

MYOCARDIAL INFARCTION AT YOUNG ADULTS – RISK FACTORS AND MANAGEMENT

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Abstract:

Introduction: Generally, the myocardial infarction is far more common among the population which is over 45 years. However, on rare occasion it can be seen amongst the younger population such as the above discussed case.

Objective: The report from the case of this overview shows an acute myocardial infarction in a young 28-year-old man, due to thrombotic occlusion that has nothing to do with coagulation problems.

Methods: The Coronary Angiography is of paramount importance when it comes to reaching a correct diagnosis, and by extension, treatments for such cases. Moreover, the detailed clinical case history further aided in determining the key risk factors.

Results: When it ensues in younger age, the myocardial infarction is associated with significant morbidity, psychological effects and financial limits to the individual and his or her family.

Conclusions: In the examined case we described the contemporary management of a myocardial infarction event, wherein the patient was advised to stop smoking, form a consistent regular exercising physical activity regime, put more conscious effort into having a healthy diet, and reduce stress levels as much as possible.

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Introduction

Cardiovascular diseases are the leading cause of death worldwide, meaning that annually, they have a higher mortality than any other disease. At a minimum, three out of four cardiovascular deaths worldwide occur in countries with low to average income (WHO, 2018; Konstantinova et al., 2014). Provided with an effective healthcare system, i.e. both medical professionals and the necessary equipment, cardiovascular deaths may be cut by as much as 40% in Bulgaria according to a 2016 Eurostat analysis focused on preventable deaths in the EU (Hristova et al., 2019; Hristova and Koleva, 2015). The main modifiable cardiovascular disease risk factors in Bulgaria match the ones worldwide. Said main modifiable factors often simultaneously coexist, which multiplies the risk of a cardiovascular event of occurring. As such, this must oftentimes be treated in a complex way. We present a ST-Elevation Myocardial Infarction (STEMI) case, where the patient, a 28-year-old male, has a thrombotic occlusion in the right coronary artery (RCA) on his inferior wall of the left ventricle.

Objective

The report from the case of this overview shows an acute myocardial infarction in a young man, due to thrombotic occlusion that has nothing to do with coagulation problems. We then define risk factors in his case.

During November of 2019 a young male, 28 years of age, is admitted at the Ward of Cardiology and Invasive Cardiology of the Kanev University Hospital in Ruse, Bulgaria. This is the patient's first admittance in the healthcare facility, he has chest point has a history of syncope which were first diagnosed just a few weeks ago. During the day of hospitalization, he's experiencing inconsistently recurring chest pain located behind the sternum – the pain occurs both at rest and during physical activity and is accompanied by hand formication.

Then his coronary risk factors were determined as follows. First, his family cardiovascular history was taken into account, it was discovered that the patient's father had a stent implantation (angioplasty), due

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to myocardial infarction. Secondly, the young man smokes approximately a box of cigarettes daily. Next, the patient leads a sedentary lifestyle as he is a computer specialist. Furthermore, he has little to no regular exercise as he does not participate in any sports. The patient tells us that half a year ago, he had taken medicaments against depression and an anxious mental disorder.

Methods

Left heart catheterization and selective coronary arteriography (SCAG) and percutaneous coronary intervention (PCI) were performed.

The patients' laboratory results show dyslipidemia (general cholesterol – 5.99mmol/l; LDL – 4.2mmol/l).

