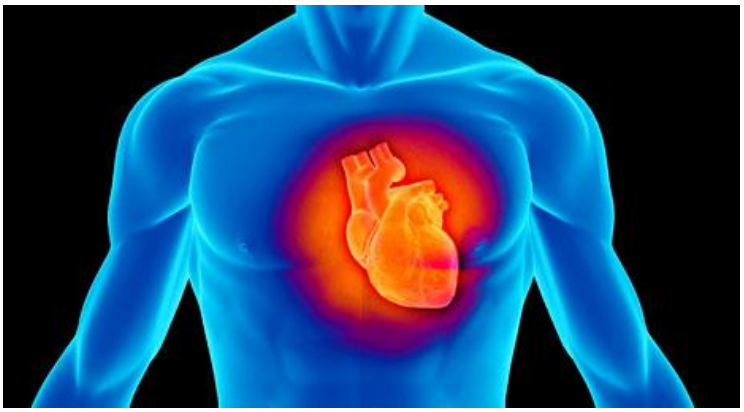
MYOCARDIAL INFARCTION



Myocardial Infarction (MI), also known as Heart Attack, is a necrosis of a specific area of the heart muscle, due to reduction or interruption of blood flow, and thus of oxygen. According to the European Heart Association, the American College of Cardiology and the American Heart Association, a myocardial infarction is diagnosed when the following criteria are met:

1. Positive biomarkers (positive Troponin test) with ischemic symptoms, electrocardiographic alterations and signs of heart tissue necrosis in angiography
2. Cardiac muscle necrosis and cardiac death without confirmation by cardiac biomarkers.

It is not uncommon to have signs of the upcoming MI some days or even weeks prior to its manifestation. The warning sing of the acute condition can be a feeling of pressure or tightness in the chest, discomfort and fatigue that cannot be justified by daily work and routine. The most typical symptom of myocardial infarction is severe retrosternal pain, which lasts 30-60 minutes, and could be radiating upwards to the neck and jaw and/or down the left arm.

It is often described as a feeling of burning or intense pressure on the chest (as if there is a weight over the person's chest). It is not uncommon for the infarction to be hidden behind a feeling of indigestion or a sense of stomach fullness and gas. However, sudden onset with no warning signs and only severe pain and sweating is not uncommon. Furthermore, in diabetic patients a “silent” myocardial infarction could be spotted only with an electrocardiogram (ECG).

Is it possible to effectively manage the symptoms?

In the event of the above symptoms, the person, or a member of his/her family, must call an ambulance fully describing the symptoms or go to the nearest hospital, without of course driving him/herself.

The ambulance crew will perform an ECG and detect the infarction. Immediately an intravenous infusion is placed and oxygen is administered. In some countries, pre-hospital Myocardial Infarction management involves the administration of aspirin and nitroglycerin, in sprays or sublingual, during transportation to the hospital. In Greece, if an ambulatory ambulance unit is called, a physician is present and the standard protocol for MI are followed. If a plain ambulance (without a physician and only with paramedics) is called, then aspirin and nitrates (isosorbide dinitrate or pensordil) are administered, and, when needed, adrenaline, always following a physician's order. All the above described interventions are performed if the person is conscious and has a heartbeat.

In case of cardiac arrest without an emergency medical care team available, Cardiopulmonary Resuscitation (CPR) can be offered by anyone with the appropriate knowledge, and, at the same time, the National Emergency Sevices (166) are notified. Depending on the damage to the heart muscle, difibrilation (administration of electricity) and the administration of medicationsmay be necessary.

In the Accident's and Emergency department, if the person is conscious and with heartbeat, an ECG will be performed and nitroglycerin (for vascular dilation), aspirin, painkillers (for acute pain) and oxygen will be administered. The American Heart Association proposes for all Myocardial Infarction patients the administration of β-blockers (atenolol or metoprolol), in order to reduce heart rate and blood pressure. These patients are hospitalized in the Intensive Coronary Care Unit where they are placed on continuous monitoring. If the person has arrived at the hospital within 90 minutes of the episode, and the hospital has a hemodynamic unit, an angiography and angioplasty are performed, if required. However, if more than two hours have passed or if there is no access to a hemodynamic unit, a special agent called thrombolytic agent is administered intravenously. The patient should be under 24-hour monitoring to avoid side-effects and complications from drug administration (bleeding).

After stabilization and treatment of the acute phase of the Myocardial Infarction, the person gets discharged from the hospital with instructions for his medication, as well as other instructions that he should follow for the rest of his life.

The patient, during hospitalization, should have been informed by the healthcare professionals (physician, dietitian, nurse) about the diet after discharge. The adoption of a low-fat and salt diet, with fruits and vegetables is essential. It is common to hand out a prepared typed diet or a list of foods that should be preferred.

Furthermore, it is vital to start exercise a few weeks after the heart attack. If it is not possible to follow an organized exercise program, daily walking is recommended for 20-30 minutes. At the same time, instructions on smoking cessation should be provided, as well as reference to the smoking cessation clinic for help and assistance.

What are the causes of Myocardial Infarction?

Atherosclerosis is the leading cause of myocardial infarction. Detachment a part of the atheromatous plaque into the blood vessels is responsible of the formation of thrombus. This small or larger piece of atherosclerotic plaque activates the platelets, a blood component, and the blood coagulating mechanism, creating a thrombus that travels through the blood vessels up to the point where it stops and becomes wedged. This point may be a smaller or larger vessel, depending on the size of the thrombus. From the wedging point and peripherally the heart muscle is no longer functioning.

In addition to arteriosclerosis, a heart attack could be manifested due to hypertrophic cardiomyopathy, coronary aneurysm, aortic dissection and aortic rupture, severe blood loss or persistent severe anemia and the use of substances (cocaine, amphetamine or ephedrine). Finally, acute coronary inflammation or abnormalities in the heart's construction can cause a heart attack in children and adolescents.

Is Myocardial Infarction preventable?

Prevention is, to some extent, possible. People with a family history of heart problems and/or sudden death syndrome should be checked at regular intervals in order to identify a potential problem. In addition, a number of aggravating factors can be modified and reduce the chances of Myocardial Infarction. Smoking, obesity, sedentary lifestyle, lack of exercise, unhealthy diet and intense daily stress are some of them. At the same time, proper management of hypercholesterolemia and dyslipidemia, diabetes mellitus, hypertension and peripheral vascular disease contribute positively to the prevention or limitation of myocardial infarction incidents.

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