Blood & Lymph Disorders (Part B-2)
Module 6 – Chapter 9

Overview
• Anemia
• Leukemias
• Coagulation Disorders
• Lymphatic Disease
  – Lymphomas
  – Infections
  – Immunodeficiency
  – Hyperimmune Response

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Lymphatic Disorders

• S/S
• Enlarged lymph nodes
  – Lymphadenopathy
• Fever
• Weight loss
• Recurrent infections
• Edema
  – Lymphadema
Lymphadenopathy

- “Swollen glands”
  - Lymph nodes enlarge when trap and filter foreign particles

Edema

- “Swelling”
  - Abnormal accumulation of interstitial fluid
- Interstitial fluid
  - Normal fluid between the cells of the body
Lymphaedema

- Swelling due to lymphatic problem
  - Usually in extremity

- Mastectomy
  - Excision of breast
    - Usually due to cancer
  - Removal of lymph nodes on cancer side
    - Causes accumulation of tissue fluid in that arm.

Lymphatic Disorders

- Infections
  - Most common cause of lymphatic diseases

- Lymphoma
  - Malignant neoplasm involving lymphocyte proliferation in lymph nodes
Infections

• Most infectious agents that cause disease are microscopic in size and thus, are called microbes or microorganisms.
• Different groups of agents that cause disease with examples are:
  – Bacteria
    • Like Staph. & Strep.
  – Viruses
    • “Flu” or “Cold” Virus, Mononucleosis
  – Protozoa (Protists)
    • Malaria, Trichomonas, Giardia
  – Fungi
    • Tinea and Candida
  – Helminths (Animals)
    • Worms

Infectious Mononucleosis Virus

• Epstein-Barr virus
  – Also called ‘Kissing disease
• Causes sore throat, lymphadenopathy, fatigue
  – Monospot is a type of non-specific blood test to screen for mononucleosis
Lymphoma

- Malignant Neoplasm
  - Abnormal Lymphocytes proliferation in the lymph nodes

Leukemia VS Lymphoma

- Leukemia
  - Malignant disorder of WBC’s tissue
    - Begins in bone marrow
    - Abnormal WBC’s then released into blood

- Lymphoma
  - Malignant disorder of lymphoid tissue
    - Begins in lymph organ
      - Example; lymph node
      - Can later spread to blood
Lymphoma

• 2 Major Types
  – 1. Hodgkins Disease/Hodgkin’s Lymphoma
  – 2. Non-Hodgkin’s Lymphoma/Lymphosarcoma

Lymphomas

• Hodgkin’s Lymphoma
  – T cells are defective
  – Reed-Sternberg cell is present.
    • Cell used as a marker for diagnosis.

• Non-Hodgkin’s Lymphoma
  – Also called Lymphosarcoma
  – Usually affects B Lymphocytes
  – Associated with HIV infection
Multiple Myeloma

- Also called Plasma Cell Myeloma
- Occurs in older adults
- Involves maturing B lymphocytes

- B lymphocytes are abnormal
  - Produce large numbers of abnormal Plasma Cells in bone marrow
    - Replace bone marrow.
    - Make large numbers of abnormal antibodies
Thinking Time

• Which lymphoma involves T lymphocytes and has Reed-Sternberg cells?

• Which lymphoma involves B lymphocytes and is often seen in HIV infected patients?

• Which disorder is a malignancy of plasma cells?

Disorders of the Immune System

• Allergy
• Autoimmune Diseases
• HIV
Immune System Disorders

• Called “Immunopathies”
• Either due to over response or under response by immune system
  – Hyperimmune
    • Over response
    • Ex: allergies, hypersensitivities and autoimmune disorders.
  – Immunodeficiency
    • Under response
    • Ex: HIV

Allergy

• Hypersensitivity to a particular foreign antigen (allergen)
  – Common Allergens
    • Penicillin
    • Insect Venom
    • Eggs
    • Peanuts
Signs and Symptoms

- Watery & itchy eyes and nose
- Pruritic Rash
  - Hives, Whelps or Urticaria
- Swelling
  - Especially face
- Wheezing, difficulty breathing

Anaphylaxis

- Life-threatening allergic type reaction
  - To something you have been exposed to before
  - Phylaxis (protection)
  - Ana (against, up, or back)
  - Leads to shock
- Anaphylactic Shock
  - Severe, systemic allergic reaction
  - Includes life threatening breathing problems plus hypotension
Autoimmune Diseases

- Immune System Attacks “Self” Antigens
  - Lupus
    - Attacks all types of cells & tissues

Lupus

- 2 Major forms
  - 1. Discoid Lupus
    - Limited to skin
  - 2. Systemic Lupus Erythematosus (SLE)
    - Kidney, heart, lung and skin
- Classic Facial Rash
  - Shape of “Butterfly”
**HIV**

- Human Immunodeficiency Virus
  - Attacks cells of the immune system
  - Destroys their ability to fight other infections.
    - Infects helper T cells, macrophages etc.

**AIDS**

- Acquired Immune Deficiency Syndrome
  - Disease caused by HIV
  - So many helper T cells have been destroyed by virus now clinically sick
AIDS

• S/S
  – Chronic diarrhea
  – Weight Loss
  – Opportunistic Infection
  – Unusual Malignancies

Opportunistic infections
In HIV

• Infections caused by organisms not normally causing infection

• In HIV
  – Most common infection
    • Pneumocystic pneumonia (Fungus)
  – Most common cancer
    • Kaposi’s sarcoma