



## Therapeutic Modalities in Patients with Ischemic Heart Disease

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### ABSTRACT

**Objective:** Analysis of application of contemporary therapeutic modalities in patients with ischemic heart disease (IHD).

**Background:** Acute Coronary Syndrome (ACS) is one of a number of syndromes in a range of clinical manifestations of atherosclerosis of the coronary arteries or ischemic heart disease, along with other clinical manifestations such as angina pectoris, chronic myocardial infarction, valvular disease, and eventually cardiac failure. Access to the management of ischemic heart disease depending on symptoms, functional and anatomical complexity, includes a variety of therapeutic modalities beginning from medical treatment until emergent treatment using percutaneous coronary interventions or aortocoronary bypass surgery. All patients with ischemic heart disease, for the prevention of disease progression and recurrence of cardiovascular events, should be managed by guideline directed medical therapy (GDMT). The most important groups of drugs are anti-ischemic drugs, antithrombotic (antiplatelet) drugs, anticoagulants and statins. Even revascularization is indicated in patients with IHD and progressive or refractory symptoms, regardless of the management of medication. In our patient after admission and during hospitalization there was no progression of symptoms. Abrupt cessation and pain relief, rapid return of ST-segment according to the isoelectric line, with optimal pharmacotherapeutic management led to the stabilization of the patient. If there is an occlusion of the coronary artery, the most important is to establish reperfusion as soon as possible. In our patient reperfusion assessment is determined really fast (coronary angiography), and according to the TIMI (Thrombolysis In Myocardial Infarction) levels are classified in the TIMI 2 (there was no thrombotic occlusion of coronary arteries and a partial reperfusion is established). Despite the fact that percutaneous coronary intervention (PCI) is the method of choice in the treatment of ACS, positive effect of anti-ischemic drug therapy in our patients influenced the decision to cancel the emergency treatment and continue the treatment only by using medical therapy.

**Conclusion:** The initial therapeutic approach by GDMT (Guideline directed medical therapy) for patients with ischemic heart disease (IHD) reduces the progression of atherosclerosis and prevent coronary thrombosis. In patients with ischemia, routine revascularization (with percutaneous coronary intervention or coronary artery bypass graft surgery) plus GDMT improve prognosis and reduce complications and improve quality of life compared to treatment only by using GDMT. The optimal drug therapy, primary and secondary prevention of IHD by the European Society of Cardiology (ESC) guidelines have almost the same prognostic significance as revascularization.

**Key words:** ischemic heart disease (IHD), acute coronary syndrome (ACS), Guideline directed medical therapy (GDMT), European Society of Cardiology (ESC) guidelines, percutaneous coronary intervention (PCI).

### INTRODUCTION:

The ACS is one of a number in a range of clinical manifestations of atherosclerosis of the coronary arteries or ischemic heart disease, along with other clinical manifestations such as angina pectoris, chronic myocardial

infarction, valvular disease of heart and eventually cardiac failure. (1) Long-term exposure to many risk factors such as sedentary lifestyle, obesity, dyslipidemia and diabetes as well as the long process of endothelial dysfunction and inflammatory response lead to systemic sclerosis, including



coronary atherosclerosis. (2) Access to the management of ischemic heart disease, which depend on symptoms, functional and anatomical complexity, includes a variety of therapeutic modalities beginning from medical treatment until emergent treatment using percutaneous coronary interventions or aortocoronary bypass surgery. All patients with ischemic heart disease (IHD) for the prevention of disease progression and recurrence of cardiovascular events should be managed by the guideline directed medical therapy (GDMT).(3) This means optimal medical therapy and optimal lifestyle to reach target lipid values, blood pressure, and blood glucose. In order to achieve the target values of blood pressure, lipid and glucose is necessary to apply the appropriate pharmacological therapy and ensure patient compliance with its intake, and control risk factors and using ESC guidelines for primary and secondary prevention of IHD. (4) Modern pharmacological treatment reduces pain and improves quality of life, reduces morbidity and mortality. The most important group of drugs are the anti-ischemic drugs (nitrates, beta-blockers, ACE-inhibitors, angiotensin receptor blockers (ARB), and calcium antagonists), anti-platelet / antiplatelet agents (aspirin, thienopyridine and inhibitors of platelet GPIIb / IIIa receptor), anticoagulants (heparin ), and statins. The following group of drugs have the great impact on the progression of coronary atherosclerosis, which is in fact the process of atherothrombosis, on symptoms and most importantly on prognosis. The drugs are: statins, antiplatelet drugs (primarily aspirin), ACE inhibitors and beta blockers. Revascularization is indicated in patients with IHD and progressive or refractory symptoms regardless of the management of medicament.

