

Acute Coronary Syndrome



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KEYWORDS

- Acute coronary syndrome • Non–ST elevation myocardial infarction
- Unstable angina • ST elevation myocardial infarction • Reperfusion

HOSPITAL MEDICINE CLINICS CHECKLIST

1. Understand the different types of acute coronary syndrome, their presentations, and initial management.
2. Be familiar with different risk-stratifying tools for the evaluation of patients presenting with unstable angina or non–ST elevation myocardial infarction.
3. Be aware of the most recent American College of Cardiology Foundation/American College of Gastroenterology/American Heart Association guidelines in the evaluation and management of acute coronary syndrome.

EPIDEMIOLOGY

What is the definition of acute coronary syndrome?

Acute coronary syndrome (ACS) is defined by clinical symptoms that suggest acute myocardial ischemia. Pathologically, ACS develops from so-called vulnerable plaques, which are characterized by large lipid cores and thin fibrous caps. On rupture, the thrombogenic material with plaque interacts with the circulating blood, resulting in thrombosis at the site of plaque rupture. In certain instances, plaque erosion may also result in thrombosis.¹

What are the 3 types of ACS and their definitions?

ACS comprises 3 types: unstable angina (UA), non–ST elevation myocardial infarction (NSTEMI), and ST elevation myocardial infarction (STEMI).² UA and NSTEMI differ in whether the ischemic damage was severe enough to result in biomarker elevation (NSTEMI). UA is diagnosed when 2 or more samples collected at least 6 hours apart resulted in no myocardial necrosis, whereas NSTEMI is diagnosed when there are positive biomarkers.¹ Both can have similar presenting symptoms of chest discomfort

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and electrocardiographic (ECG) changes. In STEMI, there is typically an acute occlusion of the coronary artery by the culprit thrombus, and it is characterized by the following ECG criteria: new ST segment elevation at the J point in 2 contiguous leads with cut points greater than 0.1 mV in all leads other than leads V2-V3; in leads V2-V3, 0.2 mV or greater in men aged 40 years or older, 0.25 mV or greater in men younger than 40 years, or 0.15 mV or greater in women.¹

What is the definition of acute myocardial infarction and the 5 types?

Myocardial infarction (MI) is defined as myocardial cell death caused by prolonged ischemia. This process can sometimes take up to several weeks to complete. Based on the universal classification of MI, it is differentiated into 5 types¹:

Type 1: spontaneous MI secondary to atherosclerotic plaque rupture, resulting in myocardial necrosis.

Type 2: myocardial injury secondary to imbalance of myocardial supply and demand, not from disrupted atherosclerotic plaque but usually in the setting of fixed obstructive coronary artery disease. Examples include arrhythmias, coronary artery spasms, hypotension, or anemia.

Type 3: fatal MI resulting in death with ischemic ECG changes or new left bundle branch block, without accompanying positive biomarkers.

Types 4-5: MI associated with revascularization procedures, where type 4a is MI in the setting of percutaneous coronary intervention (PCI), type 4b in the setting of stent thrombosis, and type 5 in the setting of coronary artery bypass graft (CABG).

PATIENT EVALUATION AND DIAGNOSIS

What are common signs and symptoms of ACS?

The classic presentation of acute myocardial ischemia is chest pain at rest, localized to the central chest or epigastric area of the abdomen, with radiation to the upper extremities, neck, or jaw, and less frequently, to other areas of the abdomen or back. The quality of the pain is usually described as crushing, squeezing, and pressure-like. Atypical symptoms include nausea, diaphoresis, dyspnea, syncope, and fatigue. Physical examination signs may include hypertension, tachycardia, tachypnea, new murmurs, or a new third or fourth heart sound.³

Are there patient populations with atypical presentations?

Many patients with acute MI do not present with the classic signs and symptoms of substernal chest pain radiating to upper extremities but rather present without any chest discomfort. This population typically includes the elderly, female, diabetic, and existing heart failure patients.⁴ These patients are often found to have delayed presentation to the hospital. Reasons for delay in seeking medical attention include atypical symptoms not consistent with well-known symptoms of a heart attack in the general population, embarrassment and fear of a false alarm, and lack of awareness for the severe consequences of MI and the crucial time-sensitive need to seek urgent medical care.⁵

What is included in the initial assessment of a patient with suspected ACS?

Initial assessment of a patient with suspected ACS should be performed efficiently to diagnose patients with signs and symptoms that warrant emergent reperfusion with

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