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Acute Coronary Events: Their Recognition and Management

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Acute Coronary Events: Their Recognition and Management

INTRODUCTION

Each year approximately 800,000 persons in the United States experience acute myocardial infarction (MI), and about 213,000 of them die. At least 50% of these persons die within 1 hour of onset of symptoms and before reaching a hospital emergency department.^{1,2} It has been known for more than 3 decades that most sudden cardiac deaths result from fatal arrhythmias that often can be stopped by emergency cardiopulmonary resuscitation (CPR), defibrillation, and prompt advanced cardiac life support (ACLS).³⁻⁵ Indeed, it was recognizing the high survival rates of patients who received prompt defibrillation of ventricular tachycardia or ventricular fibrillation after an acute MI that led to the creation of the Cardiac Care Unit, with nurses skilled in using continuous telemetry monitoring and defibrillators. More recent data regarding the time-dependent benefits of thrombolytic therapy show the need for expediting delivery of medical care to persons with acute MI. Early treatment has been shown to reduce mortality and infarction size as well as to improve left ventricular (LV) function.³⁻⁵ Clearly, delay in treating patients with suspected acute MI is a critical factor in decreasing the overall survival rate.

Most patients do not seek medical care for 2 hours or more after symptom onset,^{6,7} reducing the effectiveness of any treatment that might be available to them. Nevertheless, it is imperative that physicians are well trained in recognizing and managing acute coronary events. Because unstable angina can progress to an MI, it is essential that physicians be able to accurately diagnose this condition to avoid morbidity and mortality. This article will focus on the recognition, pathophysiology, and management of acute coronary events, including stable angina, unstable angina, non-Q-wave MI, and Q-wave MI.

DEFINITIONS

ANGINA PECTORIS

Angina is a clinical syndrome characterized by discomfort in the chest, jaw, shoulder, back, or arm. It is typically aggravated by exertion or emotional stress and

relieved by nitroglycerin. Angina results from myocardial ischemia, which is most commonly caused by atherosclerotic lesions in the coronary arteries. Angina usually occurs in patients with coronary artery disease (CAD) involving one or more large epicardial arteries. However, angina also can occur in persons with valvular heart disease, hypertrophic cardiomyopathy, and uncontrolled hypertension. It can occur in patients with normal coronary arteries and myocardial ischemia related to spasm or endothelial dysfunction. Similar nonanginal chest discomfort can also be felt with noncardiac conditions of the esophagus, chest wall, or lungs.⁸

The 2 main categories of angina are stable and unstable angina. Patients have stable angina when no change has occurred during the previous 60 days in the precipitating events, duration of attacks, or frequency of episodes. Patients have unstable angina when their symptoms (1) are occurring for the first time; (2) have appeared in the last 60 days; (3) were previously stable but have accelerated in frequency; and (4) consist of prolonged events that last longer than previous episodes or are precipitated by less effort. Clearly, unstable angina is of greater concern than stable angina because it can progress to an acute coronary event. However, it is often difficult to discern the type of angina that a patient has because unstable angina and MI can be episodic events that frequently are superimposed on a chronic stable angina pattern. The severity of a patient's angina can be assessed using criteria from the Canadian Cardiovascular Society (**Table 1**). Angina can be further divided into categories based on the duration, precipitating factors, and clinical presentations although the character, location, and radiation of angina are similar.

MYOCARDIAL INFARCTION

The World Health Organization (WHO) has established criteria for diagnosing an MI; a patient must demonstrate 2 of the following 3 conditions: anginal chest discomfort, a resting electrocardiogram (ECG) with an infarction (not just ischemic) pattern in consecutive leads or new left bundle branch block (LBBB), and significant elevation of cardiac enzymes. These criteria are examined in greater detail in the sections discussing the value of ECGs and cardiac enzyme levels for diagnosing MI.