**OBJECTIVE:** Analysis of application of contemporary therapeutic modalities in patients with ischemic heart disease (IHD).

**CASE REPORT:** 54 year old man, a long-standing hypertension, has been smoking for 30 years, overweight. He had been regularly taking the recommended antihypertensive therapy for 7 years. (Lisinopril tablets 10 mg 1x1). 6 months ago, due to the appearance of dry cough, Amlodipine 10 mg was included in the treatment of hypertension instead of lisinopril. At medical examination: RR 160/100 mm Hg, heart action tachycardia, rhythmic, pulse 110 / min. ECG: ST elevation in the inferior leads. After a three-day hospitalization at the Clinic for Cardiovascular Diseases University Clinical Centre Tuzla, with monitoring and additional diagnostics, discharged with a diagnosis of three-vessel coronary artery disease with a

recommendation to continue hygienic dietary regime with maximum control of all risk factors. Trandolapril tablets 2 mg 1X1, bisoprolol tablets 2.5 mg 1x1, Clopidogrel tablets 75 mg 1x1, aspirin tablets 100 mg 1x1, rosuvastatin 20 mg tablets 1x1. After a month, and after three months, the patient is stable with good therapy submission, and we recommended continuing of the same treatment for next six months when the new control is convened.

**DISCUSSION:** The optimal approach to the management of patients with IHD can be hormonal and surgical and both of them depend on the symptoms of the disease, the prognostic parameters, ie the degree of complexity of the angio-anatomical coronary lesions. The goals of drug therapy are the elimination or reduction of angina and prognosis improving. Optimal medical therapy that includes the optimal way of life with the attainment of the target lipid values, blood pressure, and blood glucose, has the same prognostic and symptomatic characteristics as revascularization.(5) The anatomical complexity of coronary artery disease and method of revascularization is determined by the patients, and generally speaking, surgical revascularization has several advantages over PCI and it depends on the complexity the anatomy of coronary artery disease (expressed by SYNTAX score).(6) Now there is the implementation of ISCHEMIA trial (International Study of Comparative Health Effectiveness With Medical and Invasive Approaches [ISCHEMIA] and the results will compare the effects of both therapeutic modalities. ISCHEMIA trial is used to determine the optimal approach to the management of patients with IHD. (7) In our patient after admission and during hospitalization there was no progression of symptoms. Abrupt cessation and pain relief, rapid return of ST-segment according to the isoelectric line, with optimal pharmacotherapeutic management led to the stabilization of the patient. Despite pharmacotherapeutic management, revascularization is indicated in patients with IHD (progressive or refractory symptoms). If there is an occlusion of the coronary artery, the most important is to establish reperfusion as soon as possible. (8) In our patient reperfusion assessment is determined really fast (coronary angiography), and according to the TIMI (Thrombolysis In Myocardial Infarction) levels are classified in the TIMI 2 (there was no thrombotic occlusion of coronary arteries and a partial reperfusion is established). Despite the fact that percutaneous coronary intervention (PCI) is the method of choice in the treatment of ACS, positive effect of anti-ischemic drug therapy in our patients influenced the decision to cancel the emergency treatment and continue the treatment only by using medical therapy. In patients with



significant ischemia strategy routine revascularization (with percutaneous coronary intervention or coronary artery bypass graft surgery as appropriate) plus GDMT reduces mortality or myocardial infarction, or improves the quality of life in relation to the GDMT therapeutic approach. Also, in the diagnosis of patients with suspicion of coronary artery disease, the introduction of fractional flow reserve computed tomography (FFR-CT), will open new horizons. FFR-CT showed high sensitivity and moderate specificity for identifying ischemia in intermediate coronary stenosis. It is shown that this technology has the potential to significantly reduce the number of invasive coronary angiography and coronary angiography normal rate which have not been accompanied by surgery. Initial data indicate that CT-FFR is able to predict the hemodynamic effects of the stent, and even the effect of bypass surgery. (9)

**Conclusion:** The initial therapeutic approach by GDMT (Guideline directed medical therapy) for patients with ischemic heart disease (IHD) reduces the progression of atherosclerosis and prevent coronary thrombosis. In patients with ischemia, routine revascularization (with percutaneous coronary intervention or coronary artery bypass graft surgery) plus GDMT improves prognosis and reduces complications and improves quality of life compared to treatment only by using GDMT. The optimal drug therapy and primary and secondary prevention of IHD by ESC guidelines have almost the same prognostic significance as revascularization.

Conflict of interest: none declared.

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