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Introductory Chapter: Atherosclerotic Cardiovascular Disease

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1. Introduction

Atherosclerotic cardiovascular disease is still the most common cause of death among adults [1]. Its prevalence is increasing in developing countries and despite all advances in both diagnostic tools and treatment modalities, it is still very common in the developed world. The nutritional and metabolic problems especially obesity, diabetes mellitus, hypercholesterolemia and also overuse of dietary salt play a pivotal role in increased cardiovascular morbidity and mortality worldwide [1, 2].

The atherosclerotic cardiovascular disease has got a wide clinical spectrum from silent ischemia to sudden cardiac death [3]. Myocardial infarction (MI) is at the center of this clinical spectrum, and a majority of current clinical efforts are mainly focused on the diagnosis and treatment of myocardial infarction. There are still scientific efforts to provide more comprehensive and realistic definition for myocardial infarction. The latest expert consensus document including experts from the main cardiovascular societies including European Society of Cardiology (ESC), American College of Cardiology (ACC), American Heart Association (AHA) and World Heart Federation (WHF) established the most comprehensive definition and classification of myocardial infarction to date [4]. Five major types of MI include type 1 MI—MI associated with occlusive or nonocclusive athero-thrombotic coronary lesions, type 2 MI—MI associated with mismatch between oxygen supply and demand, type 3 MI—MI in patients with ischemia-associated cardiac death, type 4a, 4b, and 4c—MI associated with percutaneous coronary intervention (PCI), and type 5 MI—MI associated with coronary artery bypass grafting surgery [4].

From the very beginning of human life in earth, three major issues including contagious diseases, shortage of food, and wars diminished human population for several years. To date, for the first time in history, modern medicine is providing us great success against contagious

diseases and advances in agriculture have almost finished the scarcity of food. In our era, deaths from over nutrition, obesity, diabetes, and hypercholesterolemia appear to overwhelm deaths from shortage of food. Furthermore, increased life expectancy and aging of the population have also increased cardiovascular diseases.

The management of ST-segment elevation myocardial infarction (STEMI) is very dynamic and several changes are recommended by the current guidelines from 2012 to 2017 [5]. There are more evidence to prefer radial access and drug-eluting stents (DESs) in primary preventions. Complex revascularizations during primary percutaneous intervention (PCI) were accepted as contraindicated (class III indication) in 2012; however, the 2017 guidelines recommend complete revascularization during index primary PCI in STEMI patients in shock with class IIa indication. Thrombus aspiration is no more recommended during primary PCI according to the new guidelines. The use of enoxaparin and early hospital discharge are encouraged in the new guidelines (class IIa). Additional lipid lowering therapy is recommended (class IIa) if low density lipoprotein levels are over 70 mg/dL despite maximum tolerated statins [5].

Current European revascularization guidelines also recommend radial access as standard approach in both angiography and PCI, use of DES instead bare metal stents (BMS) in any PCI, use of SYNTAX score in revascularization procedures involving left main coronary artery or multivessel disease, use of the same revascularization strategy in patients with non-STEMI after stabilization of the patient, use of radial artery grafts over saphenous vein grafts in patients with severe coronary stenosis, and to prefer CABG surgery for patients with coronary artery disease, heart failure, and left ventricular ejection fraction <35% [6].

In this book, we aimed to provide at the beginning epidemiological data on myocardial infarction and atherosclerotic cardiovascular disease. Then, in the following chapters, we aimed to address the role of current diagnostic biochemical markers in the diagnosis of acute MI. We also aimed to overview current management strategies and the role of interventional therapies in patients with acute coronary syndromes. At the end of the book, we aimed to provide information on “how to manage myocardial infarction in a specific patient group; the children.”

Recent developments in interventional therapies, drugs, and devices lead to important decrease in morbidity and mortality from myocardial infarction. Despite all advancements in the management of myocardial infarction, morbidity and mortality from atherosclerotic cardiovascular diseases and especially myocardial infarction are still high. We think that more glory can be achieved by the prevention of atherosclerotic processes, and efforts should be focused on the early stages of the disease since it may be very late for some of the patients experiencing myocardial infarction.

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