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## Three Lives At Stake:

# A Case of Acute Myocardial Infarction in a Patient with Twin Pregnancy

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### Abstract

Acute myocardial infarction (AMI) is a rare occurrence in pregnancy. The incidence ranges between 3 to 100 per 100,000 live-births<sup>1,2</sup>. Factors associated with AMI in pregnancy includes advanced maternal age, preeclampsia, thrombophilia, postpartum infection and hemorrhage<sup>3,4</sup>. Due to the absence of data, these cases present with unique management challenges. We describe an acute ST-elevation myocardial infarction (STEMI) in a 37y old woman at 24wks gestation with a dichorionic/diamniotic (DCDA) twin pregnancy.

### Case Presentation

A 37 year old G4P3003 female, 24 week gestation with DCDA twins presented to the Emergency Department (ED) with bilateral arm pain of two days. She described a burning pain which was intermittent, lasting less than ten minutes, with rare radiation to her posterior neck. She denied chest pain, shortness of breath, abdominal pain or paresthesia. Her past medical history was without cardiovascular risk factors and included hypothyroidism, anemia, and anxiety.

On initial presentation, vitals were significant for tachycardia of 115, otherwise within normal limits. She was well developed, alert and in no acute distress. Physical exam was unremarkable, with normal heart sounds, no murmurs, lungs clear bilaterally, no peripheral edema and a gravid abdomen. The patient acknowledged tenderness and discomfort with palpation of the right shoulder and both upper extremities were neurovascularly intact without acute weakness.

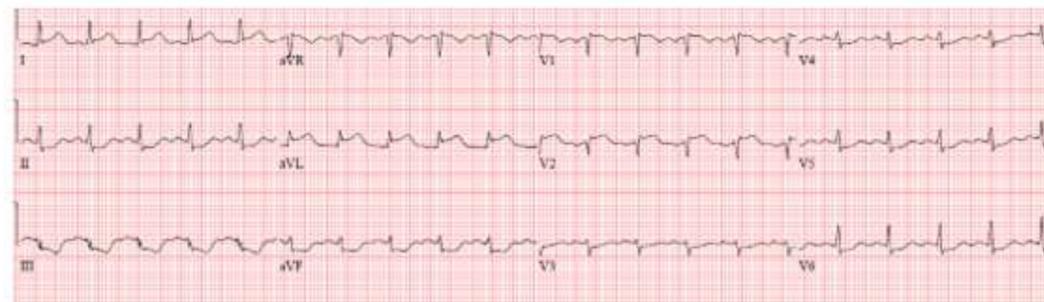
Intake electrocardiogram (ECG) revealed no obvious ischemic changes (Fig. 1a). Chest x-ray was within normal limits. Laboratory workup exhibited normal renal function, anemia of 8.5 g/dL and normal coagulation profile. She was asymptomatic on arrival, but noted a return of bilateral arm discomfort with new radiation to her neck and upper back during her visit. A STAT ECG revealed sinus tachycardia and ST segment elevation in leads I and aVL (Fig. 1b). STAT troponins ordered off of initial labs showed a troponin of 217 ng/dL, those at symptom onset were 2447 ng/dL.

Interventional cardiology requested a STAT echocardiogram, revealing severe hypokinesis of the entire anterior, anteroseptal, and anterolateral walls and reduced ejection fraction (Figure 3). Emergent cardiac catheterization was agreed upon and the coronary angiography revealed 90% stenosis of the proximal left anterior descending artery (LAD) with a thrombotic lesion. Percutaneous coronary intervention (PCI) of the proximal LAD was successful using a drug eluting stent (Fig. 2). Dual antiplatelet therapy included Aspirin and Clopidogrel. She tolerated the procedure well and was transferred to our tertiary care center for High Risk Obstetrics and Cardiac Intensive Care management. She went on to deliver two healthy children at 35 weeks through a cesarean section and remains asymptomatic on follow-up 6 months later.

