

Treatment of a patient with NSTEMI and implanting intracoronary stent in Ramus intermedius artery trifurcation left main – Case report

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Abstract

Acute coronary syndrome is a term used to describe conditions associated with sudden, reduced blood flow to the heart. One condition associated with acute coronary syndrome is myocardial infarction; when cell death results in damaged or destroyed heart tissue. Even when acute coronary syndrome causes no cell death, the reduced blood flow alters the heart function and indicates a high risk of a heart attack. Acute coronary syndrome causes severe chest pain or discomfort. It is a medical emergency that requires prompt diagnosis and delivery to the emergency cardiologic unit. Treatment goals include improving blood flow, treating complications and preventing future problems. In the Clinical Hospital of Tetovo was admitted a patient with chest pain and discomfort one hour before hospitalization. ECG was performed at admission with no ST segment denivelisations. During the admission hour the Troponine I level was in normal range, after two hours the laboratory was repeated and the second value for troponine was positive. Chest discomfort was still present. The patient underwent Percutaneous coronary intervention (PCI) via radial artery (TRA), after visualization of coronary arteries with Left main artery (LMn) trifurcation and Ramus intermedius artery occlusion in 100%, a stent was implanted. Left main trifurcation is an anatomical variation among the population with an average rate 15-30 %.

Keywords: NSTEMI, Left main artery trifurcation, Ramus intermedius artery occlusion.

1. Case report

A 42 years old patient with chest pain was admitted to Clinical hospital of Tetovo. Chest pain started one hour before admission to hospital. The ECG was performed with no significant ST segment changes (Figure 1). First laboratory findings of troponine I levels (68.29 ng/L) were negative, below the referent value (<80, 35 ng/L).

After two hours due to the chest pain persistence, the laboratory and ECG re-evaluation was done. Second laboratory findings were as described below. Troponine I 13633,27 ng/L (referent value <80,35 ng/L), CK 1075 U/L (referent value 39-308 U/L), CK-MB 69,00 U/L (referent value 7-25 U/L). The high levels of cardiac biomarkers and chest pain indicate non ST elevation myocardial infarction. Then was administrated Amp Heparin 5000 I/U, Tbl. ASA a 300 mg, Tbl Clopidogrel 600 mg , Tbl Rosuvastatin 40 mg and Amp Heparin 25.000 I/U in 500 ml saline solution /24 h.

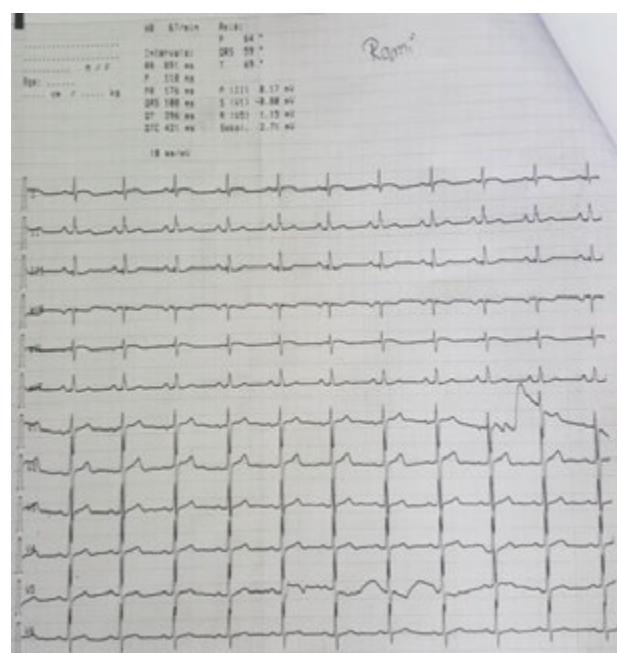


Figure 1. ECG of patient without significant ST segment changes

The patient was indicated for Percutaneous Coronary Intervention (PCI) which is performed in Catheterization OR of Clinical Hospital of Tetovo. The procedure is performed on the same day without any complications. The procedure was performed through Radial artery (TRA) with 6F introducer.

