EM CASE OF THE WEEK.

BROWARD HEALTH MEDICAL CENTER
DEPARTMENT OF EMERGENCY MEDICINE

BROWARD HEALTH
Care Warriors

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Aortic Dissection

A 72-year-old male with a history of hypertension and previous open heart surgery of unknown type presents to the emergency department with one day of 6/10, constant, sharp, generalized, radiating chest pain. He denies nausea, vomiting, dyspnea, or diaphoresis. He has never experienced similar pain before. Blood pressure is 200/115. Other vitals are within normal limits. Physical exam is unremarkable and the patient is in no acute distress. EKG shows normal sinus rhythm and troponin is negative. CXR shows an enlarged thoracic aorta. Which of the following is the most appropriate next step?

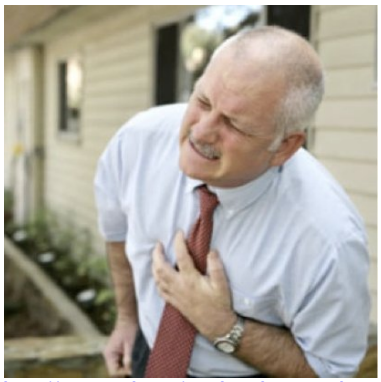
A. TEE

B. D-dimer

C. Serial troponin

D. CT angiogram

E. Control BP and HR



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Patients with aortic dissections often present with severe, sharp or tearing chest pain that radiates to the back. Less commonly, they may also present with back pain in the absence of chest pain.

EM Case of the Week is a weekly "pop quiz" for ED staff.

The goal is to educate all ED personnel by sharing common pearls and pitfalls involving the care of ED patients. We intend on providing better patient care through better education for our nurses and staff.

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The correct answer is E. Blood pressure and heart rate should first be controlled in a patient with a strong suspicion of an aortic dissection.

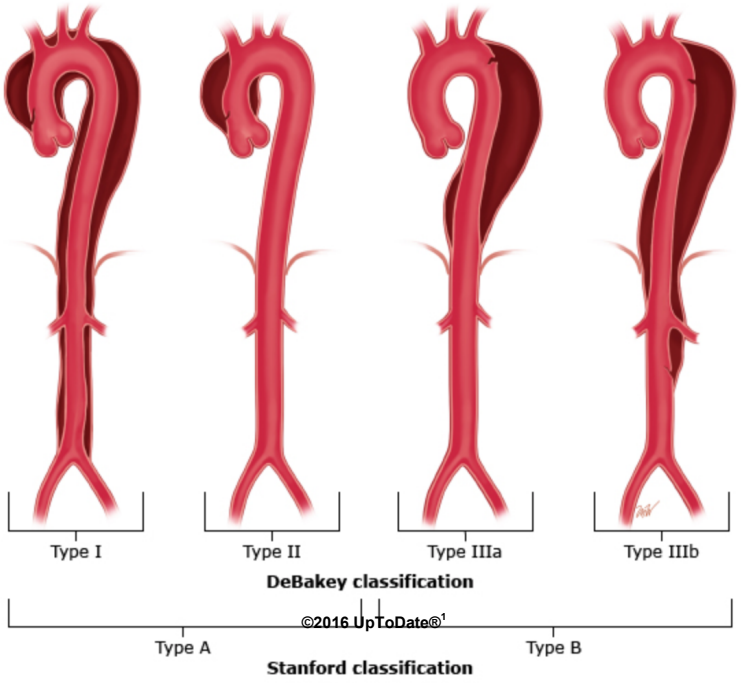
Aortic dissection is an uncommon event with significant mortality. It has an incidence of 2.6 to 3.5 per 100,000 person-years and a mortality of 25-30%. Patients with aortic dissection tend to be men between the ages of 60 and 80. Risk factors include hypertension, collagen disorders (Marfan's, Ehlers-Danlos), pre-existing aortic aneurysm, bicuspid aortic valve, aortic coarctation, and pregnancy.

Discussion

Aortic dissections occur due to a tear in the aortic intima. This tear separates the intima from the media and adventitia and creates a false lumen which can propagate in an anterior or posterior fashion. There are two systems used to classify dissections: in the Stanford system, dissections that involve the ascending aorta are considered Type A and all other dissections are considered Type B. The DeBakey system classifies them based on the site of origin. Type I dissections originate from the ascending aorta to the arch, type II involve just the ascending aorta, and type III originate in the descending aorta.

