

EM CASE OF THE WEEK.

BROWARD HEALTH MEDICAL CENTER
DEPARTMENT OF EMERGENCY MEDICINE



Care Warriors

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Acute Aortic Dissection

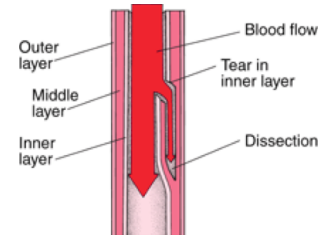
A 42-year-old Hispanic male with history of hypertension non-compliant with medications is brought by EMS as a brain attack to the Broward ED. About 30 minutes prior to arrival the patient was in court preparing to testify when he suddenly collapsed. According to his wife he had never experienced these symptoms prior to this episode.

On arrival patient was afebrile, blood pressure of 178/75 in the left arm, HR 60, RR 16, O₂ 96%. Patient was found to have an NIH stroke score of 6. He was awake but drowsy and confused. He had mild dysarthria, mild aphasia, and slight motor drift in the left upper and lower extremities. A stat brain CT scan was ordered to rule out cerebral hemorrhage. As the patient was being taken to CT, physical exam revealed absence of pedal pulses and cold lower extremities which raised suspicion for aortic dissection. A stat abdominal CT scan was ordered.

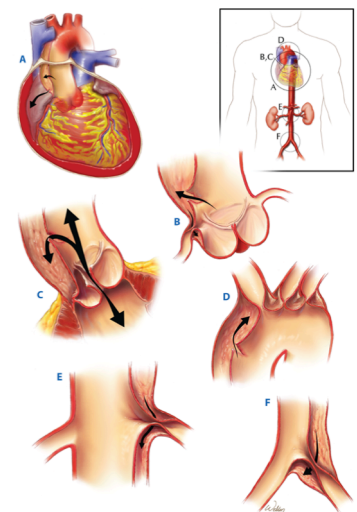
Just prior to CT patient had a generalized seizure that was controlled with Ativan. There was no evidence of cerebral hemorrhage on brain CT. Abdominal CT revealed an aortic dissection extending from the ascending aorta to the iliac vessels.

Which of the following is the most appropriate initial treatment for this patient's condition?

- A. Magnesium
- B. Hydralazine
- C. Furosemide
- D. Amiodarone
- E. Labetalol
- F. Lisinopril



Merck manual: Aortic Dissection



Schwartz principles of surgery

Aortic Dissection is defined as a tear of the intimal layer of the aorta leading to extravasation of blood into the media or adventitia.

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.

BROWARD HEALTH MEDICAL CENTER

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The correct answer is **E**. Initial treatment for aortic dissection requires an intravenous beta-blocker to prevent reflex tachycardia and lower blood pressure thereby minimizing stress on the damaged aorta. However, in our patient the heart rate is already low at 60bpm so a nicardipine drip was started.

Discussion

Our patient initially presented as a brain attack to the Broward ED. Aortic Dissection is a rare diagnosis and can present with focal neurologic signs due to obstruction of the aortic branch vessels leading to a decrease in cerebral perfusion.

Incidence: 3 cases per 100,000 person-years.

Risk factors: Hypertension, male gender (~70% of aortic dissections occur in men), connective tissue disease (Marfans, Ehlers-Danlos), and preexisting aortic aneurysm are all conditions that may lead to dissection

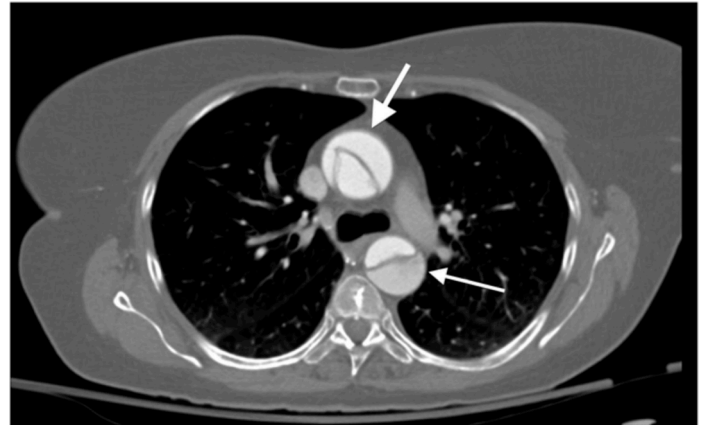
History: Classically acute onset of severe back pain that is of a tearing or ripping quality. However, painless dissection is possible. Patients may also present with syncope, signs of CVA/stroke, or heart failure.