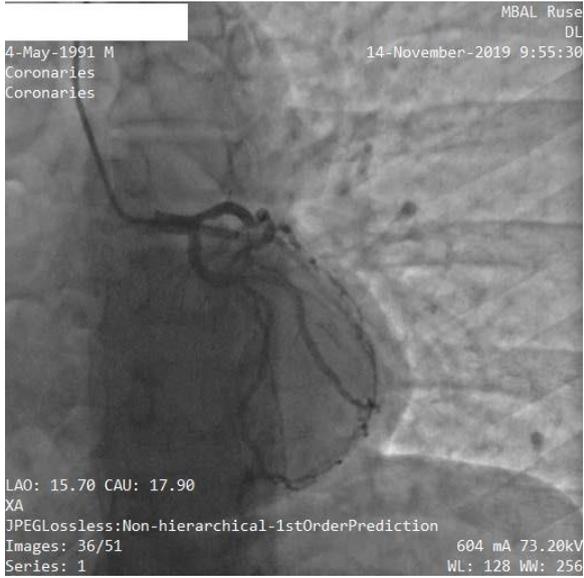
The routine laboratory blood tests identified stress hyperglycemia (blood sugar 7.2mmol/l) and high rates of cardiac enzymes: CPK – 795.0 U/l; CK MB1 – 113.2 U/l; Troponin immunochromatologically – 4.771 ng/ml. The patients' laboratory results, such as full number of blood cells, hemocoagulation, nephritic and liver biochemistry, are normal.

His baseline ECG showed – sinus tachycardia 120/ per minute; semi-vertical electric position; CT-depression in I, aVL, V 3-6; pathological Q-cog in II, III, AVF. RR 140/80 is being measured.

An ultrasound examination revealed a discrete anteriorly septal and basal hypokinesis.

Results

From the SCAG a proper type of coronary circulation is determined.

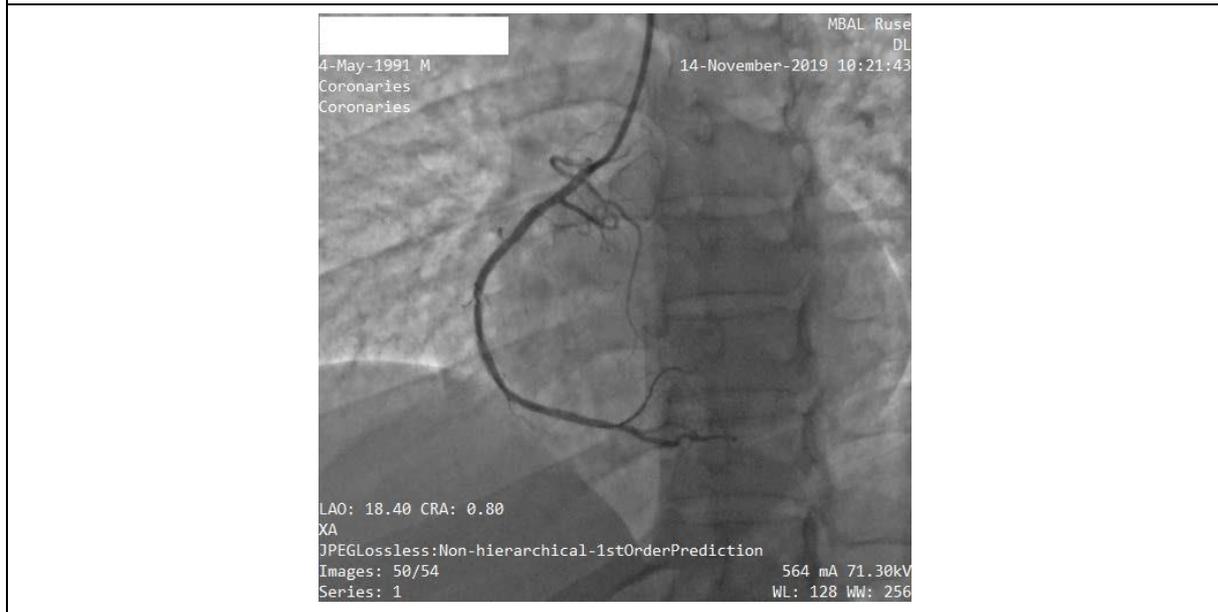
<p>Figure 1: LCA diagnostics: LM – no stenosis, LAD – unevenness, LCx – non-significant stenosis.</p>	<p>Figure 2: Thrombotic occlusion of RCA.</p>
 <p>MBAL Ruse DL 4-May-1991 M 14-November-2019 9:55:30 Coronaries Coronaries LAO: 15.70 CAU: 17.90 XA JPEGLossless:Non-hierarchical-1stOrderPrediction Images: 36/51 604 mA 73.20kV Series: 1 WL: 128 WW: 256</p>	 <p>MBAL Ruse DL 4-May-1991 M 14-November-2019 9:57:43 Coronaries Coronaries LAO: 18.40 CRA: 0.80 XA JPEGLossless:Non-hierarchical-1stOrderPrediction Images: 1/31 582 mA 70.30kV Series: 1 WL: 128 WW: 256</p>
<p>Source: Authors</p>	<p>Source: Authors</p>

