Visual Case Discussion

Point-of-care ultrasound and anterior ST-elevation myocardial infarction

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1. Visual case discussion

A 55-year-old man with a history of hypertension and tobacco-use presented to the emergency department with 12 h of substernal chest pain with associated shortness of breath, diaphoresis, and vomiting. His EKG was notable for ST-segment elevations in leads V1 - V4 (Fig. 1). A “code STEMI” was immediately activated to mobilize the cardiac catheterization suite. A bedside ultrasound was performed, which showed severe mid to distal anteroseptal and apical hypokinesis (Vid. 1). He was emergently taken for percutaneous coronary intervention, which demonstrated 100% thrombotic occlusion of the mid left anterior descending coronary artery (Vid. 2). He successfully received a drug-eluting stent to the LAD and was admitted to the cardiac care unit in stable condition.

Questions

1. When aortic dissection is complicated by myocardial infarction, which of the following is the most commonly affected vessel?

a. Left anterior descending coronary artery
b. Left circumflex coronary artery
c. Left coronary artery
d. Right coronary artery

Answer: d. Right coronary artery. The incidence of myocardial ischemia or infarction complicating aortic dissection ranges from 1% to 10%, and it most commonly arises from occlusion of the right coronary artery (RCA) as the dissection begins to involve the coronary artery. The greater incidence of RCA involvement is thought to be due to the fact that a false lumen most frequently develops in the right anterior aspect of the ascending aorta.1,2

2. Which of the following treatments has a proven mortality benefit in ST-elevation myocardial infarction (STEMI)?

a. Aspirin
b. Morphine
c. Nitroglycerin
d. Oxygen

Answer: a. Aspirin. While the classic teaching for the medical treatment of STEMI is to give morphine, oxygen, nitrates, and aspirin (“MONA”), of these options, only aspirin has been shown to demonstrate a mortality benefit. Early administration of a beta blocker, ACEi or ARB, and a statin are also associated with mortality benefit in the medical treatment of STEMI.3

Vid. 1. Point-of-care ultrasound of apical four-chamber view of the heart demonstrating septal wall hypokinesis. The red arrow denotes the septum.

Vid. 2. Coronary angiography demonstrating 100% thrombotic occlusion of the mid-LAD. The red circle highlights the occluded LAD.

Supplementary materials

References


Fig. 1. EKG demonstrating ST-segment elevations in leads V1 - V4, identified by the arrows.