

Disorders of the Leukocytes and Spleen - 2022

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

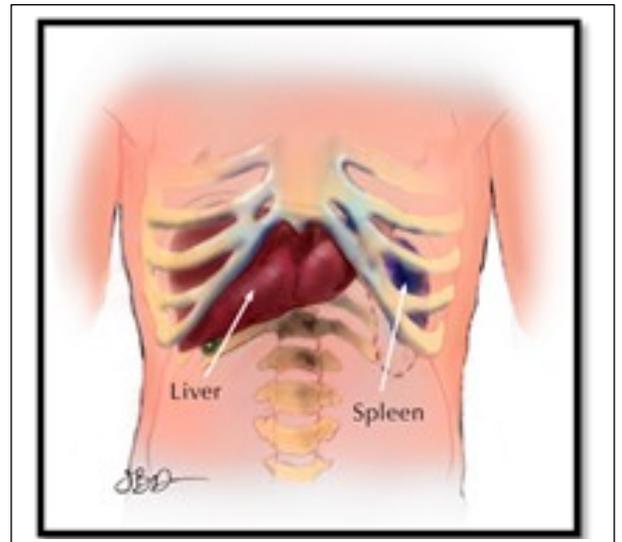
Protect the Neutropenic Patient!

- 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 plates and RBCs
- Storage of RBCs & plates
 - Releases cells as needed



- **Splenomegaly**
 - enlarged spleen
- **Hypersplenism**
 - 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