A proper type of coronary circulation is determined; LM – no stenosis, left anterior descending (LAD) – unevenness, LCx – non-significant stenosis and RCA – thrombotic occlusion in a proximal segment. TIMI Flow – 0.

A percutaneous coronary intervention (PCI) was performed – with arterial introducer 6F in radial artery. A JR Guide liner 3.5/6F was used, and a coronary wire Runthrough®, placed in the outskirts of the vessel. Predilation with a balloon 2.5/15mm, after which two drug eluting stents (DES) were implanted: Orsiro® 3.0/18 and Orsiro 2.75/15mm with an optimal result.

No complications during, or after the procedure are registered – post-procedure he had stable hemodynamics and no chest pain. A dual antiplatelet therapy at home was recommended – Brilique® 2x90mg for 12 months and Acetysal Cardio® 100mg at evening for constant intake, as well as for beta-blocker, statin and PPI.

Figure 3: Recovered blood flow after implantation of two drug eluting stents.



Source: Authors

Discussion

Generally, the myocardial infarction is far more common among the population which is over 45 years. However, on rare occasion it can be seen it can be found amongst the younger population such as the above discussed case. Smoking, obesity and the lack of physical activity are defined as the main reversible risk factors of cardiovascular diseases among younger people. When it ensues in the younger age, the myocardial infarction is associated with significant morbidity, psychological effects and financial limits to the individual and his or her family (Egred et al., 2005).

The well-known risk factors of cardiovascular diseases are divided in two basic groups: modifiable (reversible), and unmodifiable (irreversible) ones. The former, are factors that can be reduced by the patients themselves, controlled or treated, and could reduce the risk of development of cardiovascular diseases. They are as follows: smoking, high rates of blood cholesterol, high blood pressure, insufficient physical activity, obesity and overweight, diabetes, and chronic psycho-emotional stress. Among the unmodifiable risk factors are: age, gender, family predisposition, social and economic state (Koleva and Hristova, 2014; Koleva, 2016). Most cardiovascular diseases are preventable, should integrated action be taken against the aforementioned risk factors. It is undisputable that the main risk factors for cardiovascular diseases are widely spread in Bulgaria (BMH, 2014).

The low physical activity, along with a number of other risk factors, lead to higher morbidity and mortality from ischemic heart disease, cerebrovascular disease, diabetes, hypertension, etc. (Koleva, 2015). By taking into account a conducted research at the request of the European Commission, 68% of Bulgaria, Greece and Portugal's population, never does any sports activities. In the examined case above, the patient had both reversible and irreversible risk factors for cardiovascular diseases. We did our best in convincing him to try to influence on the reversible ones.

Conclusion

Men are exposed to greater risk of myocardial infarction at younger age, and much more often than women. But the lower age limit gets threatening levels. The frequency of myocardial infarction events in the population below 30 is on the raise for both genders. That combined with the fact that cardiovascular events, on average, tend to be more severe and life-threatening at an early age is truly worrisome. Furthermore, a rapidly growing portion of the youthful population prioritizes a healthy lifestyle only post-factum a life-threatening event. In summary, in the examined case we described the contemporary management of a myocardial infarction event, wherein the patient was advised to stop smoking, form a consistent regular exercising physical activity regime, put more conscious effort into having a healthy diet, and reduce stress levels as much as possible.

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