Non-Neoplastic WBCs Disorders

Raneem Al-Zoubi

Leukopenia

- Neutropenia/agranulocytosis
  - Decreased production
    - aplastic anemia
    - myelophthisic anemia
    - myelodysplastic syndrome
    - paroxysmal nocturnal hemoglobinuria
    - advanced megaloblastic anemia
    - chemotherapy
    - drugs
      - anti-epileptic
      - anti-hyperthyroidism
  - Increased destruction
    - immune mediated
    - splenomegaly
    - overwhelming bacterial, fungal or rickettsial infections

Reactive Leukocytosis

- Neutrophilia
  - infections
  - inflammation
- Lymphocytosis
  - viral infections
  - Bordetella pertussis infection
  - chronic infections
    - TB
    - brucellosis
- Monocytosis
  - chronic infections
  - rheumatologic diseases
  - inflammatory bowel disease
- Eosinophilia
  - asthma
  - allergic diseases
  - drug sensitivity
  - parasitic infections
  - Hodgkin lymphoma
- Basophilia (rare)
  - myeloproliferative neoplasms

Reactive Lymphadenitis

- Acute NonSpecific Lymphadenitis
  - Painful
  - Painless
- Chronic NonSpecific Lymphadenitis
  - Follicular hyperplasia
    - proliferation of B-lymphocytes
    - Causes
      - rheumatologic diseases
      - toxoplasmosis
      - HIV infection
  - Paracortical hyperplasia
    - proliferation of T-lymphocytes
    - Causes
      - viral infections
        - EBV
      - vaccination
      - drug reaction
  - Sinus histiocytosis
    - proliferation of macrophages
    - Causes
      - adjacent cancer
- Cat-Scratch Disease
  - Cause: Bartonella henselae bacteria
  - acute lymphadenitis in neck/axilla area
  - self-limited
- Hemophagocytic Lymphohistiocytosis (HLS)
  - Defective genes related to the function of cytotoxic T-cells & natural killer cells
    - Viral infection or other inflammatory agents activate macrophages to engulf normal blood cells and their precursors in BM
  - Types
    - Type 1
      - Infants & children
      - Homozygous defects in gene PRF1 that encodes perforin
    - Type 2
      - Adolescents & adults
      - X-linked lymphoproliferative disorder (males)
      - Defect in SLAM-associated protein (Signaling lymphocyte activation molecule-associated protein)
        - inefficient killing of EBV-infected B cells
    - Type 3
      - Associated with systemic inflammatory disorders
        - rheumatologic diseases
      - Heterozygous genetic defects in genes required for cytotoxic T-cells
    - Type 4
      - T-cell lymphomas
  - Symptoms
    - Fever
    - Splenomegaly
    - pancytopenia
  - Laboratory findings
    - High ferritin
    - High triglyceridemia
    - High serum IL-2
    - Low cytotoxic T-cells & natural killer cells in blood
  - Bone marrow examination
    - numerous macrophages engulfing RBCs, platelets & granulocytes