Acute pain is the most common presenting symptom of aortic dissection. The pain is more commonly experienced in the anterior chest in ascending dissections and the back in descending dissections. Although classically described as a tearing pain, it is more commonly described as sharp. The pain may migrate as the dissection progresses.

Classification of aortic dissection



Other symptoms include pulse deficit, new onset diastolic heart murmur, hypotension, and syncope. Neurological symptoms can be present if there is involvement of the carotids or spinal arteries.

Diagnosis

Diagnosis of aortic dissections is primarily done through imaging. However, in patients who are at low risk, a D-dimer can be used to rule out the condition. A chest radiograph will show a widened mediastinum in 60-90% of cases. In hemodynamically stable patients, CT angiography is the preferred study. MR angiography can also be performed in these patients depending upon availability. In unstable patients, a transesophageal echocardiogram can be used to quickly diagnose dissection.

For a list of educational lectures, grand rounds, workshops, and didactics please visit ***BrowardER.com*** and **click** on the ***"Conference"*** **link**.

All are welcome to attend!

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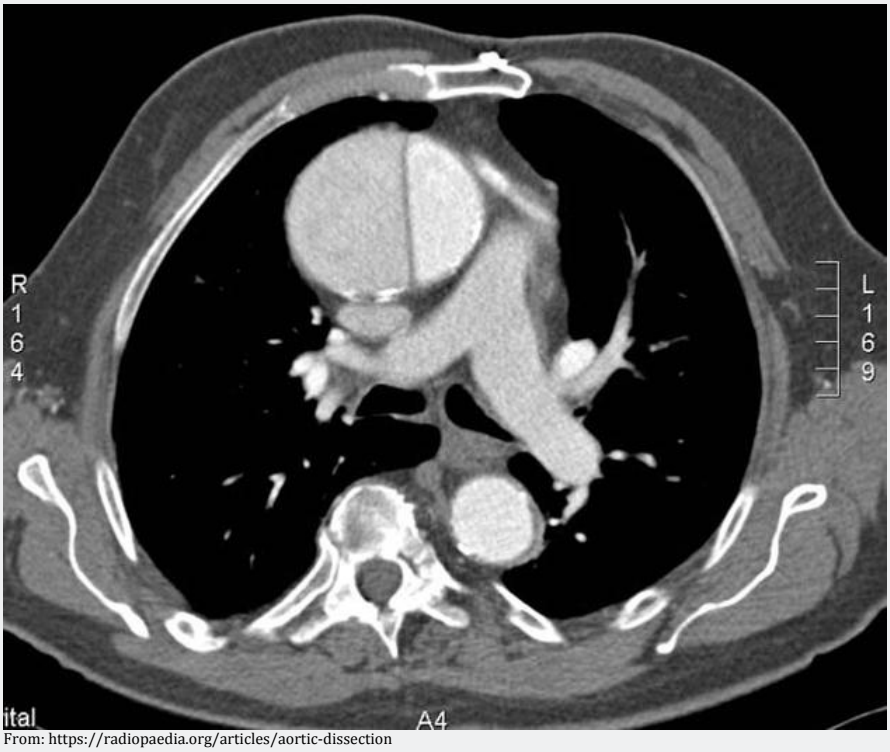

From: https://radiopaedia.org/articles/aortic-dissection

A CT demonstrating a Type A aortic dissection involving the ascending aorta.

Treatment

Quick diagnosis and treatment of aortic dissection is necessary due to the high mortality involved with aortic dissections. Treatment decisions are made based on the classification of the dissection. Type A dissections have a high risk of urgent complications including cardiac tamponade, aortic regurgitation, aortic rupture, stroke, and MI. For these reasons, they are treated surgically. Mortality is 7-36% with surgical intervention and 50% with just medical management. Type B dissections that are uncomplicated can be managed medically. This consists of anti-impulse control and serial imaging. Anti-impulse control is achieved by targeting a blood pressure of 120/80 and heart rate control.

Take Home Points

- Aortic dissections are caused by a tear in the intima. They are classified as Type A if they involve the ascending aorta and Type B if they don't.
- Although relatively uncommon, prompt diagnosis is required due to the significant mortality.
- The condition should be suspected in patients with acute, sharp chest or back pain. Diagnosis is most commonly made through CT angiography.
- Type A dissections are surgical emergencies while Type B dissections can normally be treated medically through anti-hypertensive therapy with a goal of 120/80.

ABOUT THE AUTHOR

This case was written by Vishaal Sridhar. Vishaal is a 4th year medical student at FIU HWCOM. He did his emergency medicine rotation at BHMC in October 2016. Vishaal plans on pursuing a career in Internal Medicine after graduation.

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