VII. Chest pain

Erica Friedman, MD
Associate Dean of Undergraduate Medical Education
Mt. Sinai School of Medicine

Specific Learning Objectives

1. Knowledge:

Subinterns should be able to describe and define:

a) The historical, physical examination, electrocardiographic, laboratory and radiographic findings of serious cardiopulmonary etiologies of chest pain, including:

Serious and potentially life threatening causes:
(1) Acute coronary syndromes (Myocardial Infarction-Q wave and ST Elevation MI (STEMI)
(2) Pulmonary embolism
(3) Pneumothorax
(4) Aortic dissection
(5) Pericarditis

Non-life threatening causes of acute chest pain including:
(1) Esophageal reflux and spasm
(2) Peptic ulcer disease
(3) Pneumonia
(4) Musculoskeletal strain
(5) Rib fracture
(6) Costochondritis
(7) Biliary colic
(8) Pleurisy
(9) Intercostal neuritis

b) The role of laboratory testing in the diagnosis of chest pain

c) The role of radiological studies in the diagnosis of chest pain

d) Appropriate clinical situations in which a patient should be transferred to telemetry monitored unit or intensive care unit or require an immediate consult or intervention (PCI, thrombolytic therapy, etc)

e) Situations in which it is necessary to seek support from resident emergently.

f) Sensitivity and Specificity of findings and lab data in ruling in or out a diagnosis

2. Skills.

Subinterns should be able to:
a) Conduct a focused history and physical exam
b) Perform a focused chart review
c) Develop a management plan
d) Create a differential diagnosis
e) Acquire and interpret an electrocardiogram
f) Provide appropriate treatment and/or analgesia for patients without an acute coronary syndrome
g) Obtain timely input from supervising housestaff and/or faculty
h) Plan the transfer of a patient to a telemetry monitored unit or intensive care unit when appropriate
i) Appropriately activate the emergency cardiac/respiratory arrest team when needed

3. Attitudes and professional behavior:

Subinterns should demonstrate:
Compassion towards patient's wishes with regards to resuscitation and mechanical support

Case I : Chest Pain

SCENARIO: You are on call for the general medicine team and are cross-covering for a colleague. A nurse from the stepdown unit (telemetry) calls you about Mr Frasier, a patient of Dr Nash's, who is complaining of chest pain.

1) Question: what questions would you like to ask the nurse over the phone?

Mr. Frasier's heart rate is 62 and regular, his BP is 110/75, RR of 16 and O2 sat of 94%. His chest pain is in the substernal region radiating to the back, started about 5 minutes ago while he was resting in bed and is a 6/10 in severity. He has some mild dyspnea but no diaphoresis, nausea or palpitations. He is a 69 year old male admitted for unstable rest angina to the CCU last night. He was ruled out, has had no chest pain since admission and after cardiac cath one hour ago was sent to the stepdown unit. He has a history of hypertension and diabetes but had no previous history of cardiac disease. His cath showed extensive triple vessel disease and he is awaiting bypass surgery. His current meds include atenolol, lisinopril, isordil, ASA, insulin, IV NTG and IV heparin.

2) Question: are there any telephone orders you would like to give the nurse?

3) Question: What are your thoughts about a differential diagnosis as you proceed to the patient's room?

4) Question: What additional chart information do you want?

The patient's CBC this morning pre-cath was 12.5/38; his renal and liver functions are normal and he has no drug allergies. He is a full code status.
Baseline EKG:

5) Question: What factors will influence your decision to call your resident right away?

6) Question: What specific information do you want to look for on exam?

EXAM: On examination he is a middle-aged man in some distress. Vital signs: BP 110/60 lying, 105/58 sitting; Pulse regular and 103 lying, 105 sitting; RR 18/minute; temperature 99 degrees F; HENT: normal except for questionable neck vein distention; chest is clear to A and P; Cardiac exam shows a normal S1 and S2 and no murmurs, rubs or gallops. Abdominal exam is normal. Extremity exam shows trace ankle edema and 1+ pulses throughout without cords. His groin shows no evidence of oozing at the catheterization site, a minimal amount of swelling and some evidence of ecchymoses.

7) Question: what should you do next?

8) Question: what additional information are you looking for in the chart?

Interpret the EKG in relation to the clinical findings and in relation to his previous EKG.
Current EKG:

9) Question: what are possible explanations for the patient's presentation?

10) Question: What should you do now?

References:

1. ACC/AHA 2002 guideline update for the management of patients with unstable angina and non ST segment elevation myocardial infarction. J Am Coll Cardiol 2002; 40: 1366.
2. Chest Discomfort. Harrisons Principles of Internal Medicine. 17th edition. Thomas Lee. 2008. 87-91.
3. Glycoprotein IIb/IIIa inhibitors in patients with unstable angina/non-ST-segment elevation myocardial infarction: appropriate interpretation of the guidelines. Antman EM. Am Heart J. 2003 Oct;146(4 Suppl):S18-22.
4. Acute coronary syndrome: unstable angina and non-ST segment elevation myocardial infarction. Grech ED, Ramsdale DR. BMJ. 2003 Jun 7;326(7401):1259-61.
5. Unstable angina and non-ST-elevation myocardial infarction: initial anti-thrombotic therapy and early invasive strategy. Cannon CP, Turpie AG. Circulation. 2003 Jun 3;107(21):2640-5.

6. Aspirin and clopidogrel in acute coronary syndromes: therapeutic insights from the CURE study. Jneid H, Bhatt DL, Corti R, Badimon JJ, Fuster V, Francis GS. Arch Intern Med. 2003 May 26;163(10):1145-53.
7. Appropriate antiplatelet and antithrombotic therapy in patients with acute coronary syndromes: recent updates to the ACC/AHA guidelines. Mehta SR; ACC/AHA. J Invasive Cardiol. 2002 Dec;14 Suppl E:27E-34E
8. Smith SC Jr, et al. ACC/AHA/SCAI 2005 guideline update for percutaneous coronary intervention: a report of the American College of Cardiology/American Heart Association Task Force on Practice Guidelines. www.acc.org/clinicalguidelines/percutaneous/update
9.Bavry AA et al. Benefit of early invasive therapy in acute coronary syndromes: a meta-analysis of contemporary randomized trials. J Am Coll Cardiol. 2006 Oct 3; 48(7): 1319-25.