03/01/21 Morning Report with @CPSolvers

Case Presenter: *(Fernand Bteich @fernandbteich)* ***Case Discussants***: *Sandra Fonseca (@SandraFonsecaMD) and (Mario Suito (@mariosuitofmd)*

CC: fatigue

HPI: 70F presents to ED w worsening fatigue, 1 wk prior received COVID vaccine.
1 wk ago- UTI, tx with nitrofurantoin

In ED: Hgb 2.5 → transfusions
Denies melena, hematochezia. WL 10-12lbs past few months, fever last few days (up to 100.8 F), dark urine

Few months prior, Endo appt: Hgb 8.5 (~8-9)

PMH:
Sarcoid (pulm) - not treated
RA
Essential HTN
Gout
Thyroid CA- tx radioiodine
No Surg

Meds:
MTX weekly (for RA)
Allopurinol (gout)
Folic Acid
Ibuprofen
Levothyroxine
Monteleukast
Losartan- HTN

Fam Hx:
No hx of anemia

Soc Hx:
RN

Health-Related Behaviors:
No tob, EtOH, no drug use

Allergies:
Cephalosporin

Vitals: **T**: 97.2 **HR**: 98 **BP**: 106/58 **RR**: 22 **SpO_2**: 97 on RA; BMI 28

Exam:
Gen: NAD, slightly fatigue, looked pale
HEENT: nonicteric, otherwise wnl
CV: RRR, no murmurs
Pulm: clear
Abd: soft, non tender
Neuro: generally nonfocal
Extremities/Skin: no purpura, no rash on skin, no edema, palpable pulses

Notable Labs & Imaging:
Hematology:
WBC: 18 (ANC 12) Hgb: 2.5 Hct: 11.1 Plt: 204 MCV 119.6
Chemistry:
Na: 137 K: 4.6 Cl: 101 CO2: 21 BUN: 35 Cr: 1.65
glucose: 129 Ca: 9.5 Phos: 3.7 Mag: 2.6
AST: 43 ALT: 12 Alk-P: 86 T. Bili: 4.8 D Bili: 1.0
Lipase: 82 Albumin: 3.8 LDH: 1200 Abs Reticulocyte count: 200 Peripheral Smear: no schisto, some spherocytes, polychromasia, some cells close together
Ferritin: 893 Folate: 8.4 Vit B12: 913 Coombs test: IgG and IgM positivity

CT: bulky mediastinal and hilar LAD, coarse calcifications, parenchymal nodules in lungs, c/w ILD c/f sarcoidosis. Splenomegaly present.
Final Diagnosis: AIHA due to autoimmune disease

Problem Representation: 70 yo F w/ PMH of sarcoid, RA, gout, radiation-treated thyroid cancer presenting with worsening fatigue, weight loss, severe macrocytic anemia with Hgb 2.5, and dark urine found to have autoimmune hemolytic anemia.

Teaching Points (Gurleen):

- **FIRST THINGS FIRST:** is patient stable? Signs of hypovolemia?
  Hgb this low - *acute on chronic*, can not be just acute
- **Who is the patient?** risk factors → nitrofurantoin; methotrexate (suppression); sarcoid (possible autoimmune or infiltration; most common to have leukopenia); RA (extra-articular); radiation therapy → increased risk of developing myeloid disease; gout due to increased uric acid production (proliferative neoplasms)
- **Clues to frame the patient:** weight loss (inflammatory process); dark urine (Hgb, myoglobin, bilirubin from hemolysis)
- **ANEMIA:** bleeding (localize: GI, GU, gyn through history)
  -issue with production (bone marrow) vs. destruction (hemolysis - membrane, internal, environment) vs. loss of blood
  -*Workup to guide diagnosis:* retic count, smear, ferritin
- **MACROCYTIC ANEMIA >115 (pivot point):** megaloblastic: nutritional (B12 - associated neuropathy, folate. assess with homocysteine, methylmalonic acid), methotrexate-induced, non-megaloblastic (no impairment of DNA synthesis): reticulocytes, liver disease, hypothyroidism, myelodysplastic syndrome (MDS)
- **KEY LABS TO LOOK OUT FOR:** schistocytes for hemolysis, retic count can increase MCV as can spherocytes, Coombs for autoimmune, haptoglobin, elevated ferritin (chronic inflammation)
  Reframe hypothesis: acute on chronic, autoimmune risk factors, splenomegaly
- **HEMOLYTIC ANEMIA:** elevated LDH, high indirect bilirubin
  -one approach: environment (MAHA, trauma), membrane (intrinsic vs. extrinsic - autoimmune), internal (intrinsic - hemoglobinopathy, enzyme deficiency (G6PD - but can have normal levels; extrinsic - infections)
- **AIHA:** warm IgG (autoimmune > lymphoproliferative) vs. cold IgM - less steroid responsive (lymphoproliferative likely, also post-infection). Workup: EBV, CMV, Mycoplasma