

Case Reports

Chest Pain Suggestive of a Life-Threatening Condition: A Department of Medicine Morbidity and Mortality Conference

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Introduction

Morbidity and mortality rounds have become essential components of teaching on multiple services throughout general hospitals,^{1,2} where they provide timely analysis of adverse events, educate staff about current practices, and enhance practice-based learning.

We report on a young man with chest pain that was suggestive of a life-threatening condition and elaborate on his decade-long experiences within the health care system. We hope that the proceedings of this multidisciplinary morbidity and mortality conference will enhance the recognition and treatment of patients with similar symptoms and histories to facilitate caring for patients with comorbid medical and psychiatric conditions and factitious illness. The evolution of our understanding of the case is highlighted by case discussions by multidisciplinary faculty who provide information and insights as the case unfolds.

Patient Presentation

Mr. B, a 32-year-old man who was visiting the Boston area for business purposes from Florida, presented to a community-based emergency department with 4 hours of sudden-onset, 10/10, tearing chest pain that radiated to his back and associated nausea.

Dr. Gavin (Cardiology)

Abrupt-onset chest pain described as “tearing” raises concern for acute aortic syndromes including aortic

dissection, penetrating ulcer, and intramural hematoma. In the absence of trauma or degenerative aortic disease, one should investigate for physical examination features of connective tissue disorders (e.g., Marfan syndrome or Loeys-Dietz syndrome), which are accompanied by aortopathy. A known history of a “murmur” might suggest an underlying congenital bicuspid aortic valve and associated aortopathy. On examination, discrepant upper extremity blood pressures increase the likelihood of aortic dissection. Other etiologies of the pain include coronary disease if present with appropriate risk factors in a young man (e.g., cocaine abuse, history of Kawasaki syndrome, and familial hyperlipidemia) or pulmonary etiologies including pneumothorax, pulmonary embolism, or pneumonia. Intra-abdominal processes, such as pancreatitis, perforated gastric ulcer, or cholecystitis, are also possible. A D-dimer blood test has a high sensitivity for both aortic dissection and pulmonary embolism and hence can be helpful to narrow down the differential diagnosis.³

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Case Reports

Presentation, Continued

Initial vital signs included a heart rate of 100 beats per minute; it decreased to 80 beats per minute after administration of intravenous (IV) hydromorphone. His blood pressure was 120/63 mm Hg on the left arm and 113/72 mm Hg on the right. The presence of a 3/6 systolic murmur and a well-healed sternotomy scar was also noted. Mr. B reported a history of a traumatic aortic dissection with coronary artery involvement (which was subsequently repaired) and a connective tissue disorder (thought to be Ehlers-Danlos syndrome). Home medications included hydrochlorothiazide and labetalol. He denied a family history of aortopathies or sudden cardiac death. He also denied tobacco, alcohol, or illicit drug use.

Dr. Gavin (Cardiology)

Both the previous aortic dissection and Ehlers-Danlos syndrome increase the concern for an underlying aortopathy and recurrent dissection beyond the area or prior aortic repair. The upper extremity blood pressures are not discrepant, but this does not exclude a dissection of the ascending aorta that does not extend into the arch vessels. In ascending aortic dissections, a diastolic murmur of aortic insufficiency is expected if it extends to the level of the aortic valve. However, this murmur may be difficult to auscultate in the acute setting because of early equalization of pressures.⁴ The systolic murmur detected may represent a benign “flow murmur” in a young man or suggest premature aortic stenosis in the setting of a bicuspid aortic valve.

Evaluation should include an electrocardiogram and chest x-ray. Imaging of the aorta was also warranted given Mr. B's history. If the renal function were normal, a contrast-enhanced computed tomography (CT) of the aorta is the most expeditious. Other options include performing a transesophageal echocardiogram (TEE) and magnetic resonance imaging (MRI) with angiography. Decision making in this setting proceeds rapidly. Ascending Type A aortic dissections carry a mortality rate of 1% per hour.⁵

Presentation, Continued

The initial electrocardiogram revealed normal sinus rhythm at 96 beats per minute with right bundle

branch block morphology. During Mr. B's initial evaluation, the attending physician in the emergency department received a page from Mr. B's cardiologist who reported that “two months ago [our patient] was diagnosed with a proximal aortic dissection. He was referred for surgical repair but had thrombocytopenia so it was deferred.” The cardiologist requested a “med flight” transport to see a specific cardiac surgeon at our institution.

Mr. B was transported to our hospital where a CT of the aorta was ordered. However, Mr. B reported an anaphylactic reaction to the iodinated contrast agent; therefore, an MRI of the thoracic aorta was ordered instead. Initial attempts at IV access were unsuccessful, and the physicians in the emergency department tried to obtain peripheral and then central venous access for 6 hours. He had no viable peripheral veins, and central line access was prevented by significant scarring at all sites. Meanwhile, Mr. B requested a TEE, explaining to the staff that MRI was a less-sensitive technique.

Dr. Gavin (Cardiology)

Like CT of the aorta and TEE, MRI has a high sensitivity and specificity in identifying thoracic aortic disease, with some series reporting that all modalities share a 100% sensitivity in identifying aortic dissection.^{6,7} TEE may miss focal dissections in the distal ascending aorta and proximal aortic arch because of shadowing by tracheal gas.

Presentation, Continued

Intraosseous access was ultimately obtained. Routine laboratory results were unable to be sent. A chest x-ray demonstrated sternotomy wires but no acute cardiopulmonary process. Mr. B appeared comfortable but began to request hydromorphone by its brand name. He was admitted to the cardiovascular intensive care unit for close monitoring and an MRI after placement of a peripherally inserted central catheter.

Shortly thereafter, an MRI was performed, which demonstrated normal size and function of all 4 cardiac chambers as well as a normal trileaflet aortic valve and coronary arteries. There was no evidence of dissection

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