EM CASE OF THE WEEK.

BROWARD HEALTH MEDICAL CENTER
DEPARTMENT OF EMERGENCY MEDICINE

BROWARD HEALTH
Care Warriors

Author: Abhinay Reddy OMS-IV | Editor: Ajith Susai D.O.

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Aortic Dissection

A 55-year-old male with past medical history of hypertension, hyperlipidemia and obesity presents to the ED with acute onset, tearing chest pain that radiates to his back. Initial EKG changes were non-specific, revealing LV hypertrophy. Vitals were only significant for tachycardia and moderate hypertension. Upon initial exam, patient was diaphoretic, the chest pain was non-reproducible upon palpation, and no findings were heard on cardiac auscultation. Troponins were drawn and sent to lab. The patient was started on a beta-blocker and IV nitroprusside. The pain persisted, and a repeat EKG was conducted. This showed findings of an acute inferior wall myocardial infarction with ST-elevations in II, III and aVF. Auscultation revealed a new onset murmur of aortic regurgitation greater at the RSB than the LSB. Femoral and radial pulses are absent bilaterally. CXR reveals a widened mediastinum. What is the appropriate next step?

A. Thrombolytic therapy and activation of the cath lab.

B. Emergent CTA and subsequent surgical intervention with CT-surgery.

C. Continue to trend troponins.

D. Do a TEE.

E. Stat cardiology consult.

John Ritter
Actor (1948 – 2003)
Misdiagnosed aortic dissection

John Ritter was an American actor known for his roles on Three's Company, Scrubs, and 8 Simple Rules. He fell ill and collapsed on set and was rushed to the hospital.

He was diagnosed with an MI, and only after his condition worsened was he diagnosed with a dissection. He unfortunately passed away during surgery to repair the dissection.

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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Department of Emergency Medicine
1625 SE 3rd Avenue
Fort Lauderdale, FL 33316

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The correct answer is B. The patient is suffering from an acute aortic dissection of the first portion of the ascending aorta (Stanford Type A). The diagnosis can be made clinically: tearing chest pain that radiates to back (interscapular region), a new high frequency diastolic murmur (aortic regurgitation) heard best at RSB, and absent or unequal pulses. This requires emergent surgical intervention.

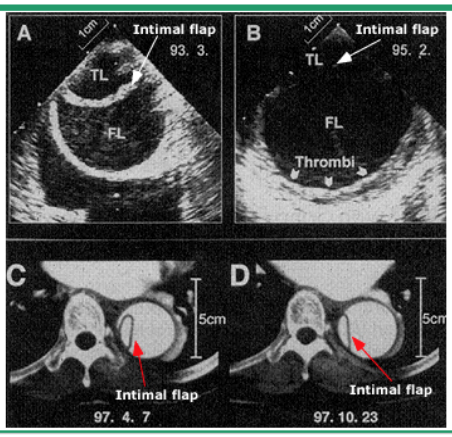
Discussion

Aortic dissection occurs when the intima separates from the media, causing a false lumen. The initial insult is a tear in the intima, which allows blood to flow between the media and the intima, causing the separation of the two layers of the aortic wall. Over time, the false lumen expands, leading to collapse of the true lumen.

Diagnosis is made through a combination of clinical presentation and imaging. Patients are generally middle-aged, hypertensive, obese and have a smoking history. Aortic dissections are also associated with connective tissue diseases, such as Marfan and Ehlers-Danlos. They complain of an acute, tearing chest pain that radiates to the back underneath the scapula. EKG changes may show non-specific changes and LVH. CTA of the chest can be used if there is a high index of suspicion for dissection; if the patient is hypotensive or otherwise unstable, a TEE can be used as it can be done at the bedside. Physical exam findings generally include diaphoresis and skin pallor. Harvey's sign: chest pain that radiates to the scapula, hypertension and a new onset right-sided aortic regurgitation murmur is consistent with a dissection of the first portion of the ascending aorta.

Patients can develop obstruction of the RCA, which manifests as an acute inferior MI. While a concurrent inferior wall STEMI may occur, it is important to realize that this is a result of the dissection, and the patient still needs emergent surgical evaluation and treatment. If thrombolytics are given to treat an MI, exsanguination and terminal pericardial tamponade may occur.

Aortic dissection on noninvasive imaging



Source: UpToDate

Treatment:

The first goal of treatment is to lower the blood pressure. This will reduce shear stress on the aortic wall, and does not allow the dissection to expand. If the BP remains elevated, IV nitroprusside can be used to bring the pressure down. Do not use nitroprusside without controlling the heart rate as vasodilation will reflexively activate the sympathetic nervous system leading to increased LV contraction and resultant increased aortic shear stress. Fluid resuscitation in an unstable patient is dependent on the etiology of the hypotension (tamponade vs valvular dysfunction vs. LV systolic dysfunction).

Medical therapy should NOT delay surgical consultation and transfer to the operating room. Do NOT give thrombolytics as they can promote bleeding into the false lumen and potentially result in tamponade.

Surgical intervention involves replacing the aortic arch, and valve with re-implantation of the coronary and brachiocephalic vessels.

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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ABOUT THE AUTHOR

This month's case was written by Abhinay Reddy. Abhinay is a 4th year medical student from NSU-COM. He did his emergency medicine rotation at BHMC in October 2017. Abhinay plans on pursuing a career in Internal Medicine and subsequently Cardiology after graduation.

Take Home Points

- Aortic dissection is an incredibly acute diagnosis that requires emergent surgical intervention. Risk factors include HTN, CTD, Obesity and Smoking.
- Physical findings include: chest pain that radiates to the scapula with a tearing quality, a new onset aortic regurgitation murmur heard more prominently on the RSB than the LSB, and the patient will look diaphoretic and pale.
- Patients can present with an infarct of the RCA resulting in an inferior wall MI. This is secondary to the dissection and is not the emergent problem. Initial EKG findings may be non-specific, but a new onset inferior STEMI does not rule out aortic dissection
- DO NOT treat with thrombolytics. Treat with beta blockers then IV nitroprusside to modulate blood pressure. Medical management should not delay surgical evaluation and treatment

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