

# AMSER Case of the Month: May 2024

HPI: 81-year-old female presents with altered  
mental status and hypotension

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# Patient Presentation

81-year-old female with history of HTN, HLD, and brainstem stroke (approximately 10 years ago) presents to the emergency department with altered mental status and hypotension. The patient was initially found by family responsive only to voice but not following commands. EMS called to the scene found the patient to have altered level of consciousness, blood pressure of 66/40, normal respiratory effort and NSR on EKG.

# Physical examination

- **Vitals on arrival at emergency department:**
- Blood Pressure: 82/62 mm Hg
- HR: 70
- RR: 30
- CO<sub>2</sub>: 20
- Responsive only to voice

What Imaging Should We Order?

# ACR Appropriateness Criteria

This imaging modality was ordered by the ER physician



Variant 1. Suspected thoracic aortic aneurysm. Initial imaging.

Procedure	Appropriateness Category	Relative Radiation Level
CTA chest with IV contrast	Usually Appropriate	☼☼☼
MRA chest with IV contrast	Usually Appropriate	○
MRA chest without IV contrast	Usually Appropriate	○
CT chest without IV contrast	May Be Appropriate	☼☼☼
US echocardiography transesophageal	May Be Appropriate	○
X-ray chest	May Be Appropriate	☼
CTA chest abdomen pelvis with IV contrast	May Be Appropriate (Disagreement)	☼☼☼☼☼

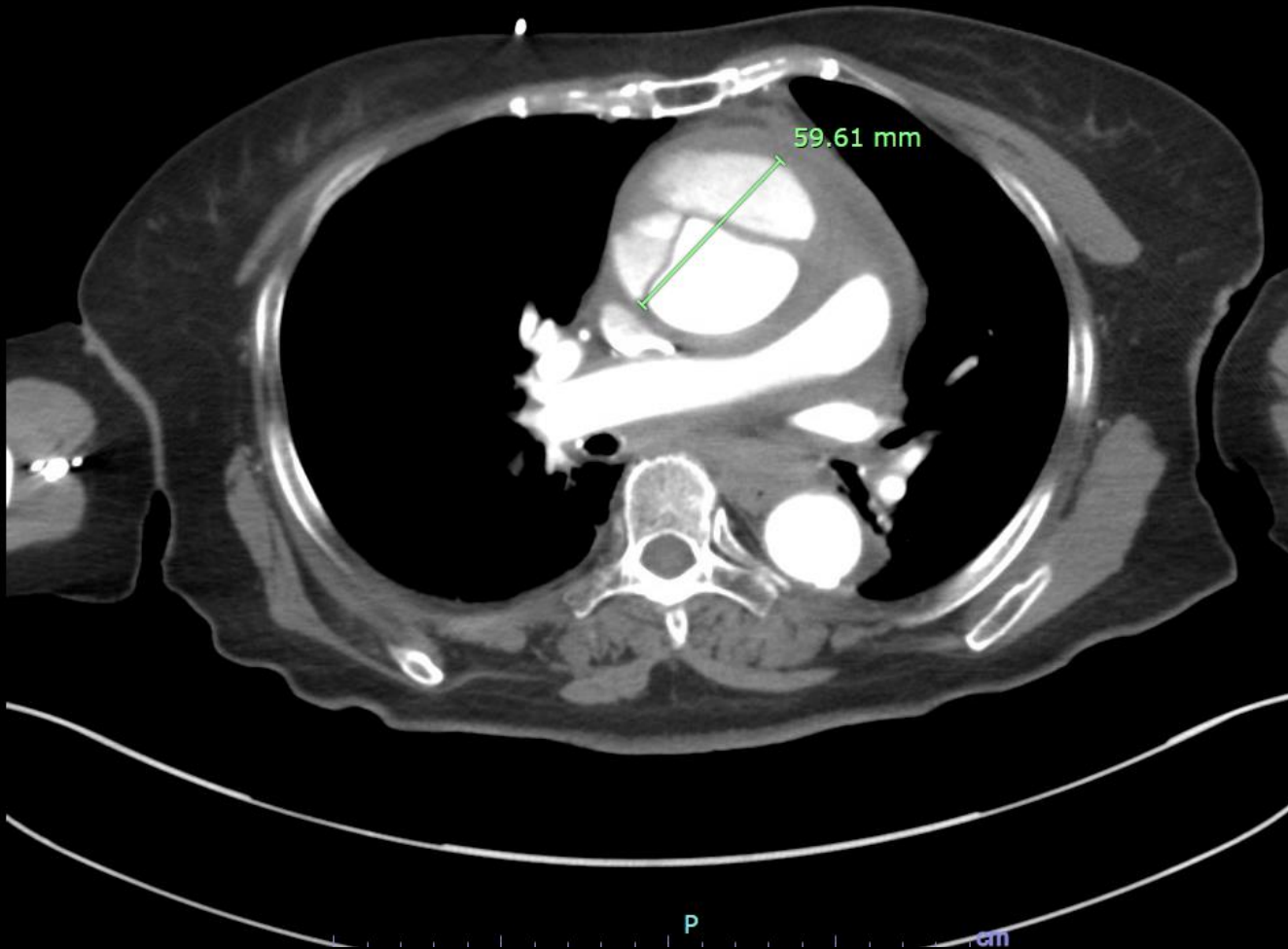
# Findings: (unlabeled)

