04/05/24 Morning Report with @CPSolvers

"One life, so many dreams" ***Case Presenter****: Nidhi Patel (@nidhipat19)* ***Case Discussants****: Rabih (@rabihmgeha) and Reza (@DxRxEdu)*

CC: 20 female presented to the ED for worsening dyspnea, orthopnea, emesis.

HPI: Patient diagnosed with HF 3 months ago from a non-ischemic cause. She has been experiencing emesis which started earlier today, she looks exhausted, has difficulty breathing. She was given PO lasix. She has more fluid buildup over the last few weeks, and she feels very tired.

Previously - 3 months ago, she came in with volume overload, afebrile, tachy, Pro-BNP: 15,000, normal CBC & CMP, Trops normal. ESR 94 CRP 123. Left heart catch was normal, initial ECG showed atrial flutter, no conduction system disease, Echo showed 10-15% and Grade 3 diastolic dysfunction, and a thrombus. Aortic lymph node with mild uptake, cardiac MRI showed enhancement in different places concerning of infiltrative disease. Started on steroids, after leaving hospital, she felt better and after taking steroids she felt great, and was able to focus in school. Since then, she had atrial flutter ablation, ESR and CRP returned to normal.

PMH: Bone marrow transplant at age 10 for Sickle cell disease, Mucocutaneous graft vs host disease, Hypertension (with recurrent HTN urgency) diagnosed 2 years ago, HfrEF 10-15%
Meds: B-blocker, ACE inhibitor, PO lasix, PO steroids given after HF diagnosed (stopped 1 month ago), blood thinner for thrombus in Left ventricle

Fam Hx: sister was donor for transplant, no family history of HF

Soc Hx: currently in school, doesn't drink alcohol
Health-Related Behaviors:
Allergies:

Vitals: T: 100.5 **HR:** 110 **BP:** 80/74 **RR:** SpO2:
Exam:
Gen: very fatigued, still responding
CV: heart sounds normal, JVD bilaterally to the ears, 2+ edema, cold on exam in proximal and distal extremities
Pulm: crackles in both lungs

Notable Labs & Imaging:
Hematology:
WBC: leukocytes 11.5, no neutrophils, no eosinophils Hgb: Plt:
Chemistry:
Na: K: Cl: HCO3: BUN: Cr: glucose: Ca: Mag:
AST: 47 ALT: 114 Alk-P: wnl Albumin: Trops: normal
Viral panel: negative
Blood cultures, urine culture: negative
RHC: Cardiogenic shock, started on meds (lasix), sent to CCU. Repeat ECHO was similar to before, CTPE: negative for PE, no other systemic findings of sarcoidosis.
No changes over the next one week and half. Later started on inotropes, possible concerns of patchy inflammation. Thought process - might eventually need a heart transplant.
Repeat FDG PET Scan showed areas of patchy inflammation from previously migrated to an alternative area. Aortic lymph node also enhanced, could not biopsy. Repeat cardiac MRI showed increased delayed enhancement in left and right ventricles, and fibrosis.
Rheu - agreed it might not be cardiac sarcoid.
Endomyocardial biopsy: lymphocytic infiltration, no fibrosis. Biopsy sent for a second opinion - showed giant cells

Dx: Giant Cell Myocarditis

Problem Representation: 20 y.o F w/PMH of BM transplant for SCD, GVHD, HTN, HFrEF came to ED % worsening dyspnea, orthopnea and emesis. Patient was febrile, and in cardiogenic shock with dampened QRS complex with evidence of migrating patchy inflammation of PET Scan and lymphocytic infiltration of endomyocardium.

Teaching Points (Ibrahim):
HF (CAD [HFrEF], valvular, HTN, toxin [alcohol, cocaine], arrhythmia [can be genetic: arrhythmogenic right ventricular dysplasia], idiopathic) hx → *HFREF (obesity) vs. HFPEF*
- *Many causes for non-ischemic cardiomyopathy exist*, make sure to distinguish one from the other
- **Rapid progression HF: (3Ts: Takotsubo, Thyroid, Thiamine), peripartum, myocarditis, large ischemia**

HF + troponin elevation = don't miss out **myocarditis**
- **Clue** → troponin persistently elevated
- *MRI w/ gadolinium → delayed enhancement, patchy (myocarditis) vs coronary artery distribution (CAD)*

Echo in HF → structural (e.g. filling pressure), EF, structural dx (e.g. VSD, shunting, valvular disease = diastolic dysfunction → infiltration [intracellular [HOCM] vs extracellular])
- **ECG** → low-voltage = think extracellular material accumulation: 1. Amyloid, 2. Myxedema (GAG), 3. Cancer, 4. Fibrosis → histology for dx/considering base-rate [conduction disease on previous ECG] [overlap w/ myocarditis exists]

Nausea and heart aren't mutually exclusive
Persistent shock in pt. on steroids → consider hydrocort. [adrenal insufficiency]

Restrictive cardiomyopathy w/ **overwhelming** systemic presentation → EXPOSURES [e.g. transplant source, infections: Chagas, genetic, GVHD, meds: tacrolimus]

Associated lymphadenopathy → may point towards immune → GVHD, sarcoid, cell diff. [including giant cells]
Lymphocytic and giant-cell myocarditis (easily missed because of patchy distribution, can happen in any age) → both present w/ lymphocytic infiltrate