10/16/23 Rafael Medina Subspecialty VMR with @CPSolvers

*"One life, so many dreams" **Case Presenter**: Navila Sharif **Case Discussants**: Youssef Saklawi (@SaklawiMD) and Natasha Spottiswoode (@NSpottiswoodeMD)*

CC: 37F who presents with fever, chills and malaise for the past 4 days

HPI: Patient noted fevers, chills, fatigue and night sweats for the past 4 days. 1 day prior noted worsening nausea and vomiting. Also presented deep epigastric pain. No headache, neck stiffness, cough, SOB, chest pain, rash, dysuria or diarrhea. No recent sick contacts or recent travel. On TPN for 2 years. Right chest Hickman catheter. Prior infections: *Klebsiella pneumoniae* bacteremia. *Nakaseomyces glabratus* fungemia. Endocarditis w/ metastatic *Bacillus spp.* bacteremia

PMH:Sphincter of Oddi dysfunction, Short gut syndrome, chronic pancreatitis, gastroparesis w/ multiple G and J tubes, malnutrition with TPN dependence, Opioid dependent. Sx history: Cholecystectomy, Bowel resection, multiple CVC placements.
Meds: fentanyl patch 100mcg/h, oxycodone 10mg, dilaudid 4 mg PRN. Antiemetic PRN.

Fam Hx: none noted

Soc Hx:from Georgia. Lives w. Husband and 2 young kids (4 and 7 y.o). No travel or hiking.

Vitals: T: 39.6 **HR:** 127 **BP:** 108/64 **RR:** 18-20 **SpO2 95% Room air**
Exam:
Gen: Toxic appearing, visible shaking and rigors
HEENT: normal except for dry mucous membranes
CV: no murmurs/ **Pulm:** crackles at bilateral lung bases
Abd: soft, non distended, tenderness in RUQ and epigastric region
Neuro: normal. AAO x4
Extremities/skin: non pitting bilateral ankle edema. **R chest Hickman w/o surrounding erythema, warmth, tenderness or discharge.** No Janeway lesions/ Osler nodes.

Notable Labs & Imaging:
Hematology:
WBC: 2900 (84% neutrophils, 10% lymphocytes) (remained at around 2.5-3.5) Hgb: 5 (baseline approx. 9, responded after 2u pRBC's to 8) Plt: 60 000 (increased to approx 150K)
Chemistry:
Normal BMP Cr: 0.45. Normal LFTs. PCT: 1.4 Lactic acid: 1.4. LDH: 413, D dimer: 2948, INR: 1.6, Fibrinogen: nl. Iron 13, Tsat 6%, ferritin 533.
Blood cultures: Gram positive bacilli x1 from central line, 2 peripheral cultures w/ no growth at 48h. **ID workup: respiratory panel/ culture, AFB culture, mycoplasma ab, adenovirus PCR, urine histo, Legionella, serum cryptococcal antigen, galactomannan, beta D glucan, HIV, hepatitis negative**
Peripheral cultures at > 72h: gram positive bacilli beaded and branching. Speciation: *Nocardia spp.* Day 10: 2d organism detected: Mycobacterium fortuitum. Final speciation: *Nocardia africana/ nova*
Imaging:
CXR: patchy air space opacity in RUL
US: no biliary obstruction. Hepatosplenomegaly
Ct abd: no acute findings, mild splenomegaly
CT chest: multifocal ground glass opacities and nodular consolidative opacities worse in LLL and RML
TTE/TEE: no vegetations/ Bronchoscopy w/ BAL: cultures negative

Final Diagnosis: Disseminated nocardiosis

Problem Representation: 37F immunosuppressed patient presents w/ 4d of fevers and chills found to have pancytopenia, hepatosplenomegaly and positive blood cultures consistent with *Nocardia africana/ nova*

Teaching Points (@Noah_Nakajima):
Overall clinical picture of inflammation ➞ Risk factors point toward infection.
N/V + deep epigastric pain + hx of pancreatitis + hx of abdominal surgery ➞ GI is a possible focus.
TPN is a risk factor for blood stream infection!
Framing of prior bacteremia, fungemia and probable prior endocarditis ➞ increases probability of repeat blood stream infection and endocarditis.
Physical examination
Lung findings are a surprise in this case ➞ concerning for possible septic emboli, less likely concomitant pneumonia.
Empiric treatment
Antibacterial (MRSA and Pseudomonas from health care exposure) + antifungal (Nakaseomyces glabratus is concerning!)
Vancomycin + pipe/tazo + micafungin.
Labs & Imaging
Pneumonia dx: imaging + s&s + laboratory data ➞ in this case, neither pneumonia nor typical pneumonia
- What could affect the lungs that is not bacteria? Virus, fungi, PJP.
Pancytopenia is surprising in this patient ➞ determine chronic vs acute
Putting it all together
Hepatosplenic + pulmonary + BM involvement ➞ Likely systemic bacterial or fungal infection.
Fungal markers (galactomannan, beta D glucan, urine histo, serum crypto ag) have low sensitivity and specificity, and don't change management too much.
GPB has a broad differential diagnosis, from harmless to deadly bugs ➞ could represent disseminated nocardiosis.
Nocardiosis - Hard to diagnose
Immunocompromised from TPN and nutritional deficiencies. Goes to all places bug. Not covered by most antibiotics bug.
Final teaching points: 1) Immunocompromised is not binary, it is a spectrum with different manifestations; 2) When uncertain, think back on types of pathogen (virus, bacteria, fungus, etc.) 3) Nocardia is challenging and disseminates easily.