Chapter 54

Care of the Patient with an Immune Disorder

Immunocompetence

- When the immune system responds appropriately to a foreign stimulus

Immunodeficiency

- A type of immunoincompetence in which the body lacks the ability to respond efficiently and/or effectively to a foreign stimulus
Autoimmune Disorders

- A type of immunoincompetence that is characterized by a response of the immune cells against the body’s own cells

Natural and Acquired Immunity

- Natural immunity
  - Provides physical, mechanical, and chemical barriers to invading pathogens and protects against the external environment
  - Includes intact skin and mucous membranes, cilia, stomach acid, tears, and saliva

- Acquired immunity
  - Provides a specific reaction to each invading antigen and has the unique ability to remember the antigen that caused the attack

Humoral and Cell-Mediated Immunity

- Humoral immunity
  - Characterized by a two-step immune process
  - In the first step, exposure to an antigen occurs and B cells develop a memory for that antigen
  - When a second exposure occurs, B cells initiate a quick response to neutralize the invader

- Cell-mediated immunity
  - T cells are sensitized to a particular antigen
  - On contact with the antigen to which they are sensitized, they attach to the organism and destroy it
The Immune Response

- Immunization
- Immunotherapy

Immunization

- Controlled exposure to a disease-producing pathogen develops antibodies while preventing disease
- Vaccines and toxoids are altered, or attenuated, to reduce their power without affecting their ability to stimulate the production of antibodies

Immunotherapy

- The patient receives doses of the offending allergens over a period of time to gradually develop immunity
Hypersensitivity Reaction

- An excessive reaction to a particular stimulus
- Reactions range from mild to life-threatening
- Assessment should focus on airway reactions, skin reaction, and pruritus
- Medical management focuses on immunotherapy and environmental control of allergens

Anaphylaxis

- An acute and potentially fatal hypersensitivity (allergic) reaction to an allergen
- Allergens that cause anaphylaxis include
  - Venoms
  - Drugs
  - Contrast media dyes
  - Insect stings
  - Foods
  - Shellfish
  - Peanuts
  - Latex
  - Vaccines

Anaphylaxis cont’d

- Patient should be assessed for airway constriction, wheezes, tachypnea, and tachycardia
- Treatment includes epinephrine, diphenhydramine, and steroids
- Nursing interventions are aimed at promoting oxygenation and preventing further complications
Latex Allergy

- Type IV allergic contact dermatitis
  - Caused by the chemicals used in the manufacturing process of latex products
  - Delayed response that usually occurs 24-48 hours after exposure
  - Symptoms include dryness, pruritus, and fissuring and cracking of the skin, followed by erythema and edema
- Type I allergic reaction
  - A response to natural rubber latex proteins
  - Occurs within minutes of contact with the proteins
  - Symptoms include urticaria, wheezing, or anaphylaxis
  - Patients who suffer this reaction should be treated for anaphylaxis

Transfusion Reactions

- Hypersensitivity disorder
- Can be mild, moderate, or severe
- Prevention of transfusion reactions is aimed at following protocol and ensuring proper crossmatching and typing
- In addition, blood must be stored properly and administered within 4 hours of removal from refrigeration

Immunodeficiency Disorders

- An abnormal condition of the immune system in which immunity is inadequate
- Evidenced by decreased resistance to infection
- May be characterized by chronic recurring infections
- Characterized as primary and secondary
Primary Immune Disorders

- Phagocytic defects
- B-cell deficiency
- T-cell deficiency
- Combined B-cell and T-cell deficiency

Secondary Immune Disorders

- Immunity is deficient in response to an outside cause
- Drugs are the most common cause
- Can also be caused by
  - Stress
  - Chemotherapy
  - Radiation
  - Age
  - Malnutrition
  - Lymphoma

Autoimmune Disorders

- Develop an immune response to one’s own tissue
- The cause is not clearly understood
- Sometimes treated by plasmapheresis
**Plasmapheresis**

- The removal of plasma that contains components causing disease
- Plasmapheresis has been used to treat autoimmune diseases such as
  - Systemic lupus erythematosus
  - Glomerulonephritis
  - Myasthenia gravis
  - Thrombocytopenic purpura
  - Rheumatoid arthritis
  - Guillain-Barré syndrome
- Removes pathogens in plasma