### ECG at Presentation and Repeated Later with Symptoms

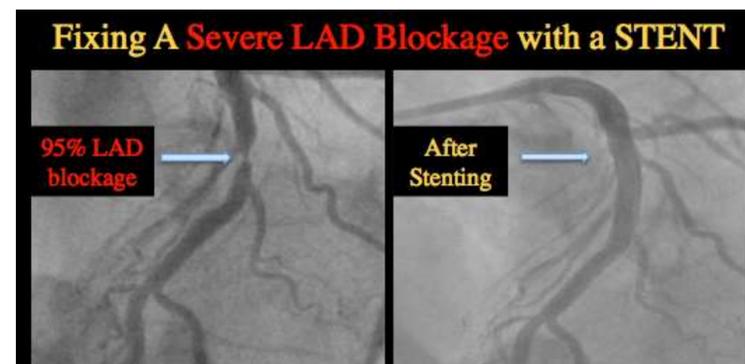


**Figure 1a: Initial ECG** revealed sinus tachycardia rate of 113, T-wave inversions of inferior leads, III, and aVF, no ST-elevations or ischemic changes.



**Figure 1b: Repeat ECG at the time of symptoms** revealed sinus tachycardia and ST elevation in leads I and aVL with reciprocal changes in inferior leads suspicious for anterolateral ischemia.

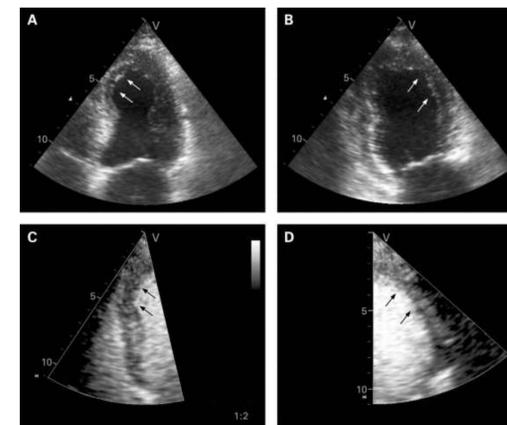
### Coronary Angiography and Echocardiography Findings



**Figure 2 Before PCI:** Coronary angiography revealed 90% stenosis of the proximal left anterior descending artery (LAD) with a thrombotic lesion, along with embolization of thrombus to the distal LAD near the apex.

**Figure 2 After PCI:** Percutaneous coronary intervention (PCI) of the proximal LAD was successful using a drug eluting stent.

**\*Note:** Unable to obtain actual PCI images from patient's chart, and the above images are a representation of before and after stenting.



**Figure 3: 2D Echocardiogram,** revealing severe hypokinesis of the entire anterior, anteroseptal and anterolateral wall with a reduced left ventricular ejection fraction of approximately 40% and no evidence of pericardial effusion.

### Discussion

- AMI in pregnancy holds maternal and fetal mortality rates of up to 11% and 9% respectively, and consideration is critical<sup>1</sup>.
- Advanced maternal age carries significantly increased chances of an AMI. 75% of AMI in pregnancy occurs after age 30<sup>2,4</sup>. Pregnancies over 40 are more than 30 times likely to have an AMI<sup>3</sup>.
- Echocardiogram is a safe, non-radiating tool that allows for risk stratification and maximal diagnostic return for evaluation of:
  - Pericardial effusion (pericarditis, myocarditis, aortic root dissection)
  - Right ventricular enlargement/ strain pattern (acute pulmonary embolism)
  - Left ventricular wall motion abnormalities (AMI).
- Emergent cardiac catheterization and PCI in timely fashion remains the standard of care in pregnant patients with AMI<sup>1</sup>.
- Radial artery approach is preferred over femoral approach to minimize radiation risk and vascular damage near the fetus<sup>5</sup>. It also makes it easier for the patient to be in lateral decubitus position.
- Near term Bare metal stent can be considered to shorten dual antiplatelet therapy (DAPT) duration to 1 month. Earlier in pregnancy DES can be used with a minimum of 3- 6 months of DAPT<sup>1</sup>.
- In the absence of conclusive data regarding safety of anticoagulant and antiplatelet agents in the pregnancy, based on experience and since the benefits outweigh the risks, use of Unfractionated heparin (UFH), aspirin and Clopidogrel is considered safe<sup>1</sup>.
- Cautious use of betablocker agents have been reported, however, ACE inhibitors, Statins and aldosterone antagonists are avoided due to known association with congenital anomalies<sup>1</sup>.

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