Physical exam: There will be a BP difference of greater than 20mm HG between the right and left side. Pulses should be checked for symmetry. A new diastolic murmur due to aortic regurgitation may be present. There may be focal neurologic deficits. Syncope, hypotension, and/or shock at initial presentation are more common in patients with ascending aortic dissection, whereas hypertension is more common in patients with descending aortic dissection.

Differential Diagnosis: Myocardial infarction, pulmonary embolism, tension pneumothorax, stroke, pericarditis, and esophageal rupture should all be considered

Imaging: CT is the quickest and most readily available. CT has a sensitivity of 93% and specificity of 98%. Diagnosis on CT requires identification of two distinct aortic lumens.

Complications: End-organ malperfusion, recurrent dissection, and aortic rupture are life-threatening.



Treatment

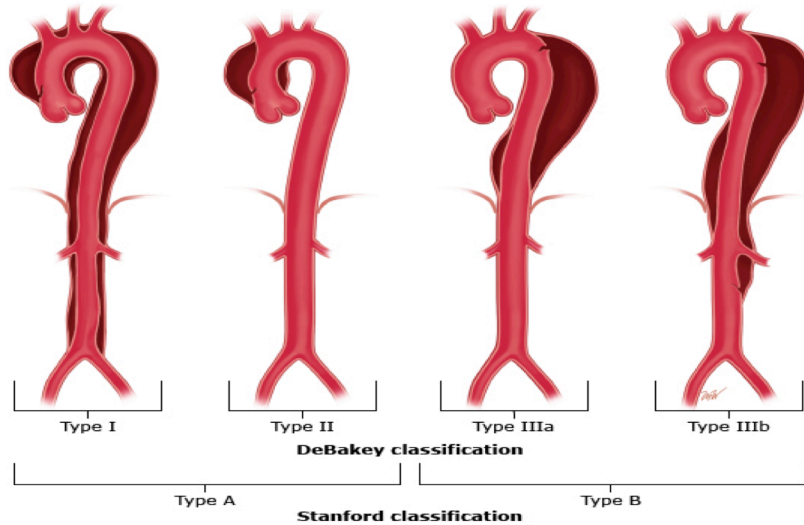
Stabilization of patient with IV beta-Blockers to achieve a heart rate of less than 60bpm and a systolic blood pressure between 100-120 mm Hg. Nitroprusside can be used following beta-blocker therapy if the blood pressure is still greater than 120. Calcium channel blockers such as nicardipine, verapamil, or diltiazem may be used in place of nitroprusside. Pain control with intravenous opioids is necessary to decrease the patient's sympathetic response and further decrease the stress on the damaged aorta.

Upon stabilization the patient can be taken for chest/neck/abdomen/pelvis CT scan to definitively diagnosis a dissection. If the patient cannot be stabilized and aortic dissection is still strongly suspected the patient can be taken to OR for diagnostic transesophageal echocardiogram. Any ascending aortic dissection (Stanford A) requires surgery. Type B aortic dissections can be medically managed unless an acute complication develops such as aortic rupture or organ malperfusion due to obstruction.

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!

Classification of aortic dissection



In the DeBakey classification of aortic dissection:

- Type I involves the ascending aorta, arch, and descending thoracic aorta and may progress to involve the abdominal aorta.
- Type II is confined to the ascending aorta.
- Type IIIa involves the descending thoracic aorta distal to the left subclavian artery and proximal to the celiac artery.
- Type IIIb dissection involves the thoracic and abdominal aorta distal to the left subclavian artery.

In the Stanford classification of aortic dissection:

- Type A involves the ascending aorta and may progress to involve the arch and thoracoabdominal aorta.
- Type B involves the descending thoracic or thoracoabdominal aorta distal to the left subclavian artery without involvement of ascending aorta.

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ABOUT THE AUTHOR

This month's case was written by Alexander Kitto. Alex is a 4th year medical student from FIU. He did his emergency medicine rotation at BHMC in March 2017. After graduation he will be starting his residency in Orthopedic Surgery at the University of Massachusetts Memorial Medical Center in Worcester, MA.

Mortality

It is estimated that there is a mortality of 1-2% every hour for the first 48 hours for dissections involving the proximal/ascending aorta. There is a 5 and 10 year survival of approximately 70% and 50% respectively.

Take Home Points

- Acute aortic dissection can present with focal neurological symptoms and can be confused with a TIA or stroke
- Type A aortic dissection involving the ascending aorta needs emergency surgery
- Type B aortic dissection may be managed medically
- Asymmetric pulses and/or BP should raise clinical suspicion
- Initial medical management should begin with a beta-blocker to decrease HR and BP.

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