

Wellens' syndrome: The electrocardiographic finding that is seen as unimportant

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Abstract

Wellens' syndrome is a pattern of electrocardiography T-wave changes associated with critical proximal left anterior descending artery lesion. Patients with Wellens' syndrome are at high risk of the development of extensive myocardial infarction of the anterior wall and death. Thus, it is vital that this finding is recognized promptly. We present a patient with Wellens' syndrome in this article. (Cardiol J 2009; 16: 73–75)

Key words: Wellens' syndrome, electrocardiography

Introduction

Wellens' syndrome is a preinfarction stage of coronary artery disease. In 1982 Wellens et al. first published the clinical and ECG criteria of a subgroup of patients with myocardial ischemia that later came to be known as Wellens' syndrome [1]. Recognition of this ECG pattern allowed the identification of patients who had a critical stenosis of the proximal left anterior descending coronary artery and hence were at risk of extensive anterior wall myocardial infarction. T-wave changes in the syndrome usually occur during a pain-free interval. Although these patients may initially respond well to medical management, they ultimately fare poorly with conservative therapy and require revascularization strategies. Although the ECG changes for Wellens' syndrome are easy to recognize, many cardiac care unit staff physicians may not be aware of their significance. We aimed to emphasize the clinical importance of Wellens' syndrome with this patient.

Case report

A 52-year-old male previously without myocardial infarction and with a history of hypertension

presented to our clinic with stable angina pectoris. Electrocardiography was normal. One day after admission the patient was asymptomatic but an ECG showed biphasic T waves in leads V1 to V5 (Fig. 1). Physical examination and cardiac enzymes were normal. Coronary angiography revealed critical occlusion proximal to the left anterior descending coronary artery (Fig. 2). Percutaneous angioplasty and stenting were performed and the patient was discharged after 3 days.

Discussion

Wellens' syndrome is characterized by symmetric T-wave inversion or biphasic T-wave in the precordial leads, typically caused by a critical stenosis in the proximal left anterior descending (LAD) coronary artery [1]. The characteristic electrocardiographic pattern often develops when the patient is not experiencing angina. In fact, during an attack of chest pain the ST-segment–T-wave abnormalities usually normalize or develop into ST-segment elevation. The natural history of this electrocardiographic pattern has been described as unfavourable with high incidence of recurrent symptoms and myocardial infarction [1, 2].

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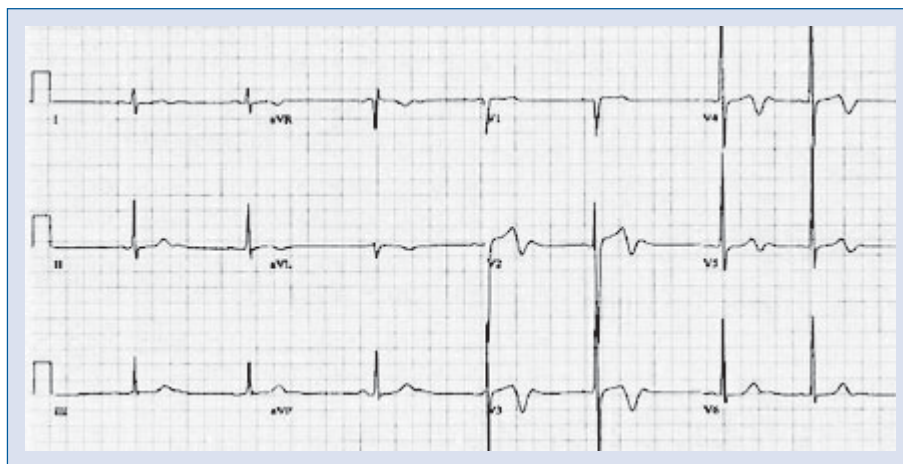


Figure 1. Electrocardiography 24 hours after admission, with biphasic T waves in V1 to V5.



Figure 2. Coronary angiogram showing 95% stenosis of the left anterior descending coronary artery.

In Wellens' first study, 26 out of 145 patients admitted for unstable angina (18%) had this electrocardiographic pattern [1]. In the later prospective study, 180 out of 1,260 hospitalized patients (14%) showed the characteristic electrocardiographic changes [3]. Furthermore, all of these patients had significant disease of the proximal LAD. In the first study, 12 out of 16 patients (75%) with electrocardiographic changes who did not receive coronary revascularization developed extensive anterior wall infarction within a few weeks after admission [1]. In the later study, urgent coronary angiography was implemented, and all of the 180 pa-

tients with electrocardiographic changes were found to have blockage of the LAD, varying from 50% to complete obstruction [3].

The clinical and electrocardiographic criteria for Wellens' syndrome are:

- biphasic or deeply inverted T waves in leads V2 and V3, and occasionally in leads V1, V4, V5, and V6;
- no or minimal elevation of cardiac enzymes;
- no or minimal ST-segment elevation (< 1 mm);
- no loss of precordial R-wave progression;
- no pathological precordial Q wave;
- a history of angina.

Patients with Wellens' syndrome are at high risk of development of extensive myocardial infarction of the anterior wall and death [1]. Although medical management may provide symptomatic improvement at first, the natural history of this syndrome is anterior wall myocardial infarction that, if not aborted, results in significant left ventricular dysfunction and/or death [2]. In addition, performing exercise stress tests for these patients can be fatal due to severe stenosis that might lead to infarction at the time of increased cardiac demand. Thus, the patients require immediate coronary angiography and revascularization strategies such as bypass surgery or percutaneous transluminal coronary angioplasty and stenting, as in our patient.

In conclusion, patients with Wellens' syndrome have an increased risk of anterior myocardial infarction. Exercise or dobutamine stress tests should be avoided and early invasive investigation should be planned for the patients. Diagnosis of Wellens' syndrome in patients with anginal syndrome by physicians is therefore crucial.

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