

QUESTION
 A 65-year-old male patient with a long history of hypertension and hyperlipidemia presents to the emergency department with acute chest pain. The patient reports a 15-minute episode of severe, crushing chest pain radiating to the left arm and jaw. He has a history of smoking 20 cigarettes per day for 30 years and is currently on amlodipine and atorvastatin. His vital signs are: blood pressure 180/100 mmHg, heart rate 110 bpm, respiratory rate 20 breaths per minute, and oxygen saturation 92% on room air. ECG shows ST-segment elevation in leads V1-V4.

ANSWER
 The patient is presenting with a clinical picture consistent with an acute myocardial infarction (MI). The key features include acute onset of severe, crushing chest pain radiating to the left arm and jaw, ST-segment elevation on ECG, and risk factors such as hypertension, hyperlipidemia, and smoking. The patient's vital signs indicate tachycardia and hypertension, which are common findings in the early stages of an MI.

QUESTION
 A 45-year-old female patient with a long history of rheumatoid arthritis (RA) presents to the emergency department with acute joint pain and swelling in her right knee. She reports a 24-hour episode of severe pain and swelling, which is worse with movement. She has a history of smoking 10 cigarettes per day for 20 years and is currently on chronic low-dose prednisone (5 mg daily) and methotrexate. Her vital signs are: blood pressure 120/80 mmHg, heart rate 90 bpm, respiratory rate 18 breaths per minute, and oxygen saturation 98% on room air. Physical examination shows a hot, swollen, and tender right knee joint.

ANSWER
 The patient is presenting with a clinical picture consistent with an acute flare of rheumatoid arthritis (RA). The key features include acute onset of severe joint pain and swelling in a single joint (monoarthritis), which is worse with movement, and a history of chronic RA. The patient's vital signs are within normal limits, and her oxygen saturation is stable.

ACUTE MYOCARDIAL INFARCTION

Acute myocardial infarction (MI) is a life-threatening condition caused by a sudden, prolonged reduction in blood flow to the heart muscle. The most common cause is atherosclerosis, which leads to the formation of a blood clot (thrombus) that blocks a coronary artery. The affected area of the heart muscle becomes ischemic and eventually infarcted (dies).

Pathophysiology: The process begins with the rupture of an atherosclerotic plaque in a coronary artery. This triggers the formation of a thrombus, which completely or partially occludes the artery. The resulting ischemia leads to the death of myocardial cells. The extent of damage depends on the size of the infarcted area and the time taken to restore blood flow.

Clinical Presentation: The most common symptom is acute onset of severe, crushing chest pain, often described as a heavy weight on the chest. The pain may radiate to the left arm, jaw, and back. Other symptoms include shortness of breath, sweating, nausea, and lightheadedness.

Diagnosis: The diagnosis of MI is based on a combination of clinical history, physical examination, and diagnostic tests. The most definitive test is a cardiac troponin assay, which shows elevated levels of troponin I and T. Other diagnostic tests include ECG, which may show ST-segment elevation (STEMI) or ST-segment depression (NSTEMI/UA), and chest X-ray, which may show pulmonary congestion.

Management: The primary goal of treatment is to restore blood flow to the infarcted area as quickly as possible. This is achieved through reperfusion therapy, which includes primary percutaneous coronary intervention (PCI) and thrombolysis. Secondary prevention is also crucial, involving the use of antiplatelet agents (aspirin, P2Y12 inhibitors), statins, beta-blockers, and ACE inhibitors.

Prognosis: The prognosis for patients with MI depends on the extent of the infarction and the effectiveness of treatment. Early reperfusion therapy significantly improves outcomes and reduces mortality. Long-term management focuses on secondary prevention to reduce the risk of future cardiovascular events.