01/01/21 Morning Report with @CPSolvers

***Case Presenter**: Ramla Kasozi (@RamlaKasoziMD) **Case Discussants**: Rabih Geha (@RabihMGeha) and Sukriti Banthiya ❤️ (@SukritiBanthiya)*

CC: SOB

HPI: Male early 20s, no known PMHx. Previously seen in ED Feb 2020 for SOB and productive cough, was diagnosed w/ R middle lobe pneumonia, was sent home with amoxi + clav.

May 2020, symptoms never improved. Cough was green → brown red sputum, not sure it was blood. SOB was present at rest and w/ exertion. No chest pain or palpitations.

ROS: 20lb weight loss, night sweats. Diarrhea 1w prior to presentation (5 loose watery non bloody stools).

PMH: None

Meds: None

Fam Hx: Mother - stage 4 Colon Ca.

Soc Hx: Takes care of mother. Unemployed. Lives w/6 family members.

Health-Related Behaviors: Not sexually active. Active vaping and THZ use. No cigarette or other drugs.

Allergies: None

Vitals: **T**: 100.6 **HR**:86 **BP**:115/60 **RR**:16 **SpO_2**: >97% RA

Exam:

Gen: Looks cachectic. No acute distress.

Pulm: Reduced breath sounds in all lung fields in R side w/ dullness to percussion. L was clear.

Rest of physical exam was normal.

Notable Labs & Imaging:

Hematology: WBC: 20.9 (N 87%, 18.3 abs count) Hgb:12.9 MCV: 78 Plt:436

Chemistry:Na:135 K: 4.0 Cl:103 CO2:21 BUN:9 Cr:0.73 Glu:83 Ca: 8.8 Mag:1.9
AST: 30 ALT: 40 T. Bili:0.5 Albumin:2.6 TP: 7.2 Gamma gap: 4.6
Lactate: 1.0 Procalcitonin: 0.08 (cutoff: 0-0.5) D-Dimer: 1.01

Imaging: EKG:normal sinus rhythm.
CXR: Feb: moderate size infiltrate R middle lobe consistent with pneumonia. May: disease involving R middle lobe and superior segment or R lower lobe. L side was nl.
CT Chest (May): dense opacity and consolidation of R middle lobe more prominent than on prior. New consolidates R upper and R lower lobe. Lung destruction on consolidation. 3mm calcified pulmonary nodule.

Hospital course: On admission: Iv vanc and zosyn. Ordered all good stuff.
Day 2: Sputum - PMN and 2+ gram positive cocci. White count trending down. HIV and Covid neg. Cr increased until 2.5. Urine studies seemed Ok. Stopped Vancomycin and zosyn and kidneys got better.
Day 4: Bronchoscopy was done. Cultures neg. White count trending up. Waiting for fungi cultures. Had intermittent fevers even on IV ATB.
Days later: Urine histoplasma antigen positive - started itraconazole. Other ID workup was neg. Continued to be febrile on and off w/ rising WBC. Bronchoscopy + BAL: KOH positive for broad based budding yeast, concerning for blasto. 48 hours later - respiratory symptoms improved and was discharged.
Outpatient: Initially patient very compliant, later patient discontinued itraconazole and continued vaping.

Dx: Pulmonary histoplasma?/blastomycosis predisposed by vaping use.

Problem Representation: 20M otherwise healthy w/vaping use p/w chronic SOB and productive cough w/no improvement to ATB.

Teaching Points (Rafa):

- **APPROACHING YOUNG PATIENT W/O PMH W/ SOB , PRODUCTIVE COUGH W/O IMPROVEMENT AFTER ANTIBIOTIC THERAPY**
  - Dyspnea pyramid - use the base rate to guide your Ddx
  - Many causes: Pulmonary - cardiac- - chest wall - anemia - neuromuscular disorders. Other causes: acidosis, anxiety
  - Antibiotic failure: non-infectious cause (malignant, autoimmune, drug related), antibiotic (spectrum, not taking, wrong dose?), natural history (too aggressive like MRSA bacteremia), wrong bug (fungal, viral, parasite, atypical bacterial),
  - Not a CAP PNA - young patient w/ antibiotic would get better
- **PE: FEVER + ↓ BREATH SOUNDS IN ALL R LUNG FIELDS + CACHECTIC**
  - Pulmonary problem- no cardiac abnormalities in the exam, no PMH
  - Where is the source: parenchyma? Airway? Pleura? Alveoli? Vasculature? - Infection, autoimmune, malignancy, primary lung diseases
  - Be sure to focus on the community factors: pneumoconiosis, hypersensitivity pneumonia, vaping-associated pulmonary injury (mimic pneumonia but typically doesn't respond to antibiotics)
- **LEUKOCYTOSIS + DENSE OPACIFICATION , CONSOLIDATION OF R MIDDLE LOBE EXTENDING + INCREASED PROTEIN GAP**
  - Monoclonal / polyclonal pathology?
  - Low MCV - iron deficiency anemia - chronic GI pathology also affecting the lung
  - Autoimmune affecting one lung - less likely - unless RA, MPA, GPA
  - Staph, Step, Enterococcus, Aerococcus - GP - less likely d/t not improvement on vancomycin - probably noise
  - **HISTOPLASMOSIS + BLASTOMYCOSIS POSITIVE** - blasto cross react with histo, paracocco, crypto, and aspergillosis..
  - Blasto - more likely because it was shown in the culture and affects more immunocompetent patients
  - Both treated with the same therapy