Internal Medicine Clerkship
Case Discussions

Coronary Artery Disease
Student Guide

Objectives:

1. Identify characteristics and relevant review of systems that determine the status of coronary artery disease including angina and anginal equivalents.
2. Assess for risk factors for coronary artery disease including hypertension and diabetes.
3. Assess for social risk factors including tobacco use.
4. Identify key physical exam findings that assess for ongoing risk factors including elevated blood pressure and assess for signs of end organ damage including presence of heart failure.
5. Identify and interpret key laboratory and imaging tests and list indications, benefits, test characteristics, risks, and costs of testing including those that determine the presence of ongoing risk factors like elevated cholesterol.
6. Describe a rational and evidence-based approach to treating a patient with coronary artery disease:
    a. Describe long-term treatment including anti-anginal, anti-platelet, and atherosclerotic disease treatment.
    b. Describe prevention and risk factor modification including management of medical conditions and health habits.
7. Describe possible complications including acute coronary syndrome and heart failure.
8. Identify characteristics and relevant review of systems that would suggest acute coronary syndrome.
9. Assess for personal risk factors and predisposing conditions such as past coronary artery disease, hypertension, dyslipidemia, social risk factors including tobacco use
10. Assess for familial risk factors including premature coronary disease and cerebrovascular disease.
11. Identify key physical exam findings that may determine the presence and severity of disease including jugular venous distention, rales/crackles, and S4.
12. Identify and interpret key laboratory and imaging tests and list indications, benefits, test characteristics, risks, and costs of testing that help differentiate among unstable angina, non-ST-elevation myocardial infarction, and ST-elevation myocardial infarction, including cardiac enzymes, electrocardiogram, and cardiac catheterization.
13. Describe a rational and evidence-based approach to treating a patient with acute coronary syndrome:
    a. Describe use of reperfusion therapy including primary percutaneous coronary intervention and thrombolytic therapy.
    b. Describe use of medical therapy including anti-platelet therapy, beta-blockers, anticoagulation, lipid therapy, and ACE inhibitors.
14. Describe possible complications of acute coronary syndrome including:
    a. Ischemic complications.
    b. Mechanical complications.
    c. Arrhythmic complications.

Clinical Case:

54yo with a 10-year history of hypertension and a 30-pack year history of smoking presents to clinic for an annual evaluation. He reports no health concerns but admits he should be more active and needs to lose some weight. His family history is notable for a fatal heart attack in his father before the age of 50. His medical history is unremarkable except as noted. He is married with three children and seven grandchildren. He denies any alcohol use but admits to often eating out due to convenience. He does not regularly exercise. His only medication is amlodipine 5mg once daily. He admits that he seldom takes it.

His exam is notable for BP 155/80, HR 86, and BMI 34.2. He has notable central adiposity, but the remainder of his exam is normal.

Questions:

1. What are the major risk factors for coronary artery disease? How would you counsel this patient regarding his risk factors?

2. What further tests or consults would you order at this time regarding his cardiovascular risk?

Laboratory results:
Fasting lipid profile: TG 360, LDL 180, HDL 30, TC 240
CBC: normal
CMP: Cr 1.34, ALT 54, AST 63 and otherwise normal

3. How would you counsel the patient regarding these results, and how can you estimate his risk of cardiovascular disease? (ASCVD Calculator can be accessed at https://www.mdcalc.com/calc/3400/ascvd-atherosclerotic-cardiovascular-disease-risk-algorithm-including-known-ascvd-aha-acc
(patient identifies as Caucasian.)

4. What else could you do at this time to help lower his risk?

You arrange for the patient to return in six months to recheck his labs, blood pressure, and assess how he is doing with his lifestyle changes. The patient misses this appointment. One year later, the patient presents to the emergency room with complaint of substernal chest pain and dyspnea that developed while he was playing baseball with his grandson. He reports intermittent episodes of similar pains over the last six months, but the episode today did not resolve with rest like it normally does. The chest pain does not radiate. He is worried that he may be having a heart attack.