Right coronary artery (RCA) angiography was made with GR 4.0 catheter, Left coronary angiography was made with GL 3.5 catheter. The trifurcation of the Left main artery was composed of the left anterior descending coronary artery (LAD), Circumflex artery (Cx) and Ramus intermedius occluded 100 %. (Figure 2).

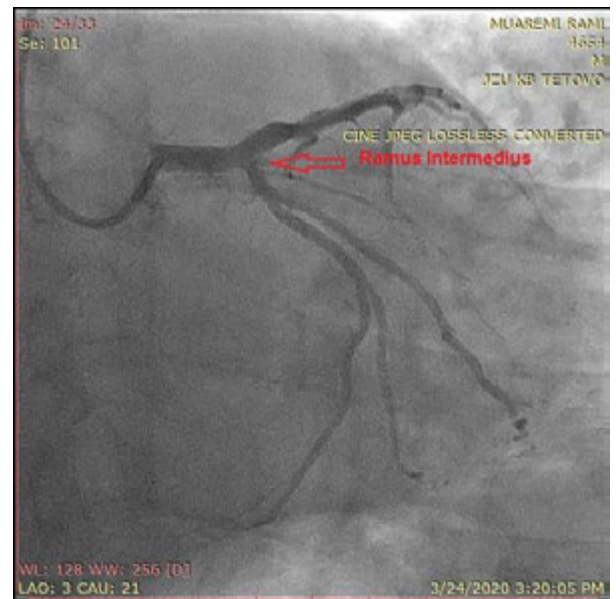


Figure 2. Coronarography of LMn and proximal Ramus intermedius occlusion (red arrow)

The implanting of the stent was indicated.

The guiding catheter GL EBU 3.5 was used, occlusion was wired with PT² guide wire. Pre dilatation was performed three times with balloon dilatation catheter 1.5x20 mm 20 atm, 1.5x20 mm 24 atm and 2.0x29 mm 12 atm 10 sec.

Resolute Integrity stent 2.5mm x 26.0 mm, dilated with 16 atm for 10 sec was implanted.

Three consecutive post dilatations were performed with balloon dilatation catheter 2.75x15mm 14 atm 10 sec, 2.75x15mm 14 atm 10 sec, 2.75x15mm 12 atm 10 sec.

During the intervention were administrated 3000 IE Heparin, 90 ml contrast solution was used. The procedure takes 45 min; fluoroscopy time was 4 min 34 sec.

The artery showed good reperfusion after stent implantation. (Figure 3)

Vital parameters such as blood pressure and pulse were stabile.

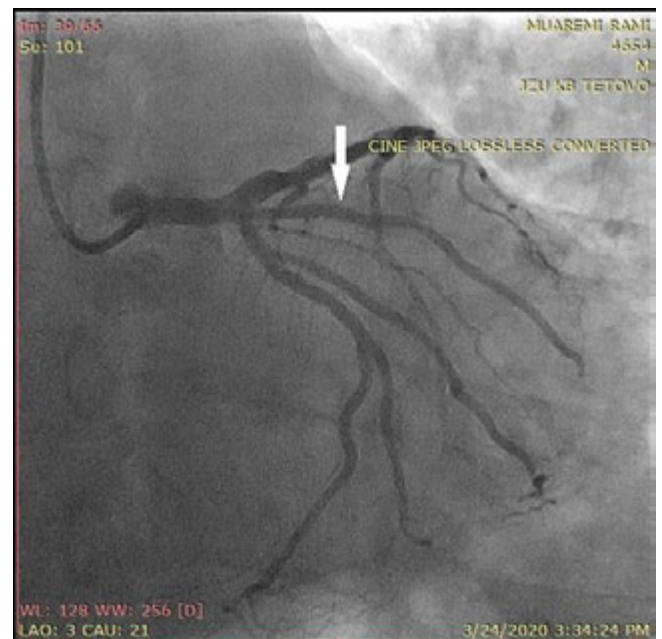


Figure 3. Ramus intermedius after stenting, white arrow

The patient was discharged from the hospital one week after the intervention the echocardiography and control laboratory was done, laboratory findings in discharge were with declined values of cardiac markers.

