Care of the Patient with Chest Pain in the Observation Unit

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KEYWORDS

• Chest pain • Emergency department • Observation unit

KEY POINTS

- Increases in emergency department (ED) use by patients presenting with chest pain has led to the development of short-term observation units to facilitate an expedited and accurate assessment of their symptoms.
- Clinical decision rules have evolved to help clinicians assess risk of acute coronary syndrome (ACS) in patients presenting with chest pain and play an integral role in determining whether a patient should be a candidate for placement in an observation unit.
- Several provocative testing modalities are available to clinicians to help determine the extent, if any, of symptomatic coronary artery disease.

Case Study

Lucy Epstein is a 63-year-old woman with a history of hypothyroidism, hypertension and breast cancer (now in remission after treatment). Over the past 3 weeks, she has noticed increased dyspnea on exertion. This morning she felt a 4/10 substernal chest pressure in the shower. The pain did not radiate; it was nonpleuritic and spontaneously resolved after approximately 20 minutes. She denies diaphoresis or nausea. Two hours after the chest pain episode, she arrives in an ED where she has an ECG that shows normal sinus rhythm with no new T-wave inversions or ST-segment depressions or elevations. Her physical examination, a chest radiograph and an initial troponin assay are normal. She is placed in an observation unit and repeat ECG and troponin at 6 hours are unchanged; the next day she receives a stress echo that is reassuring and is discharged home with instructions to follow-up with her primary care doctor within the next week.

Disclosures: None.
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INTRODUCTION

The evaluation of ACS in EDs remains diagnostically challenging. On a yearly basis it is estimated that more than 6 million people visit an ED for the evaluation of chest pain or other symptoms that are concerning for myocardial ischemia.[1] The differential diagnosis of chest pain is broad and includes many organ systems. In addition to ACS, there are other immediately life-threatening diseases, such as pulmonary embolism, tension pneumothorax, cardiac tamponade, and aortic dissection, that also need to be considered.[2] In several cases, a diagnosis can be made quickly based on initial screening ECG with detection of ST-segment elevation myocardial infarction (STEMI).[3] Patients who present de novo to an ED with STEMI, however, are by far the minority compared with all-comers with a chief complaint of chest pain. Clinical decision rules and accelerated diagnostic protocols help with timely and accurate risk assessment but do not allow for immediate discharge of a majority of patients.

Apprehension about preventable sudden death drives most physicians to err conservatively on the side of admission.[4] The cost of these admissions, however, remains high. As early as 1997 in the United States, hospitalization for more than 3 million patients cost approximately $3 billion to 4 billion annually for those who ultimately are determined disease-free.[5,6] Furthermore, despite diagnostic advances in recent years, missed acute myocardial infarction (AMI) and ACS remain problematic, with estimates ranging between 2% and 10%.[7] Missed AMI remains one of the leading causes of malpractice suits against emergency physicians.[7]

These factors combined to produce the development of a safe, effective, and efficient manner of assessing risk of ACS in ED patients.[8] The use of observation units

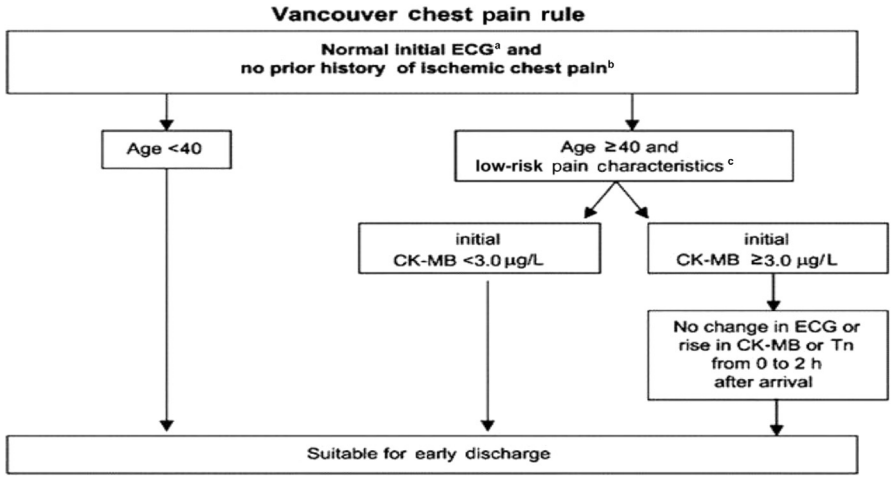

Fig. 1. Vancouver Chest Pain Rule algorithm for early discharge of very-low-risk patients with chest pain. CK-MB, creatine kinase–myocardial band isoenzyme. Note: patients with suspicion of other causes for chest pain (eg, pulmonary embolus, aortic dissection) should be investigated independent of this clinical prediction rule. [a] T-wave flattening is the only acceptable ST-T abnormality. [b] Prior ischemic chest pain is defined as a past known diagnosis of MI or angina, previously prescribed nicroglycerin or a clear history of effort-related angina. [c] Low-risk Pain Characteristics is defined as pain not radiating (arm/neck/jaw) OR increasing with a deep breath OR increasing with palpation. MI, myocardial infarction; Tn, troponin. (*From* Christenson J, Innes G, McKnight D, et al. A clinical prediction rule for early discharge of patients with chest pain. Ann Emerg Med 2006;47(1):6; with permission from Elsevier.)