



Case Report

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Wellens' Syndrome and Exercise Stress Test: A Case Report

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Abstract

The Wellens' syndrome electrocardiogram (ECG) pattern highly suggests severe coronary artery disease (CAD) caused by critical proximal left anterior descending (LAD) artery stenosis. Many nurses and physicians may not be aware of WS ECG changes and lead to plan an exercise stress test for these patients and severe myocardial infarction (MI) or sudden cardiac death (SCD) will happened. Thus, the least common variant of WS has been reported.

Keywords: Wellens' Syndrome, Exercise test, Case reports.

INTRODUCTION

Pattern of Wellens' Syndrome (WS) in the electrocardiogram (ECG) first was described in 1982 [1].

There are two types of WS; type A is the most common and manifested with deep negative T waves in leads V2 and V3, while type B is the least common type that manifested with biphasic T waves in leads V2 and V3 [1].

WS can be a useful ECG indicator of a major proximal left anterior descending (LAD) artery obstruction [1, 2] and it has been recommended to be considered as a high risk condition [3].

In case of the syndrome missed diagnosis, no treatment, or limiting treatment to medical management, major myocardial infarction (MI) will be happened [2, 4]. Because of fatal consequences following failure to diagnosis this condition and subsequent inappropriate management [4], knowledge of treating physicians of this condition is essential in order to prevent life-threatening complications by prompt life-saving interventions [2]. In addition, diagnosis of this condition is needed as an exercise test contraindicated due to the danger of anterior MI and sudden cardiac death [2, 5].

CASE REPORT

A 62-year-old male was seen in the cardiology outpatient clinic with a chief complaint of an intermittent retrosternal chest pain, especially during activity. His past medical history did not reveal any comorbid conditions and there was no family history of heart diseases. Heavy cigarette smoking has been reported by the patient. While, he did not mention using illicit drugs, or drinking alcohol.

The cardiopulmonary physical examination on admission was normal and his general condition was acceptable. Vital signs showed blood pressure of 128/70 mmHg and heart rate of 80 beats per minute (bpm). The 12-lead ECG on presentation showed biphasic T wave in leads V3 through V5 (Fig. 1). One day later, because of no remarkable findings throughout echocardiography, the patient underwent the exercise stress test. During the exercise treadmill test (ETT), the patient experienced vertigo, tiredness, dyspnea and severe retrosternal chest pain. In addition, observation of severe ST-segment elevation in ECG and an increase in systolic blood pressure >40 mm Hg compared to the previous stage were led to stop the ETT.

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Because of a diffuse ST-segment elevation in precordial and inferior leads of ECG (Fig. 2), severe coronary artery disease (CAD) was diagnosed and the patient underwent urgent coronary catheterization.

The cardiac catheterization showed a tight significant lesion in the proximal LAD artery that treated with percutaneous coronary intervention (PCI) (Fig. 3). Normal left ventricular systolic function has been found in echocardiogram following the catheterization and the patient was discharged with the good general condition two days after the cardiac procedure.

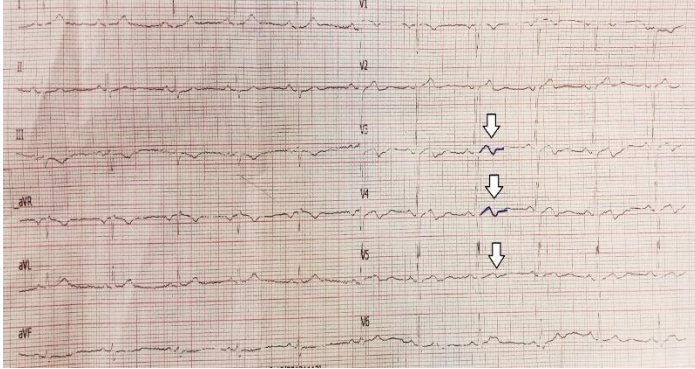


Figure 1: Electrocardiogram (ECG) on presentation

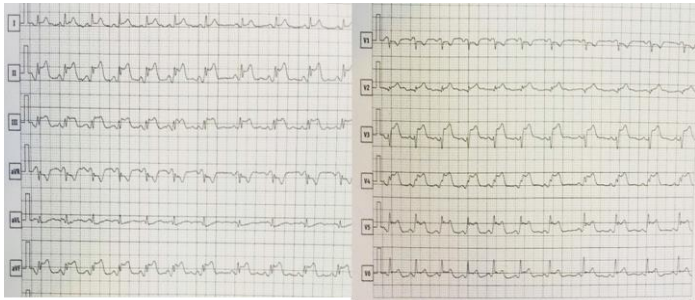


Figure 2: Electrocardiogram (ECG) during exercise stress test

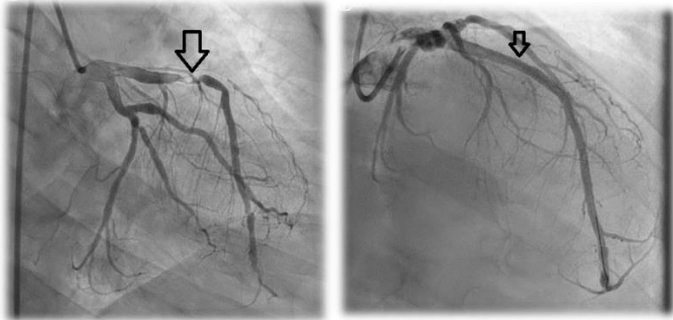


Figure 3: Coronary angiogram before and after procedure (left to right)

DISCUSSION

In this case report, missed diagnosis of the least common type of WS, type B, and doing ETT and consequence of the inappropriate management have been reported.

WS is a pattern of ECG T-wave changes associated with proximal LAD artery lesion [6]. From two known variants of WS, Type B accounts for approximately 25% of all cases and refers to the classical biphasic T waves in leads V2 and V3 [1] as we have seen in our case.

CAD is the leading cause of cardiovascular mortality, worldwide [7]. On the other hand, acute coronary syndrome (ACS) is one of the most frequent reasons for hospitalization [8]. Therefore, early recognition and appropriate intervention can be very helpful for prevention of the death and MI among patients with ACS. In addition, WS is a pre-infarction stage of CAD, therefore recognizing this syndrome could be a

life-saving diagnosis [6]. It is very important for health care providers to identify patients with the ECG pattern of this syndrome [9] in order to apply appropriate management even if these patients are stable and pain-free.

ETT has been used to identify patients with CAD and to predict its severity and the urgency for intervention, as well [10]. However, it has been contraindicated for patients with a WS ECG pattern because of progression to MI and fatal outcomes. In the present case, although the patient presented with typical chest pain during activity and WS pattern in ECG, the ETT was planned for him that led to ST-segment elevation during the exercise test. The current guidelines are lack of specific recommendations for the management of WS [9]. However, our case was undergone urgent PCI and managed same as patients with STEMI regardless WS diagnosis.

CONCLUSION

Missed diagnosis of WS, especially type B, may happen because of lowest prevalence. It leads to plan ETT and the occurrence of life-threatening outcomes. Therefore, knowledge of health care providers regarding WS ECG pattern, is essential in order to avoid exercise test and save the patient life by prompt appropriate interventions.

Conflict of interest

There is no conflict of interest.

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