Clinical Pearls: Hematology

Hematology I

- Ferritin is a measure of iron stores and Total Iron Binding Capacity (TIBC) measures the capacity to accept more iron. In patients with anemia of inflammation, iron stores frequently are sufficient but sequestered making the ferritin level rise. This corresponds to a low TIBC. These are the hallmark labs used to differentiate between anemia of inflammation and iron deficiency anemia.
- The presence of neurologic symptoms including is specific to B12 deficiency when differentiating it from folate deficiency. A methylmalonic acid level may be helpful for uncovering true B12 deficiency in patients with borderline low B12 level.
- Thrombotic thrombocytopenic purpura can present with fevers, thrombocytopenia, microangiopathic hemolytic anemia (MAHA), neurologic symptoms, and renal dysfunction but only rarely with all 5 concurrently.
    - The presence of a MAHA is required for diagnosis and is most frequently associated with thrombocytopenia. Low ADAMTS13 levels are the gold standard for diagnosis but treatment should be as soon as there is clinical suspicion for TTP give the risk of complications.
- In performing an initial evaluation in a patient referred for anemia, the importance of obtaining a reticulocyte count cannot be understated.
- In evaluating patients for microangiopathic hemolytic anemia, it is rare that all five parameters in the classic pentad of fever, anemia, renal insufficiency, thrombocytopenia, and neurologic changes are present. ADAMTS13 testing should be obtained as soon as the diagnosis is suspected but prompt initiation of plasma exchange should never be delayed when the clinical suspicion for TTP is high.
- A decreased serum erythropoietin level is highly specific for a diagnosis of polycythemia vera and JAK2 V617F mutations are present in approximately 97% of patients with PV.

Hematology II

- Inheritance of the Duffy null red blood cell type may be associated with mild neutropenia <1500 micro/L that does not increase the risk for infectious complications or cytopenias in other cell lines.
    - For patients with persistent, isolated neutropenia on complete blood count testing, the diagnosis may be confirmed using Duffy antigen phenotype testing of the peripheral blood.
- Primary immune thrombocytopenic purpura remains a clinical diagnosis. Platelet-associated antibody testing does not predict outcomes and is not routinely ordered. Evaluation with a bone marrow biopsy is only necessary if there is clinical concern for an alternative marrow disorder.
- In evaluating patients for a leukocytosis, the differential on the WBC, the presence of any co-existing cytopenias, and the clinical appearance of the patient are key in deciding upon the urgency of the evaluation and determining the appropriate testing to be obtained.
- Determining the 4T score is essential in any patient for which heparin induced thrombocytopenia is considered. Additional diagnostic testing and treatment for suspected HIT should be based upon the results of the 4T score
- In patients diagnosed with the antiphospholipid syndrome, warfarin is typically preferred over novel oral anticoagulants, especially in high-risk situations such as patients with triple positive APS .
- For patients being evaluated for heparin induced thrombocytopenia (HIT), a positive immunoassay should result in holding further heparin-based products and initiation of an alternative anticoagulant. Indeterminate assays that are paired with a high pre-test probability require functional testing to confirm the diagnosis of HIT.
    - Warfarin should not be initiated until normalization of the platelet count to avoid temporarily increasing the risk of thrombosis due to more immediate depletion of protein C and State.