

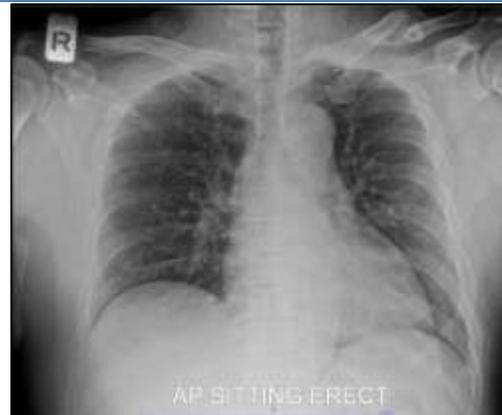
INTRODUCTION

Aortic dissection (AD) is a challenging clinical emergency and remains difficult to diagnose with 1 in 6 being missed during initial ED visit. For AD, both misdiagnosis and over testing are key concerns, with initial chest radiograph and electrocardiogram can be misleadingly normal.

CASE DESCRIPTION

A 43-year-old male, active smoker with no known medical history, presented to the emergency department with severe tearing chest pain radiating to the back, ongoing for the past 4 hours. Upon arrival, the patient was alert but in severe pain, rating it 7/10. Cardiovascular examination revealed no radiofemoral or radioradial delay, normal heart sounds, and no signs of heart failure. His blood pressure on arrival was 168/88 mmHg, which later elevated to 220/102 mmHg.

Point-of-care testing showed normal blood gas, and ECG showed lateral ischemia with T-wave inversion in leads I and aVL. The chest radiograph, showing a normal mediastinal width of 7.5 cm, initially suggested acute coronary syndrome. However, bedside echocardiography revealed a dilated ascending aorta measuring 4.7 cm, with a normal aortic root, no aortic regurgitation, no pericardial effusion, and preserved regional wall motion and contractility. Despite labetalol and fentanyl infusions, the patient's blood pressure remained resistant, requiring oral ACE inhibitors and calcium channel blockers. CTA confirmed a Stanford type A AD starting from the ascending aorta and extending to the celiac trunk.



DISCUSSION

The International Registry of Acute Aortic Dissection (IRAD) study showed absence of mediastinal widening and absence of both mediastinal widening and abnormal contour in 37.4% and 21.3%, respectively. Chest radiograph can be normal in 12.4% of patients. Employing a combination of the Aortic Dissection Detection Risk Score and D-dimer alongside point-of-care echocardiography assists emergency clinicians in reducing unnecessary computed tomography for lower risk patients. Echocardiography findings of AD include the presence of an intimal flap, true and false lumina, aortic regurgitation, and pericardial effusion. Nonetheless, negative echocardiography does not rule out AD and further imaging techniques must be considered if clinical suspicion is high.

CONCLUSION

A high clinical suspicion is crucial, and the usage of bedside predictive tools, D-dimer, and echocardiography facilitate prompt AD diagnosis in the ED.

- References:
- Hagan PG, Nienaber CA, Isselbacher EM, et al. The International Registry of Acute Aortic Dissection (IRAD): New Insights Into an Old Disease. *JAMA*. 2000;283(7):897–903. doi:10.1001/jama.283.7.89
 - Aortic dissection live from the EM Cases course View larger image. (2017). Retrieved April 29, 2025, from <https://emergencymedicinecases.com/aortic-dissection-em-cases-course/>