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ABSTRACT

This clinical policy from the American College of Emergency Physicians addresses key issues in the evaluation and management of patients with suspected non–ST-elevation acute coronary syndromes. A writing subcommittee conducted a systematic review of the literature to derive evidence-based recommendations to answer the following clinical questions: (1) In adult patients without evidence of ST-elevation acute coronary syndrome, can initial risk stratification be used to predict a low rate of 30-day major adverse cardiac events? (2) In adult patients with suspected acute non–ST-elevation acute coronary syndrome, can troponin testing within 3 hours of emergency department presentation be used to predict a low rate of 30-day major adverse cardiac events? (3) In adult patients with suspected non–ST-elevation acute coronary syndrome in whom acute myocardial infarction has been excluded, does further diagnostic testing (eg, provocative, stress test, computed tomography angiography) for acute coronary syndrome prior to discharge reduce 30-day major adverse cardiac events? (4) Should adult patients with acute non–ST-elevation myocardial infarction receive immediate antiplatelet therapy in addition to aspirin to reduce 30-day major adverse cardiac events? Evidence was graded and recommendations were made based on the strength of the available data.

INTRODUCTION

Chest pain is the chief complaint for approximately 10 million emergency department (ED) visits each year. Based on accepted protocols triggered by diagnostic ECG changes, individuals with ST-elevation myocardial infarction (STEMI) are quickly diagnosed and treated with reperfusion therapy. However, approximately 70% of the 625,000 patients who are diagnosed annually with an acute coronary syndrome (ACS) have a non–ST-elevation (NSTE) ACS.[1] The physician evaluating stable patients with symptoms suspicious for ischemia must strike a balance between increasing diagnostic certainty, the threat of malpractice lawsuits, and the judicious use of limited resources. Currently in the United States, approximately $10 billion is spent each year on these low-risk patients with less than 10% ultimately being found to have ACS.[2] In spite of the intensive use of resources including observation and stress testing, approximately 1% to 2% of patients with acute MI were missed at an ED visit.[3,4] Therefore, the purpose of this clinical policy is to aid the emergency physician in the initial evaluation and treatment of patients who present with potential NSTE ACS. This includes both NSTEMI and unstable angina, because these can be indistinguishable on presentation to the ED and represent a continuum of disease.

Risk Tolerance

Any discussion of accuracy in ED testing for potential NSTEMI needs to include discussion of an acceptable rate of missed diagnosis. The test threshold, the point of probability at which the harms associated with elevated troponin testing and workup exceed the risks of untreated disease, has been estimated to be approximately 2% for ED patients presenting with suspected cardiac chest pain.[5] A limited survey of 1,029 emergency physicians internationally showed that 82% were willing to accept an arbitrary maximum of only 1% for missed diagnosis of major adverse cardiac events (MACE) within 30 days of ED discharge for a patient with symptoms suggestive of ACS.[6] The acceptable miss rate in this survey is lower than the test threshold of 2%, which suggests that many patients may be receiving extensive diagnostic workups for ACS in which the harms may exceed the potential benefit. When physicians are given permission to have a 1% to 2% acceptable missed diagnosis rate without medicolegal repercussions, there is a hypothetical 29% decrease in the rate of hospital admissions.[7] Also, when patients are engaged in shared decisionmaking, observation admissions for chest pain were reduced with no change in clinical outcomes.[8,9] Therefore, based on limitations in diagnostic technology and the need to avoid the harms associated with false-positive test results, the committee based its recommendations on the assumption that the majority of patients and providers would agree that a missed diagnosis rate of 1% to 2% for 30-day MACE in NSTE ACS is acceptable.

Troponin Testing

Both diagnosis and risk stratification of patients with potential myocardial ischemia relies on troponin testing. Cardiac troponin I and T are components of the contractile apparatus of myocardial cells and are expressed almost exclusively in the heart. Although elevations of these biomarkers in the blood reflect injury leading to necrosis of myocardial cells, they do not indicate the underlying mechanism. Elevated or abnormal troponin levels are defined as exceeding the 99th percentile cutoff point for each specific assay[10]; however, not all studies clearly report the performance characteristics of the assays used. In addition, there is substantial variability in studies with respect to the use of troponin I versus T, high sensitivity versus standard conventional troponin, and bedside point-of-care versus lab-based testing.

More recently, high-sensitivity assays for troponin measurement have been developed. This designation refers