8/7/23 Rafael Medina subspecialty VMR with @CPSolvers

"One life, so many dreams" Case Presenter: Mark Heslin(@Mark_Heslin) Case Discussants: Dan Restrepo(@DrDanRestrepo)

CC: 38 year old female, 2 to 3 weeks of fever, headaches, cough, arthralgias and myalgias.

HPI: Presented first to a neighboring hospital:
Fever **104F** , other VS stable. CTPE no PE but did show **bilateral hilar and mediastinal LAD.** CT a/p **hepatosplenomegaly.** **Vancomycin and pip-tazobactam** for **empiric sepsis.** Worsening cough, dyspnea and **new hypoxemia** on hosp day 7, repeat ct chest widespread bilateral airspace opacities and new pleural effusions. Continued fever and new **AMS** after 8 days of admission. **Lumbar puncture** WBC 291, 78% lym, glucose 38 , protein 90, after LP new respiratory distress acute hypoxemic respiratory failure requiring *intubation* and *shock* requiring **vasopressors.** She was then transferred to our institution 10 days after admission to OSH for further management. **Pancytopenia.**
Also received doxycycline and Acyclovir.

Fam Hx: nil
Soc Hx:
Immigrated from Nicaragua 8 months prior to admission. Spent 2 months in Texas, and 6 months in PA. Works on a turkey farm before getting sick. Spent many nights outdoors, exposed to possible rat/animal/bug bites referred by husband. Denied alcohol use.

Vitals: T: HR: BP: RR: SpO2
Gen: Intubated, sedated, paralyzed
HEENT: scleral icterus; CV: norepi 10, vaso 0.03 no murmurs
Pulm: Mechanical breath sounds, **Fi100% PEEP 15 slight crackles in bases**
Neuro: Unable to assess orientation or command following, pupils eq and reac.
Extremities/skin:2++ peripheral edema; MSK no synovitis

Notable Labs & Imaging:
WBC: 2.3 Hgb: 6.3 Plt: 23; PBS: No schistocytes, rare spherocytes
CMP on admission:
Na: 131 K: 3.1 CO2:19 AG 14 BUN: 7 Cr:0.8
AST:58 ALT:58 Alk-P:193 T. Bili:1 Protein: 7.8 Albumin: 3.5
CMP upon arrival on MICU:
Na 141, K 3.1, Cl 104, Bicarb 25, AG 11, BUN 62, Crea 2.92, AST 187, ALT 60, Alp 65, Tbili 6, direct 4, Total Protein 4.9, Albumin 2.4
WBC 2,3 w/ lymphopenia Hb 6.4 MCV 80, PLT 23, INR 1.3 PTT wnl
Haptoglobin <30, LDH 689 , retic count 34k (1.3%) , ferritin 1,331 **direct coombs pos for IgG;** CK Normal, HIV neg
ANA neg, Chikungunya IgM G neg , Aspergillus neg, BDG neg, Dengue Fever neg; **Dengue** neg, **Quantiferon** neg, Brucella Igg+IgM neg, Covid neg, mycoplasma igm neg, igg+, MRSA neg, EBV IgM neg, Lepto IgM neg, **Resp. panel** neg, **Hepatitis panel** neg, Anaplasma neg, RMSF neg, Chlamydia neg, **Meningitis panel** neg (listeria, N. menin, Strep agalactiae, Strep pneumo, cmv, enterovirus, hsv-1/2/6, vzv, Crypto neg)
Positive: Coxiella IgG 1:23 IgM neg Cmv pos IgG 1.4 , IgM neg
Blood culture neg, Resp culture: neg, Strep antigen neg, Arbovirus panel, Strongy, neg from CSF; Urine Histoplasma + Legionella neg, Blood parasites neg, Malaria antigen neg,
Day 14: Bronchoscopy BAL RBC 36,000 WBC 934 (79% PMN 10% monos 3% lymph); Neg AFB, Tb PCR, small budding yeast in background of necrosis w/ acute on chronic inflammation, degenerated epithelioid cells: stain consistent w/ Histoplasma
Final Diagnosis: Severe Disseminated Histoplasmosis.

Problem Representation:
Received prolonged course of AmpB and iv methylprednisolone. Deversecesed shortly after AmpoB. Was extubated 2 days after starting AmpB.

Teaching Points (Ibrahim):
- **Subacute/acute constitutional symptoms** → viral infection, suspect otherwise if going on for wks (VERY WIDE DIFFERENTIAL → autoimmune disease, malignancy, drugs, endocrinopathies)
- ***headache*** *is nonspecific (make sure not at center)*
- **myalgia** often arise secondary to inflammatory response
- **fever** → tempo is important, consider host status (travel, immune status → wider differential such as parasitic, fungal, and tick-borne infections)
- **Acute renal failure** → multi-organ infection vs Vanco + pip/tazo S/E
- *Bacterial* sepsis → **tachycardia** w/ fever, esp. If young & healthy
  - *exceptions: typhoid (travel), legionella, leptospira, and other intracellular pathogens*
- reticuloendothelial involvement + pancytopenia → tick-borne infections, anaplasma, babesiosis; ***suspect otherwise if worse on doxy. Think about HLH,*** adult-onset still's, lymphoma, SLE.
- HOST + TEMPO + NOT RESPONDING to Tx → lower pre-test of bacterial infections
- **Central America/Texas travel hx** → TB/histoplasma/blastomycosis and other dimorphic fungi/cryptococci (esp. If immunocompetent)
- **Rat urine** → leptospira (conjunctival effusion, respiratory failure, renal failure), streptobacillus moniliformis; **mammal placenta** → coxiella.
- **Workup**: histoplasma antigens, serum cryptococcal antigen, respiratory for fungal culture, if Tx non-responsive and lab data don't fit → tissue biopsy/micro
- high **LDH**: lymphoma, hemolysis, pul involvement
- Think about **HLH**, even if doesn't meet cut-off values
- R/o **disseminated TB** [can cause TB] is HARD (reticuloendothelial + renal + pulm.) + lymphoma + adult-onset still's disease (arthralgias + sore throat + leukocytosis) + sarcoidosis (sub-variants may involve liver, aggressive sarcoidosis)
- **FURTHER workup**: mediastinal lymph nodes (LUNGS LUNGS LUNGS!), liver biopsy, BM biopsy (AFPs, TB cultures, hemophagocytic lymphohistiocytosis)