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Case Conference

Acute Type-B Aortic Dissection in Pregnancy: Therapeutic Challenges in a Multidisciplinary Setting

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ALTHOUGH ACUTE AORTIC dissection during pregnancy is a rare occurrence, it remains important because it is frequently a cardiovascular emergency that can be lethal for both the mother and the fetus. Clinical data from the International Registry of Acute Aortic Dissection have suggested that the risk of acute aortic dissection during pregnancy is about 0.2%.[1] Despite this low prevalence, it should be noted that 50% of aortic dissections in women younger than 40 years occur in the setting of pregnancy.[2] The literature also has suggested that the majority of pregnancy-related aortic dissections are Stanford type-A dissections, with Stanford type-B dissections accounting for about 10% to 20% of cases.[3] This case conference describes the multidisciplinary management of an acute type-B aortic dissection in a pregnant woman with Marfan syndrome to highlight the challenges of this life-threatening acute aortic syndrome.

Case Report[*]

A 32-year-old multigravida woman with a history of Marfan syndrome and previous surgery for acute type-A dissection presented with sudden onset of substernal chest pain radiating

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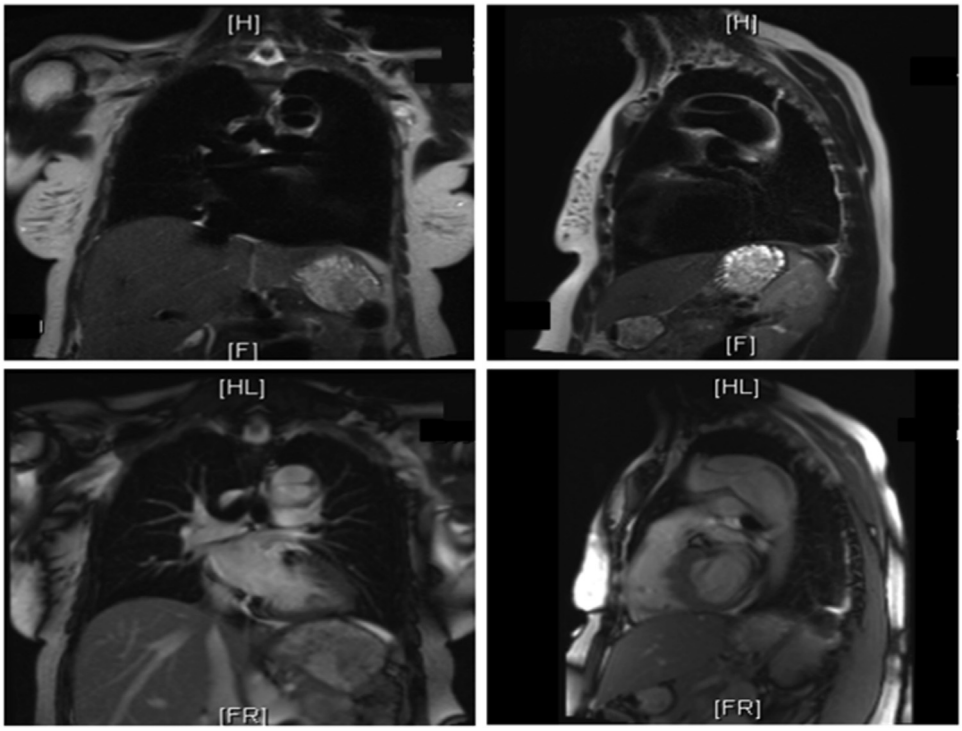

Fig 1. Magnetic resonance imaging of the thoracic aorta on admission. Plain imaging in sagittal *(top left)* and coronal section *(top right)* demonstrate type-B thoracic aortic dissection. Angiographic imaging in sagittal *(bottom left)* and coronal section *(bottom right)* demonstrate the intimal flap with patent false and true lumens in the descending thoracic aorta.

to her back. She also was carrying a singleton pregnancy with an estimated gestational age of 23 weeks. Urgent magnetic resonance imaging (MRI) of her thoracic aorta was selected for diagnosis to avoid the effects of ionizing radiation to the second-trimester fetus from computed tomography. The MRI imaging revealed an acute type-B aortic dissection extending from the origin of the left subclavian artery to the proximal thoracic descending aorta, with a maximal diameter of 3.9 cm (Fig 1). The patient's condition was hemodynamically stable at this point, and there was no evidence of aortic rupture or malperfusion—a Penn class-a presentation.[4]

The patient was admitted to the heart and vascular intensive care unit for strict control of her blood pressure and close monitoring by a multidisciplinary team comprising an intensivist, a cardiothoracic surgeon, cardiac and obstetric anesthesiologists, an obstetrician, and a maternal-fetal medicine specialist. The titration of opioids for analgesia and intravenous beta-blockade resulted in rapid resolution of both her aortic symptoms and systemic hypertension. Serial obstetric assessment revealed a normal second-trimester singleton pregnancy with no signs of fetal distress. Despite the significant aortic risk, the mother expressed a strong wish to continue the pregnancy. The initial management approach was to continue with this strict medical management, given the pregnancy, the uncomplicated clinical presentation, and progress during the first week of her hospital admission.[1–4]

On the 7th hospital day, the patient developed uterine contractions that initially were responsive to tocolytic treatment. On the 9th hospital day, she developed painful uterine contractions and passed large blood clots vaginally, raising concerns about placental abruption. Repeat MRI imaging of the type-B dissection at this time clearly demonstrated an expansion by 0.5 cm in maximal aortic diameter, further distal extension of the dissection in the descending thoracic aorta, and thrombosis of the distal false lumen. The gestational age at this time was now 24 weeks—an important milestone because the fetus was considered viable based on the excellent neonatal care available at the major referral center where the patient was receiving this multidisciplinary management.

Given the clinical deterioration at this point, the threat to the fetus from the placental abruption, and the achievement of fetal viability, the decision was reached to proceed with fetal delivery. An emergency Cesarean section was performed on the 12th hospital day with the patient under epidural anesthesia, with the delivery of a live, premature infant. Given the rapid progression of the acute type-B aortic dissection demonstrated on serial MRI imaging, the patient subsequently underwent definitive surgical repair under general anesthesia on the 17th hospital day. The surgical repair comprised left thoracotomy for distal aortic arch and proximal descending thoracic aortic replacement with cardiopulmonary bypass and deep hypothermic circulatory arrest (Fig 2). Her postoperative course was uneventful. Aggressive management for protection against spinal cord ischemia was administered, including perioperative lumbar drainage of cerebrospinal fluid and permissive systemic hypertension.[5] She was discharged on the 26th hospital day. The infant received continued management in the neonatal intensive care unit due to prematurity.

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