2. Discussion

Cardiovascular diseases remain one of the leading causes of death worldwide. Acute coronary syndrome is a life-threatening disease with serious implications in patients' health and health systems all over the world. Cardiovascular diseases are represented with 31% of overall mortality according to WHO.

Acute coronary syndrome (ACSy) is a term used to describe conditions associated with sudden reduced blood flow to the heart. ACSy includes patients with acute myocardial infarction (AMI) with ST segment elevation and patients with unstable angina and non ST segment elevation or NSTEMI (Marco Roffi *et al*, 2016).

Acute myocardial infarction is defined as cardiomyocyte necrosis in a clinical setting consistent with acute myocardial ischemia. There are many risk factors contributing to the development of any form of myocardial infarction including dyslipidemia, hypertension, cigarette smoking, diabetes mellitus, genetic factors, age, and gender also lifestyle (A. Fauci *et al*, 2008). Risk factors are divided into modifiable and non-modifiable. The main symptom of the AMI is chest pain. In every case with chest pain, an ECG is indicated, the levels of cardiac Troponine are elevated in a patient with NSTEMI and determine the further treatment of a patient with chest pain (Joseph G. Murphy *et al*, 2013), it is also known that cardiac troponine levels could be higher than reference values in other diseases such as pulmonary diseases. Troponine levels remain a crucial diagnostic tool for the diagnosis of non-ST segment elevation myocardial infarction. According to ESC Guidelines in a patient with myocardial infarction should be given antiplatelet therapies: acetylsalicylic acid and P2Y inhibitors loading doses, also heparin before the percutaneous intervention.

Percutaneous coronary intervention (PCI) remains the method of choice for the treatment of myocardial infarction. The PCI allows visualization of coronary circulation using contrast. The main coronary arteries are the right coronary artery (RCA) and left main coronary artery (LMCA). Both of these originate from the root of the aorta (Joseph G. Murphy *et al*, 2013). The left main coronary artery bifurcates in the left anterior descending coronary artery (LAD) and Circumflex artery (Cx). In ~20 % of the patient, the left main trifurcation is present with persistent and visible Ramus intermedius artery (Koşar P *et al*, 2009). Left the main trifurcation is defined as the dividing of the left main into three arteries each having a diameter >2.25mm and both side branches (SBs) originating <3 mm from the main branch. Cases with ramus intermedius lesions are also rare.

This case report shows a patient with non ST segment elevation ECG with increased cardiac markers and chest pain, such patients must be re-evaluated and have in consideration of eventual coronary artery occlusion. This case presents an angiographic finding of left main artery trifurcation that is not common in catheterization OR. The Ramus intermedius occlusion with culprit lesion was seen during coronarography and implantation of the stent was mandatory. Without appropriate evaluation of patients according to AHA and ESC guidelines patients could not be accurately diagnosed. The patients with myocardial infarction should be further monitored to avoid and if occurs to be treated complications from Percutaneous intervention or myocardial infarction.

3. Conclusion

Chest pain is the main symptom of acute myocardial infarction. It may vary in quality and quantity but must be seriously considered. We can conclude that every patient with chest pain has to undergo a laboratory examination of cardiac troponine to appropriately diagnosing NSTEMI. Left main trifurcation with a lesion on the ramus intermedius artery is also a rare angiographic finding and may be a challenge for a less experienced interventional cardiologist.

This case report is about a patient with Ramus intermedius artery occlusion treated with a stent implanting to the occluded artery with good reperfusion and without complications. The patient was further monitored by clinicians. This procedure was done in catheterization OR in the Clinical Hospital of Tetovo. The aim of this study is to present a treatment of NSTEMI patient with Left main artery trifurcation and Ramus intermedius artery occlusion with implantation of the stent and to show importance of chest pain symptoms and cardiac troponine level examination in diagnosing myocardial infarction.

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