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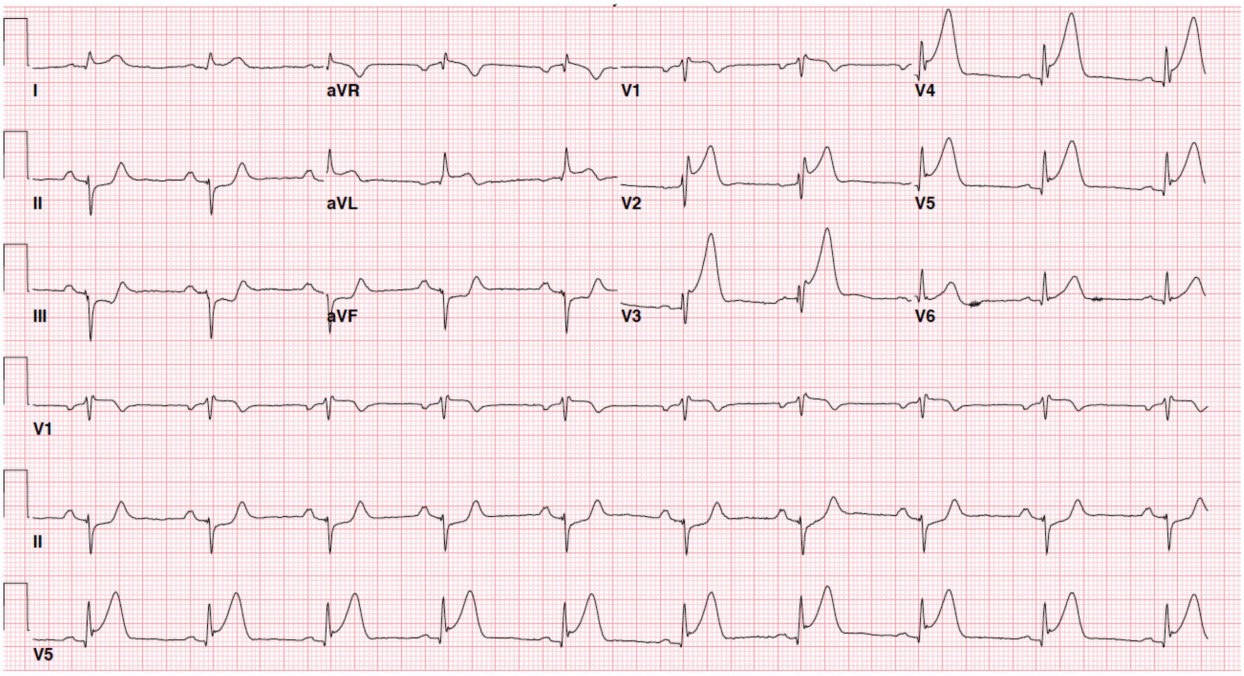
Physical Exam:
Vital Signs are as follows: P 110, RR 20, BP 160/90, T 98.6F BMI 36.1
He is an obese male who is appears to be in distress and is moving around on the hospital bed. His HEENT is normal; there is no elevation of JVP. His lung and abdominal exam are normal with the exception of central obesity. His heart exam is notable for an S4. There are no bruits and no edema on peripheral vascular exam. His musculoskeletal exam is normal as well.

Questions:

5. What are common presenting symptoms and physical exam findings of acute coronary syndrome?

6. What additional tests would you order at this time?

His initial troponin in 0.15, and his EKG is noted below:



Source: Maxine A. Papadakis, Stephen J. McPhee, Michael W. Rabow
Current Medical Diagnosis & Treatment 2019

Questions:

7. Define his clinical condition. What is the American Heart Association's, American College of Cardiology's, and the World Heart Federation's definition of an acute myocardial infarction?

8. How do you differentiate STEMI, NSTEMI, and unstable angina?

9. What medical management should he receive immediately?

10. Describe the treatment rationale of percutaneous intervention (PCI) or fibrinolytics in this scenario. What are contraindications to fibrinolytic therapy?

11. What are the indications for coronary artery bypass grafting (CABG)?

Patient is taken to the cath lab, and a drug-eluting stent is placed. You see him the following day. He is feeling well. He slept okay overnight, and he is planning on being discharged in the next day or so.

Questions:

12. What medicines should he be placed on prior to discharge?

13. What are your target goals with these medicines?

14. What additional therapies should he receive? Are there any vaccines he should receive?

15. Are there additional studies you want? What potential complications would you counsel the patient about?

References:

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https://accessmedicine-mhmedical-com.archer.luc.edu/content.aspx?bookid=3095&sectionid=265453510

Harrison's Manual of Medicine, 20e. Chapter 123: Chronic Stable Angina
https://accessmedicine-mhmedical-com.archer.luc.edu/content.aspx?bookid=2738&sectionid=227558058

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https://accessmedicine-mhmedical-com.archer.luc.edu/content.aspx?bookid=2738&sectionid=227560751

Harrison's Principles of Internal Medicine, 21e. Chapter 269: ST-Segment Elevation Myocardial Infarction
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Harrison's Principles of Internal Medicine, 21e. Chapter 270: Percutaneous Coronary Interventions and Other Interventional Procedures
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Harrison's Manual of Medicine, 20e. Chapter 121: ST-Segment Elevation Myocardial Infarction
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Symptom to Diagnosis: An Evidence-Based Guide, 4e. Part 9: Chest Pain
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