

QUESTION

A 65-year-old male patient with a long history of hypertension and hyperlipidemia 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 a pale, diaphoretic patient with a 2/6 systolic murmur at the apex. An electrocardiogram (ECG) shows ST-segment elevation in leads II, III, and aVF, and ST-segment depression in leads I, aVL, and V1-V4. The patient's medical history includes a recent diagnosis of atrial fibrillation and a previous myocardial infarction 10 years ago. He is currently on aspirin, beta-blockers, and statins.

ANSWER

The patient's presentation is consistent with an acute myocardial infarction (MI) with ST-segment elevation (STEMI). The ECG findings of ST-segment elevation in leads II, III, and aVF, along with ST-segment depression in leads I, aVL, and V1-V4, indicate an inferior wall MI. The patient's symptoms of severe, crushing chest pain, diaphoresis, and a heavy weight on his chest are typical of an MI. The physical examination findings of a pale, diaphoretic patient and a 2/6 systolic murmur at the apex suggest a possible complication of the MI, such as a mitral regurgitation murmur. The patient's history of hypertension, hyperlipidemia, and smoking are risk factors for atherosclerosis and MI. The patient's current medications, including aspirin, beta-blockers, and statins, are appropriate for his medical history.

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DISCUSSION



The diagram illustrates the pathophysiology of an acute myocardial infarction (MI). It starts with 'Atherosclerosis' leading to 'Coronary artery disease' and 'Thrombosis'. This results in 'Myocardial ischemia', which leads to 'Myocardial necrosis'. The diagram then branches into 'STEMI' and 'NSTEMI/UA'. STEMI is associated with 'ST-segment elevation' and 'Q-wave formation'. NSTEMI/UA is associated with 'ST-segment depression' and 'T-wave inversion'. The diagram also shows 'ECG changes' leading to 'Diagnosis of MI'. The final outcome is 'Myocardial infarction'.