Atypical Aortic Dissection in a Healthy Pregnant Female in the Emergency Department

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INTRODUCTION

- Aortic dissection is a critical diagnosis to rapidly make in the emergency department. Sadly, given the variety of symptoms during presentation many cases go undiagnosed or have significant delays in diagnosis.
- Pregnancy itself is a risk factor for a ric dissection that should be carefully considered in patients with suspicious symptoms or physical exam findings, especially in the third trimester.
- Hereditary fibrillinopathies remain the principal risk factor for a ortic dissection in pregnancy. Marfan syndrome is the most common of these.

CASE PRESENTATION

A previously healthy 31-year-old woman currently 22 weeks pregnant with twins presented to our emergency department (ED) at approximately 11 PM, complaining of jaw and throat pain which started earlier in the day. She was placed in the emergency department's fast-track section shortly after her arrival. She also endorsed a non-productive cough which had been ongoing for a few weeks. She noted some swelling in her mandible and submandibular region. She denied any recent dental problems, tooth pain, or intraoral drainage. She noted she hasn't seen a dentist in approximately 4 years. The patient had been eating and drinking fluids without difficulty. She further denied any leg pain, recent travel, fever, vaginal bleeding or discharge, dysuria, nausea, vomiting, or any abdominal pain. She denied any significant medical, surgical or social history. Chart review showed two previous vaginal deliveries and a diagnosis of preeclampsia during her second pregnancy. She was receiving routine prenatal care and was taking a daily prenatal and 81mg aspirin.

The patient's vital signs were blood pressure 114/51 mm Hg, pulse rate 78 beats/min, respiratory rate 18 breaths/min, temperature 98.1°F (36.7°C), and SaO₂ 96% on room air. Physical examination revealed a young woman of stated age in no acute distress and nontoxic appearing. There was no neck tenderness, cervical lymphadenopathy, mandibular swelling, or intraoral abnormalities noted. After reclining patient, a pulsation was noted at the suprasternal notch. A thrill/bruit was noted in bilateral carotids. She had 2+ pulses in all extremities; no neurological deficits; heart and lung sounds were normal; and abdominal examination was benign.

Initial laboratory and viral respiratory panel was ordered. However, in light of the patient's presentation, a bedside ultrasound exam was completed to investigate the source of the patient's neck pain. Ultrasound revealed a hyperdynamic pulsating left carotid and flap in the aortic arch, concerning for aortic dissection (Figure 1). Cardiothoracic surgery was consulted, and computed tomography of the chest, neck, abdomen and pelvis with intravenous contrast was performed. The results showed a dissection of the thoracic aorta, which began at the level of the aortic valve, propagating through the ascending thoracic aorta, aortic arch, and descending thoracic aorta. The dissection involved the origin of the left common carotid artery. Findings were compatible with a Stanford type A dissection (Figure 2). She was placed on an esmolol and nicardipine drip and admitted to the cardiac surgery intensive care unit. Patient underwent successful surgical repair of aortic root with aortic valve replacement.





IMAGES

Figure 1. Suprasternal notch view using POCUS showing dissection flap in aortic arch and dilated aortic outflow track

Figure 2. CTA chest, abdomen, and pelvis with Stanford Type A dissection



Aortic dissection is an incredibly rare diagnosis with incidence estimated at 10-30 cases per million people per year.¹ In pregnancy, aortic dissection occurs in 4-5 per million pregnancies and even given this rarity, it is the third most common maternal cardiovascular cause of death.^{2,3} Pregnancy increases the risk of occurrence by slightly more than 20 fold.² This is theorized to be related to hormonal changes and physiologic changes in pregnancy that begin in the first trimester and peak third.⁴ 78% of cases in pregnancy occur in third trimester while the second trimester only accounts for 19% of cases. Type A dissection is slightly more common comprising approximately 60 percent of cases in pregnant patients.⁵

The ability to quickly and accurately diagnose an acute dissection is critically important as mortality increases every hour that treatment is delayed. Mortality for Type A dissections increases by 1-2% per hour during the first 24-48 hours.⁶ Data suggests that the correct diagnosis of aortic dissection may only occur in 15% of all workups prior to a diagnosis made during autopsy.⁷ Symptoms can vary widely and 10% of patients may experience no pain at all. The classical teaching of asymmetric upper extremity pulses may only present in 15% of cases.⁸ The sonographic protocol for emergent evaluation of aortic dissections (SPEED protocol) has successfully shown that three sonographic signs, a pericardial effusion, an intimal flap, or an aortic outflow track diameter greater than 35 mm, have a sensitivity of 93.2% and a specificity of 90.9%.⁹

A complaint of "tearing" back/chest pain should always raise concerns for potential aortic dissection, however the overall incidence in the general population is low and many lack these classically taught signs/symptoms. Pregnancy especially those in the third trimester and patients with connective tissue disorders like Marfan, Turner, and Ehlers-Danlos syndromes are at increased risk. The SPEED protocol is a sensitive measure of acute aortic dissection using ultrasound. Emergency medicine physicians are keenly trained in bedside ultrasound which ultimately led to this expedited diagnosis and successfully lifesaving surgical repair in a unique presentation.



DISCUSSION

CONCLUSION

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