05/27/21 WDx Morning Report with @CPSolvers

***Case Presenter**: Ashka Patel 👑 **Case Discussants**: Sherry Chao 👑 (@Shark8078Chao) and Casey Rimland 👑 (@CaseyRimland)*

CC: Shortness of breath
HPI: 66yF transferred from neighboring hospital, admitted for acute hypoxic respiratory failure. Presented w SOB for the past 3w. Prior dyspnea on exertion for past week that worsened, associated w/ dry cough. ROS: Negative.

Vitals: **T**:101 **HR**: 114 **BP**:144/86 **RR**: **SpO_2**: 86% RA; High Flow Nasal Cannula - FiO2 65
Exam: **Gen**: respiratory distress.
CV: tachycardic. **Pulm**: rales
Abd and Neuro: normal.
Extremities/Skin: No edema in lower extremities. No joint pain. Skin warm and dry. No rashes. No pallor.

Problem Representation: 66yF w/extensive autoimmune hx, ILD w/ previous lung transplant on immunosuppression not on PJP prophylaxis p/w acute hypoxic respiratory failure. Workup remarkable for high LDH, high BDG, Neg sputum cultures, Covid and CMV PCR w/ widespread b/l ground glass opacities on CT.

PMH:
- Aortic stenosis - TAVR.
- RA - antisynthetase sx complicated w polymyositis tx w IVIG, steroids, rituximab.
- Currently ILD - Left lung transplant Sep 2017. CMV Donor + Recipient -, EBV Donor + Recipient +. Transplant had episode of acute rejection - tx w/ prednisone Has received CMV prophylaxis, voriconazole and amph B prophylaxis.
Calcineurin toxicity.
- Sjogren - HTN. -CKD

Meds: cyclosporine, cyclosporine inh 3x week, prednisone, atorvastatin, omeprazol, ASA, nifedipine.

Fam Hx: Mother: lung cancer. Father: stroke.

Soc Hx: Married.

Health-Related Behaviors: Doesn't use tobacco, alcohol or drugs. No pets.

Allergies: None

Notable Labs & Imaging:
Hematology: WBC: 15 Hgb:9.6 Plt:482

Chemistry: Na: 130 K:4.4 BUN:19 Cr:2.04 (bl: 2.5-3)
Liver enzymes normal. Albumin: 3.5 No protein gap.
Lactate 2.2 Troponin 21, BNP 387 LHD 919.
Cyclosporine 67 CK7
ABG: pH 7.45, PCO2 30, PO2 64, A-a 212.

Micro: COVID PCR Nasal Swab: neg x2. Both vaccinations.
Blood cultures - no growth, Sputum RVP neg, urine legionella antigen neg. B-d glucan >500, CMV and EBV DNA PCR not detected.HIV Neg. Pre transplant: TB Quantiferon: Neg. Induced Sputum PJP PCR: Not detected. BAL not performed.

Imaging: CXR: Increased opacities in R mid and lower lung, opacities in L base. R volume lung decreased appreciated. Cardiac silhouette enlarged. TAVR visible.
CT Chest: Diffuse ground glass opacity in 5 lobes, bl pleural effusions - parapneumonic. Additional band atelectasis in R base. Scattered aortic calcifications.
Echo: Dilated L atrium. Aortic valve replacement, Mean gradient 22, mild regurgitation. Mitral valvular calcification.

Pt on Vanc, Zosyn, Azithro, IV Methylpred, IV Bactrim. Pt improved.
Final DX: PJP Pneumonia.

Teaching Points (Gurleen):
- **DYSPNEA ON EXERTION:** Cardiovascular (myocardium, pericardium electrical), Pulmonary (airway, parenchyma, vascular-PE/vasculitis, alveoli, pleura), chest wall, neuromuscular, heme (anemia), other (thyroid, anxiety)
  -Time course? Who is our patient? Layering on symptoms - hypoxia
- **Clinical Reasoning:** Sorting through - Is the current syndrome an extension of pt's existing condition (ex: ILD, acute on chronic) or is it a new entity?
- **S/P TRANSPLANT:** immunocompromised → prioritize infection
  -Viruses: HSV, VZV, CMV; Atypical bacterias - subacute symptoms, consider exposures, mycobacterium; Fungal; Parasites - strongy
  -But broad spectrum of conditions to consider: rejection vs. medication side effects vs. unrelated
  Steroids → thinking about infections like PJP, crypto, Aspergillus, Mucor, Candida
- ***Collecting clues:*** Elevated LDH →concern for PJP (high sens, low spec) *-Using physical exam to localize the process. Signal may be masked in severely immunocompromised.*
- **Positive Beta-D Glucan:** component of fungal cell wall & in PJP (but not in Mucor, Crypto, Blasto). False positives: Nocardia, Pseudomonas, mycobacterium
- **PJP:** ***Illness script → Who?*** Immunocompromised **What?** dyspnea , fever, high LDH, beta-D glucan, bil interstitial infiltrates, diffuse GGO D**x?** Induced sputum can miss, BAL more sensitive
  -When test is negative, use test characteristics for guidance.