11/14/23 Morning Report with @CPSolvers

*"One life, so many dreams" **Case Presenter**: Mark (@Mark_Heslin) **Case Discussants**: Ravi (@rav7ks), Yazmin (@minheredia) and Ibrahim (@IbrahimOmer_)*

CC: 73 year old male with progressive dyspnea & hypoxemia over the past 2 weeks.

HPI: 9 months prior to admission, presented to the local ED with lower back pain and upper chest pain. Found to have WBC 5.5, platelet flow with AML FLT mutation, ITD mutation, IDH2 mutation, MP1 mutation, received 5 cycle of venetoclax and azacitidine. last cycle was given 1 month prior to admission. Admitted for **planned allogeneic stem transplant,** and started on **tacrolimus, MMF prophylactic antifungals**. Developed dyspnea, cough and hypoxemia on admission, 3-4 weeks after CT scan showed diffuse bilateral GGO, started on meropenem for 7 days, hypoxemia progressed from Nasal Cannula to high flow cannula. Repeat CT 8 days later showed worsening GGOs and interstitial edema. On the floors, patient developed irritation and received haloperidol. Developed AKI and epistaxis. Received many platelet and blood transfusions during the admission. 12 days after the initial onset of symptoms, the hypoxemia worsened and patient was intubated and admitted into MICU. During the admission, patient had intermittent fevers, and was febrile on admission to the MICU.

PMH:
AML, Branch arterial occlusion, HTN, Pseudogout; arthrocentesis, BM biopsy

Meds: Prophylactic acyclovir, levofloxacin, caspofungin prophylaxis, gabapentin, rosuvastatin

Fam Hx: none
Soc Hx: quit smoking in 2005, smoked pack per day for a long time (unsure of duration), drank 1 alcoholic beverage per week. Worked in the navy, then trucking and was an accountant. Now retired and lives in central pennsylvania.

Health-Related Behaviors:
Allergies: NKDA

Vitals: T: 100.7 **HR:** 110 **BP:**115/73 **RR:** 95% mechanically ventilated **Fio2** 100% **PEEP** 8
Exam: in ICU, ill appearing, paralyzed **HEENT:** dry blood in nose and mouth, **CV:** tachycardia, no murmurs **Pulm:** diffuse inspiratory crackles **Abd:** soft, nondistended abdomen **Neuro:** intubated and sedated, couldn't assess neuro exam **Extremities/skin:** warm, well perfused, erythematous maculopapular rash on upper chest

Notable Labs & Imaging:
Hematology: WBC: 13.3 (neutro) Hgb: 7.1 Plt: 15

Chemistry: Na: 132 K: 4.2 Cl: 100 BUN:118 Cr: 4.8 glucose: 185 Ca: 8.4 (slightly low?) Mag: 2.9 phos 5.5 (high?) AST: 67 ALT: 28 Alk-P: 94
Albumin: 2.9 Total Bilirubin 3.3, indirect Bili 1.5, Anion-Gap 16
PT and PTT normal LDH 525 Haptoglobin <30, fibrinogen normal, UA: mild proteinuria,
Infectious workup: Aspergillus, beta D glucan, MRSA, legionella, EBV DNA, CMV DNA - all negative. Respiratory viral panel, strep pneumo - negative

Imaging: TTE: nl
Peripheral Smear: 5 schistocytes, coombs negative
Continued to have refractory hypoxemia p/f ratio <100, signifying severe ARDS, bloody output from endotracheal tube, bronchoscopy was done - serial lavage, became progressively bloody. BAL studies showed 1319 WBCs, 17,562 RBCs, WBC diff: 40% neutrophils, 60% lymphs.
Respiratory viral panel, routine respiratory culture, anaerobic culture, fungal culture, AFB, aspergillus antigen, histo antigen - ALL negative. CMV negative, Legionella negative. ANA, ANCA, RF, cryo, anti-GBM - all negative
Symptoms started 3 weeks after the transplant.
ADAMTS13: negative
Dx: Tach Induced TTP and secondary diagnosis of Periengraftment Respiratory Distress Syndrome (PERDS)

Problem Representation: 73 year old male w/PMH of AML received chemotherapy and allogeneic stem cell transplant. After 3 weeks patient presented with progressive dyspnea and hypoxemia along with a localised erythematous maculopapular rash on upper chest.

Teaching Points (Hui Ting):

Approach to hypoxemia: any associated conditions (e.g. respiratory). Oncologic patient + hypoxemia consider Aa gradient to approach the differential diagnosis. Ask the question if O2 saturation improve with minimal O2? → Yes: normal Aa gradient (Asthma, COPD, Opioid overdose), No: Increased Aa gradient. (PE, pleural effusion).

Approach dyspnea: Acute vs chronic. E.g. CV: tamponade, ACS. Pulmonary: PE, pHTN. Airways: Asthma, COPD. Other causes to r/o such as neuromuscular (MG, ALS, GB).

It is important to consider if mechanical ventilation is needed. R/O possible obstruction of the airway. Consider acute insult to the lungs (e.g. chemotherapy agents). Possible TACO or TRALI. Possible infections (fungal, bacterial o virus).

TRALI: acute onset of hypoxemia and dyspnea, bilateral infiltrates, leukopenia, hypotension, tachycardia, thrombocytopenia, multiple previous transfusions.

Acute diffuse alveolar hemorrhage: hypoxemia, dyspnea, chest pain, hemoptysis, fever.

Approach to thrombocytopenia: consider DIC, TTP. Need PBS → schistocytes. External forces that can disrupt RBCs, scleroderma (can cause MAHA). Intrinsic causes: Leishmaniasis, Malaria, babesiosis, bartonella.

Approach to rash: DIC, purpura fulminans, TTP. In this case TTP was caused by tacrolimus.

PERDS (Peri-engraftment respiratory syndrome): patient with history of autologous hematopoietic stem cell transplantation experiencing fever, erythematous rash over the body, diffuse pulmonary infiltrates.