Case 28-2010: A 32-Year-Old Woman, 3 Weeks Post Partum, with Substernal Chest Pain

Case Study Presented By:
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3 weeks postpartum

First pregnancy: hypertension and preeclampsia

Normal blood pressure between pregnancies

Second pregnancy:
- 1st trimester BP: 120-140/60-80
- 2nd trimester BP: 118-120/60-82
- 3rd trimester BP: 104-130/60-78
- Postpartum BP: 120/80
- Undersized placenta (340 grams) with increased perivillous fibrin

No medications or allergies
Family and Social History

- **Family History**
  - Parents: hypertension, hyperlipidemia
  - Distant Cousin: stroke

- **Social History**
  - Profession: physician
  - Lives with husband, toddler, and newborn
  - No use of alcohol, illicit drugs, or tobacco
Onset

• 7:25 PM
  ○ Patient developed left jaw and substernal chest pain
  ○ Pain resolved spontaneously

• 8:00 PM
  ○ Chest pain returned
  ○ EMS called, pain resolved after 20 min O₂ therapy
Onset (Continued)

- **8:26 PM**
  - Pain returned (7/10) with shortness of breath
  - EMS returned
    - BP: 148/74 mm Hg
    - Pulse: 90-100 bpm
    - Interventions: Oxygen, 325mg Aspirin, Nitroglycerin (x3), Morphine 4mg
  - Pain resolved en route, arrived at ED 8:50P
Physical Exam

- **Vital Signs**
  - Blood Pressure: 143/92 mm Hg on left, 137/81 mm Hg on right
  - Heart Rate: 83-92 bpm
  - Neck: jugular vein distension (JVP 6-7 cm H2O)
  - Cardiovascular: no murmurs, rubs, or gallops
Labs

- **ECG:**
  - Normal sinus rhythm
  - Incomplete right Bundle Branch Block
  - ST elevation in V2, V3

- CK MB and Troponin I were negative

- Electrolytes were normal
Diagnostic Process

Chief Complaint: Substernal Chest Pain, Radiating to Jaw

Possible Causes of Chest Pain:
- Cardiovascular
- Pulmonary
- Gastrointestinal
- Musculoskeletal
Shows coronary artery dissection in the mid-to-distal left anterior descending artery (35mm long segment of narrowing, 90% stenosis)
Coronary Angiography - LAD

Day 0
What is a coronary artery dissection?

- **Tear in the coronary artery**
  - Inner and outer layer of the artery separate
  - Blood pools in the area between the layers
- **Tear can slow and/or block blood flow to the heart causing a heart attack, abnormalities in heart rhythm or sudden death**
- **Symptoms**
  - Chest Pain
  - Rapid HR; fluttery feeling in chest
  - Pain in arms, shoulder or jaw
  - Shortness of breath
  - Sweating
  - Unusual tiredness
  - Nausea
  - Dizziness
Postpartum Coronary Artery Dissections

- 75% of postpartum SCAD occur 1 day to 3 months postpartum (most occur within first 2 weeks)
- Mean age 33 y/o
- 87% occur in left coronary tree
Idiopathic Spontaneous Coronary Artery Dissection

- 75% pt’s female, premenopausal with no traditional cardiac risk factors
- 80% occur in left coronary tree
- Precipitated by activities that cause coronary shear stress
  - severe systolic hypertension
  - cocaine use, snow shoveling
  - weight lifting, etc.
  - As well as seemingly benign stresses such as running, aerobics, sneezing, etc.
- Pt.’s chest pain began right after picking up toddler
There is no consensus on appropriate treatment
Case dependent
Usually a conservative approach is taken
Conservative Treatments

- Patients who are stable and pain free
- Cardiac Support
  - Blood Thinners and Nitrates
  - Intra-aortic Balloon Pump
Interventional Treatments

- Patients with major or continued ischemia
  - Percutaneous Coronary Intervention (PCI)
  - Coronary Artery Bypass Grafting (CABG)
Case Treatment Decisions

- Patient Information
  - Left Anterior Descending Artery Dissection
  - No Pain
  - Slight Cardiac Ischemia
Case Treatment Decisions

- Conservative Medical Treatment
  - Intra-aortic Balloon Pump
  - β- blockers
  - Antiplatelet Agents (Aspirin)
  - Anticoagulation Agent (Heparin)

- Glycoprotein IIb/IIIa was not immediately administered
Resolution

- After 48 hours
  - Improved blood flow
  - Dissection resolved
  - Intra-aortic Pump Removed

2 Days
Resolution

- Discharged after 8 days with the following regimens:
  - Warfarin, Atenolol, Simvastatin, Clopidogrel (discontinue after one year)
  - Aspirin (indefinitely)

90 Days
Pathology

- 42-85% of cases involve Adventitial Inflammation due to Eosinophils
- Eosinophils release histolytic agents which cause dissections in coronary arteries
Questions?

Case Study Citation: