Spontaneous Coronary Artery Dissection in a Healthy Pregnant Patient

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Introduction

Acute coronary dissection is a rare cause of acute myocardial infarction (MI) in the general population[iv]. However, in pregnant patients, acute coronary dissection accounts for about 25% of total MIs during pregnancy. Although acute myocardial infarction is a rare event in women of reproductive age, pregnancy increases the risk 3 to 4-fold [i]. Mortality is high at 49%, with sudden cardiac death as initial presentation in 28% of cases[iii]. Coronary dissection during pregnancy can happen ante-partum, peripartum, or post-partum. The mean onset for prepartum coronary dissection is at 23 weeks gestation and for postpartum is at 23-26 days after delivery. Coronary dissection is the primary cause of myocardial infarction in the peripartum period, and it occurs in patients that are healthy with few if no cardiac risk factors presenting with chest pain.

Case Presentation

Prepartum Myocardial Infarction

A 29 year old female, G5P2022 at 34w3d, with past medical history notable only for asthma, presented initially to an outside hopsital with chest pain and sudden onset dyspnea. EKG showed ST-elevations with an initial troponin being negative, but repeat of 5 ng/mL. She was taken for an urgent left-heart catheterization, which showed left main dissection. She received two bare metal stents- one each to the left circumflex and LAD. She had VF in the cath lab, requiring defibrillation x5 with eventual return of spontaneous circulation. She was then given aspirin, heparin, and a loading dose of Plavix. Initial post-procedure TTE reavealed an EF of 30%. She developed uterine contractions later that night, and was transferred to our hospital for further management.

.Delivery

On admission to our CT ICU (post-MI day 1) was notable for EF of 25-30%, with severe hypokinesis of the septal, anterior, and apical walls. Day 2, her EF was still 30-35%. Plan was that if she needed an emergent delivery, she would deliver bedside in the CT ICU. In the event of an urgent or scheduled delivery, the plan was to deliver in the hybrid cath lab suite. The timing of delivery was discussed amongst the obstetricians, cardiology, and anesthesia in order to optimize cardiac function as well as gestational age.

The patient underwent a scheduled caesarian delivery at 35w1d in the hybrid cath lab. An interventional cardiologist, an obstetric and cardiac anesthesiologist, and a perfusionist were all involved. The hybrid cath lab had access to both an Impella or ECMO if needed. A venous Femoral sheath and an arterial line was inserted prior to induction along with a R IJ MAC introducer with PA Catheter. A rapid sequence induction was performed with 250 mcg fentanyl, 70 mg propofol, and 100 mg rocuronium. Patient was an easy intubation with a grade 1 view. Pfannenstiel incision was made, a low transverse uterine incision was made, and the infant was delivered. There was minimal bleeding and surgeon noted complete hemostasis. Intraoperative TEE noted EF to be around 25%. She was started on low dose norepinephrine and epinephrine. Femoral sheaths were removed and patient went to ICU intubated, sedated with propofol, until the 2-hour lie flat time reached. She was extubated without incident. Her EF remained 30-35%, with the same wall motion abnormalities. She was discharged with a plan for repeat TTE in 4-6 weeks and on ASA, Plavix, carvedilol, spironolactone, and Lisinopril.

Discussion

Pregnancy itself is not thought to increase the risk of myocardial infarction; however the increased cardiac output and altered hemodynamics, along with the increases in estrogen and progesterone likely contribute. Pregnancy-related spontaneous coronary dissection is thought to be due to an excess of progesterone, leading to biochemical and structural changes to the vessel wall involving damage to the elastic and reticular fibers [ii]. The increase in cardiac output and blood volume during pregnancy may increase shear forces in the vessels resulting in increased risk for dissection [ii]. The mean age of presentation with an acute coronary dissection during gestation is 33 years old with the majority of women being multiparous.

Coronary dissection can be limited to one vessel or can involve multiple vessels. When it involves one vessel, it typically involves the left main coronary artery (ii). Anterior-wall acute myocardial infarction, reported in 20% of cases, was more common than lateral or inferior-wall infarcts (iii). In these cases, multidisciplinary action is required involving CT surgeons, cardiologists, perfusionist, obstetricians, and obstetric and cardiac anesthesiologists.

References

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