



12/18/23 Rafael Medina Cardio VMR with @CPSolvers



"One life, so many dreams" Case Presenter: Dr. Rand Ibrahim Case Discussants: Dr. Dimitri Cassimatis and Dr. Sophie Vitter

CC: 38-year-old male with 3 days of SOB and dyspnea on exertion

HPI: He had sudden onset of his symptoms, and has no symptoms at rest. No chest pain, orthopnea, PND. No prior similar events. Active at baseline.

ROS: Reports mild non-productive cough and sore throat 1 week prior to presentation. No rhinorrhea, nausea, vomiting, abdominal pain, rash, dysuria, weight loss, night sweats.

PMH:
DM2

Fam Hx:
HTN, DM

Soc Hx:
Nurse in GA

Meds:
Metformin

Never smoker, daily alcohol use (cut down to 3x/week from heavier use), no drugs
No pets, recent travel, hiking
Never homeless, prison, sex worker
No sick contacts but his son + for strep throat 3 weeks prior

Vitals: T: 36.9 HR: 83 BP: 108/75 RR: 15 SatO2: 99%

Exam:

CV: RRR, S1, S2, no murmur, rubs, gallops. No distant heart sounds. Warm extremities, no peripheral edema, 2+ symmetric pulses, no elevation of JVP

Notable Labs & Imaging:

Hematology:

WBC: 5.2 Hgb: 13 Plt: 325

Chemistry:

Na: 139 K: 3.9 Cl: 101 HCO3: 28 BUN: 12 Cr: 0.9
ESR 29 CRP 7 BNP: 48 hs-Troponin: 6278 CPK normal Total cholesterol 138 TG 313 HDL 30 LDL 45 HbA1c 8.1% from 9.4% 7 mo prior
Repeat BCx2 negative
Strep test positive

Imaging:

EKG: ST elevation in precordial leads V1 to V6
Cardiac cath: Normal coronaries without abnormalities
Echo: normal EF (65%), increased left ventricular wall thickness, N LV systolic and diastolic functions, no vegetations, mildly dilated aortic root, mild nonrheumatic tricuspid valve regurgitation.
US BLE: no DVT
Cardiac CT: Aortic root dilation, negative for dissection and aneurysm, no coronary artery calcium.
Cardiac MRI: Acute myocarditis according to modified Lake Louise criteria as well as mild pericardial thickening and enhancement suggestive of mild pericarditis.

Final Dx: Post-GAS myopericarditis

Problem Representation: 38 yo M presenting with acute SOB and DOE one week after mild non-productive cough and sore throat, with EKG revealing ST elevation in leads V1-V6. Cardiac MRI revealed myopericarditis.

Teaching Points (Bettina):

- **SOB + dyspnea on exertion** (cardiac vs. pulmonary): Infections (viral, CAP), DVT/PE (RFs: travel, sedentary), HF (acute vs. acute-on-chronic), myocarditis, arrhythmia (AF, atrial flutter, SVT), new onset or recent ACS (→ get EKG!), pneumothorax, pleural effusion, pericardial effusion, chronic anemia, malignancy, toxins (CO poisoning)
 - Sudden onset: ACS, pneumothorax, arrhythmia (less likely new-onset HF)
 - Sick contacts: myocarditis (infection/prodrome 1 week before)
 - Check for flu and strep
 - Daily alcohol use: Alcoholic cardiomyopathy (check echo)
 - Check for family history of sudden cardiac death ("drowning suddenly") → arrhythmia or HOCM
- Discerning ACS vs. non-ischemic may be challenging simply from history → get EKG and later on troponins (global ischemia like myocarditis vs. regional like ACS vs. HF exacerbation), cath if urgent, cardiac MRI
 - EKG: Rate, R wave progression, q waves (old MI), ST elevations (MI), PR segment depression vs. baseline (pericarditis), low voltages (effusion)
 - End EKGphobia with practice :)
 - Echo: EF, regional wall abnormalities, wall thickness, effusion
 - **Increased wall thickness:** Hypertensive heart disease, infiltrative disease, inflammation
 - **Mildly dilated aortic root + TR:** May be inflammation affecting the valves
 - Mild TR may be a normal variant
 - **Normal EF + diastolic function;** Very unlikely that they have ischemia (good NPV)
 - One of the first things to become abnormal in ischemia is diastolic function
 - Troponins: 20,000-30,000 (clear injury → urgent cath)
 - A high troponin does not always mean ACS
 - Late gadolinium enhancement on MRI: Diffuse (myocarditis) vs. in a specific region (vascular)
- If you miss ischemia for hours, you will lose muscle (reasonable to rule it out definitively)
- **Myocarditis:** viral (COVID) vs. bacterial (GAS; improves with abx)
 - If troponin kept up trending and symptoms increased, and If EF suddenly drops, think of fulminant myocarditis that may lead to severe cardiogenic shock
 - **Post-strep myopericarditis**
 - Molecular mimicry that targets the myocardium itself
 - Treatment is amoxicillin and generally do well ± endocarditis prophylaxis
 - Biopsy does not rule out but might help clinch giant cell myocarditis (fulminant)
- Medicine is an art and there are different ways of coming to the same conclusion
- Start with a broad differential and then hone in clinically with the information from the history and PE, then try to think about further investigating for the most dangerous/urgent things first (e.g., ACS) then keep going back to your differentials for what to address next