Disorders of the Leukocytes and Spleen – 2023

Role of the Leukocytes
aka: WBCs
- Protection from invading organisms
  - Destroy pathogens
- Recognition of self vs non-self
- Destruction of foreign invaders, debris, abnormal cells

Leukopenia
- ↓ in total WBC count

Leukocytosis
- ↑ in total WBC count

Neutropenia
- ↓ neutrophil count

Absolute Neutrophil Count (ANC) = WBC x %neutrophils
- Neutropenia = ANC less than 1,000

When looking at WBC differentials, note:

% neutrophils, eosinophils, etc. = % of those cells out of 100% (i.e. 55%)

Absolute neutrophils, eosinophils, basophils, etc. = the exact number of that type of cell (i.e. 590)

Neutropenia
- Clinical consequence that occurs with a variety of conditions or diseases
- Commonly from chemotherapeutic and immunosuppressive meds
- Also from (Table 30-21):
  - Hematologic malignancies
  - Autoimmune disorders
  - Infections and severe sepsis
  - Nutritional deficiencies
- Normal protective mechanism impaired
- Pt. has little to no ability to fight infection

Clinical Manifestations
- Classic signs of inflammation may not occur
- Low grade fever is significant!!
- Minor infections can lead rapidly to sepsis
- Normal body flora can become an opportunistic pathogen!
- Any minor complaint of pain or infection is serious
- Common entry points for infection
  - Mucous membranes
  - Skin, throat, mouth
  - GU system
  - Pulmonary system

Diagnostic Studies
- H & P
- WBC Count with differential
  - WBC < 4000 = Leukopenia
  - ANC < 1000 = Neutropenia
  - Bands
- Bone marrow aspiration and biopsy

Interprofessional Care
- Determine Cause and ID organism

- Antibiotic therapy for fever
    - Blood cultures first
    - Broad spectrum for T> 100.4
    - Monitor side effects
- Meds to stimulate WBC count
    - Filgrastim (Neupogen)
    - Pegfilgrastim (Neulasta)
- Protective Isolation Includes: strict handwashing, visitor restrictions, private room!
- Monitor for infection (check temp often)
- Be aggressive with fevers
- Support nutrition
- Teach pt./family
    - Handwashing
    - Dietary restrictions
        - avoid uncooked meats, seafood, eggs, and unwashed fruits and veggies
        - even fresh flowers
    - Avoidance of crowds
    - When to call provider

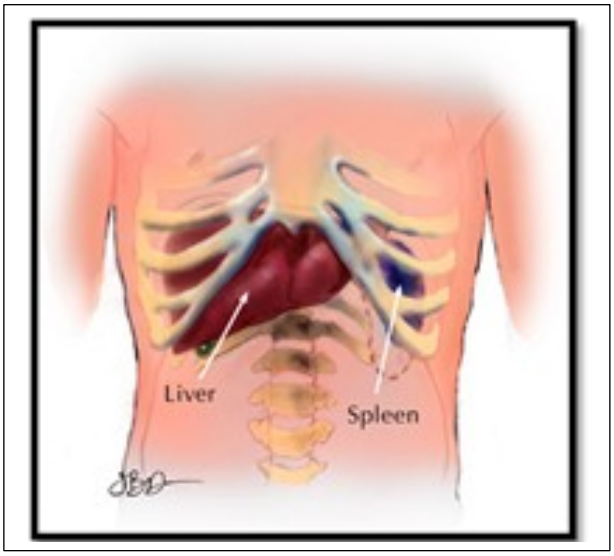
Protect the Neutropenic Patient!

- Pt.'s normal skin flora is the most common source of microbial infection
- Direct contact with hands of HCP is another way organisms are transmitted
    - Wash hands!!!
- Private Room – Protective Isolation
- Check VS every 4h (call MD for temperature > 100.4)

Disorders of the Spleen

Function of the Spleen (review basic A/P)

- Immune protection
    - Destroys bacteria
- Filters blood
    - Destroys worn out & damaged plats and RBCs
- Storage of RBCs & plats
    - Releases cells as needed



- **Splenomegaly**
    - o enlarged spleen
- **Hypersplenism**
    - o Splenomegaly with ↓in blood counts

Clinical Manifestations

- Asymptomatic
- Abdominal fullness or discomfort

Diagnostic Studies

- Physical exam
- CT, PET Scan, MRI, US
- Occasionally laparoscopy or laparotomy to evaluate spleen

Interprofessional Care

- Pain control
    - Care with turning, moving and positioning
- Evaluate lung expansion due to enlarged spleen
- Support complications of pancytopenia
- Splenectomy
    - To treat enlarged or ruptured spleen
    - To relieve pain
    - To increase circulating RBC, WBC, and platelets
- Post-op considerations
    - Lifelong risk for infection
        - Especially Pneumococcus species
            - Need pneumococcal vaccine after surgery!
                - Pneumovax 13 or 23