



Hypokalemia Associated with Non-Obstructive Coronary Arteries Myocardial Infarction

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Abstract

Hypokalemia is a condition that may affect the contraction of the heart leading to decrease the blood supply through the coronary arteries, especially if the coronary slow phenomena exist. We report a case of 27 year old female with a acute coronary syndrome associated with a positive biomarkers of myocardium damage. The primary PCI was done and only the coronary slow flow was detected without any obstruction. A low potassium level was notified and outlined as the potential cause of non-ST elevation myocardial infarction. Patient was discharged in a good condition and dual anti-platelet therapy is recommended.

Introduction

Acute Myocardial Infarction without Obstruction of Coronary Arteries (MINOCA) is a challenge for the interventional cardiologist in terms of treatment that should be provided. The underlying atherosclerosis process is not the cause, but some other causes are considered like microcirculation abnormality, coronary non-atherosclerotic pathology, myocardial disorders and non-cardiac etiology including thrombophilia, pulmonary embolism etc. Finding the real cause and therapy of MINOCA provides opportunity for more adequate management.

Case Presentation

A 27 year-old Caucasian woman presented to the Emergency Department with nausea and pain in chest and left shoulder. The same symptoms she felt two days before, when she visited family doctor. ECG was normal and her pain was understood as inter costal myalgia. On the admission day she had a chest discomfort again and due to significantly increased high sensitive troponin level and other markers of myocardial necrosis she was considered as acute coronary syndrome and admitted to the intensive coronary care unit. Serum chemistries were notable for a potassium concentration of 3.2 mmol per liter. Electrocardiogram recorded in ED showed a T wave inversion in pre cordial leads. The initial diagnosis was non ST elevation myocardial infarction. Echocardiogram showed presence of hypokinesis of basal and medial part of anteroseptal segment with normal systolic function. The coronary angiography was done soon after admission and revealed slow flow phenomenon through the left coronary arteries. A more detailed history revealed that the patient had intensified sweating a few days during the week before hospitalization. In the past history, two and a half months before, she was hospitalized because of tonsillar abscess. It was drained and further she was treated with antibiotics. One year ago she gave birth. She smoke six years approximately 10 cigarettes a day and stopped smoking after having tonsillar abscess. Thirteen years prior she was diagnosed with infectious mononucleosis A positive family history present additional risk factor for ischemic

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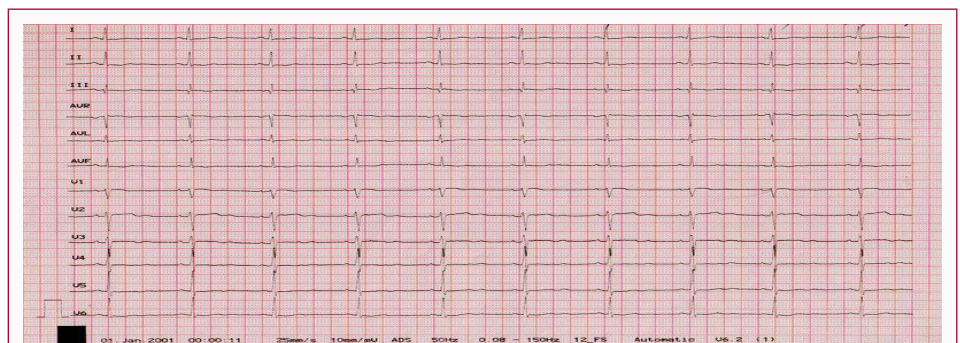


Figure 1: ECG.

Table 1: Lab tests.

Assay	Result 1	Result 2	Expected value
Troponin HS	1850 ng/L	2658 ng/L	0-14 ng/L
AST	67 U/L	125 U/L	14-36 U/L
ALT	26 U/L	31 U/L	9-52 U/L
CK	536 U/L	1029 U/L	30-135 U/L
CKMB	99 U/L	172 U/L	0-25 U/L
LDH	277 U/L	367 U/L	123-243
K+	3.2 mmol/L	3.9 mmol/L	3.5-5.1 mmol/L

cardiovascular disease. She was released from hospital with diagnosis MINOCA, according to the Fourth Universal Definition of MI and followed by adequate therapy [1] (Table 1 and Figure 1).

Discussion

Coronary Slow-Flow Phenomenon (CSFP) is an angiographic phenomenon characterized by the slow passage of contrast in the absence of obstructive coronary artery disease, reported in 1% to 7% of all coronary angiograms [2]. The pathogenic mechanism stays unclear, and there are several conditions associated with “secondary” coronary slow flow: coronary spasm, embolism, heart failure, angioplasty and stenting of AMI, valvular disease, connective tissue disorders [3]. Hypokalemia may produce changes on ECG that can be confused with myocardial ischemia. When potassium is between (3.0 to 3.8) mmol per liter, on ECG is usually seen flattening or inversion of T waves [4].

Conclusion

In this case hypokalemia induced slow contraction of the heart, reducing the blood supply and probably reducing already weakened flow through the coronary arteries. Remembering of her previous hospitalization, it is important to mention that inflammatory mechanisms have also been tested in the context of CSFP. Many studies showed that those parameters might be an indicator of endothelial dysfunction, which have an effect on coronary slow flow [2]. It is very important to improve awareness of this disease among clinicians and to improve methods of coronary recording and functional testing that can be very useful for lighting mechanisms of CSFP.

References

1. Thygesen K, Alpert JS, Jaffe AS, Chaitman BR, Bax JJ, Morrow DA, et al. Fourth Universal Definition of Myocardial Infarction. *Eur Heart J*. 2019;40(3):237-69.
2. Ajit M, Suma MV. Coronary slow flow phenomenon. *European Society of Cardiology*. 2013;11(25).
3. Wang X, Nie SP. The coronary slow flow phenomenon: characteristics, mechanisms and implications. *Cardiovasc Diagn Ther*. 2011;1(1):37-43.
4. Petr W. Hypokalemia and the heart. *European Society of Cardiology*. 2008;7(9):9-12.