CTA Chest/Abdomen/Pelvis with contrast axial view



# Findings: (labeled)

CTA Chest/Abdomen/Pelvis with contrast axial view



Enlargement of the ascending aorta measuring 6 cm in diameter at its widest point.

Dissection is seen involving the ascending aorta.

Descending thoracic aorta is normal caliber with no dissection.

# Findings (unlabeled)

CTA Chest/Abdomen/Pelvis with contrast sagittal view and 3D reconstruction





# Findings (labeled)

CTA Chest/Abdomen/Pelvis with contrast sagittal view and 3D reconstruction



Type A aortic dissection flap extending from the sinotubular junction to the mid ascending aorta, approximately 5.4 cm in length. Non-opacification of portion of the dissection could reflect thrombus versus lack of contrast opacification.

# Final Diagnosis:

Stanford type A ascending aortic dissection

# Case Discussion

**Pathophysiology:** Non-traumatic aortic dissections are most commonly complications of chronic hypertension. As the aorta ages, there is a weakening of elastin proteins and an increase in the collagen-elastin ratio leading to increased aortic wall stress. This process is further accelerated by chronic hypertension. A tear in the intimal layer of the aorta allows blood to escape from the lumen and enter the underlying diseased media forming a hematoma. Aortic dissections can be classified according to the Stanford classification. Stanford Type A is defined as a dissection of the ascending aorta proximal to the brachiocephalic artery or Stanford Type B if the dissection originates distal to the left subclavian artery and only involves the descending aorta.

Pre-operative cardiopulmonary arrest is a complication of Stanford Type A aortic dissection that is associated with significantly higher mortality and morbidity.

# Case Discussion

In the evaluation of this elderly patient presenting with hemodynamic instability and altered level of consciousness, rapid evaluation to identify potentially life-threatening pathologies was crucial. With CXR and CT head and neck returning normal, CTA chest/abdomen/pelvis was selected to further investigate the cardiopulmonary vasculature. With a PMH of HTN and HLD alongside her rapid deterioration, there was suspicion for acute non-traumatic aortic dissection. CTA exam was chosen over MRA to provide timely and accurate diagnostic information necessary for prompt management and intervention.

CTA confirmed a Stanford Type A aortic dissection. The patient was then immediately prepped for open-heart surgical repair. As patient was prepped, she went into cardiac arrest. Chest compressions were started, and an emergency sternotomy was performed. With the ascending aorta opened, a clot was found between the true and false lumen as well as within the true lumen. This was found to be extending into the arch. The surgery was deemed futile, and patient was declared deceased.

# References:

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