

QUESTION

1. A 60-year-old male patient with a long history of hypertension and diabetes mellitus presents to the emergency department with a 2-hour history of severe, crushing chest pain. The pain is described as a heavy weight on his chest and is not relieved by rest or nitroglycerin. He has a history of smoking 20 cigarettes per day for 30 years. His vital signs are: blood pressure 180/110 mmHg, heart rate 110 bpm, respiratory rate 20 breaths per minute, and oxygen saturation 92% on room air. Physical examination reveals diaphoresis, tachycardia, and a third heart sound (S3) at the left lower lung base. ECG shows ST-segment elevation in leads V1, V2, and V3. Laboratory tests show a troponin I level of 0.15 ng/mL and a creatine phosphokinase-MB level of 150 U/L. The patient is diagnosed with an acute anterior wall myocardial infarction.

2. A 45-year-old female patient with a history of rheumatoid arthritis and chronic kidney disease (stage 3) presents to the emergency department with a 12-hour history of severe, sharp pain in her right lower quadrant. The pain is constant and worsens with movement. She has a history of smoking 10 cigarettes per day for 20 years. Her vital signs are: blood pressure 130/80 mmHg, heart rate 95 bpm, respiratory rate 18 breaths per minute, and oxygen saturation 98% on room air. Physical examination reveals tenderness and guarding in the right lower quadrant, with a positive McBurney's sign. Laboratory tests show a white blood cell count of 12,000 cells/mm³ and a C-reactive protein level of 15 mg/L. The patient is diagnosed with acute appendicitis.

3. A 55-year-old male patient with a history of chronic obstructive pulmonary disease (COPD) and a recent diagnosis of heart failure presents to the emergency department with a 4-day history of increasing shortness of breath. The patient reports waking up at night with a need to breathe. He has a history of smoking 30 cigarettes per day for 40 years. His vital signs are: blood pressure 140/90 mmHg, heart rate 105 bpm, respiratory rate 22 breaths per minute, and oxygen saturation 88% on 2L of oxygen. Physical examination reveals rales at the lung bases and a third heart sound (S3) at the left lower lung base. ECG shows sinus tachycardia. Laboratory tests show a B-type natriuretic peptide (BNP) level of 180 pg/mL and a troponin I level of 0.05 ng/mL. The patient is diagnosed with acute decompensated heart failure.

ANSWERS

1. The patient's presentation is consistent with an acute anterior wall myocardial infarction (MI). The key features include severe, crushing chest pain, diaphoresis, tachycardia, and ST-segment elevation in leads V1, V2, and V3. The patient's history of hypertension and diabetes mellitus are risk factors for atherosclerosis. The physical examination findings of a third heart sound (S3) and the laboratory tests showing elevated troponin I and creatine phosphokinase-MB levels further support the diagnosis. The patient should be treated with aspirin, a P2Y12 inhibitor, a beta-blocker, and an ACE inhibitor, along with oxygen and morphine for pain relief.

2. The patient's presentation is consistent with acute appendicitis. The key features include severe, sharp pain in the right lower quadrant, tenderness and guarding, and a positive McBurney's sign. The patient's history of rheumatoid arthritis and chronic kidney disease are not directly related to the current presentation. The laboratory tests showing a white blood cell count of 12,000 cells/mm³ and a C-reactive protein level of 15 mg/L support the diagnosis. The patient should be treated with antibiotics and surgical resection of the appendix.

3. The patient's presentation is consistent with acute decompensated heart failure. The key features include increasing shortness of breath, waking up at night with a need to breathe, rales at the lung bases, and a third heart sound (S3). The patient's history of COPD and a recent diagnosis of heart failure are risk factors for this condition. The physical examination findings of rales and S3, along with the laboratory tests showing an elevated BNP level and a troponin I level, support the diagnosis. The patient should be treated with oxygen, a diuretic, and a beta-blocker.