SLUŽBU NAKON PRESTANKA BOLOVA U PRSIŠTU UZROKOVANIH TJELESNOM AKTIVNOŠĆU

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Wellensov sindrom, također poznat kao sindrom T vala lijeve prednje silazne koronarne arterije (LAD), je sindrom koji može promaknuti kao neprepoznat u hitnoj službi, a može imati kobne posljedice. Obično se sastoji od znakovitog elektrokardiografskog (EKG) nalaza u prekordijalnim elektrodama, koji predstavlja značajnu stenozu proksimalne LAD. Iako ovaj sindrom nije uključen u indikacije za primarnu perkutanu koronarnu intervenciju (bolesnici s tipičnim nalazom EKG obično nemaju bolove u vrijeme snimanja), svakog bolesnika sa sumnjom na Wellensov sindrom trebalo bi uputiti intervencijskom kardiologu i razmotriti potrebu hitne kateterizacije srca. Opisuje se bolesnica bez prethodne anamneze koronarne bolesti i sa samo jednim rizičnim čimbenikom za kardiovaskularnu bolest, koja je primljena u hitnu službu s tipičnim Wellensovim sindromom.

Ključne riječi: *Koronarne bolesti – dijagnostika; Koronarne bolesti – fiziopatologija; Elektrokardiografija; Koronarna stenozna – dijagnostika; Hitno liječenje; Ženski spol; Prikaz slučaja*