

Chapter 18 Immunologic Disorders

Summary Outline

- 18.1 **Type I Hypersensitivities: Immediate IgE-mediated hypersensitivities**
- A. **IgE attached to mast cells or basophils** reacts with specific antigen, resulting in the **release of powerful mediators** of the allergic reaction.
 - B. **Localized anaphylactic** (type I) reactions include
 1. **Urticaria (hives)**
 2. **Allergic rhinitis (hay fever)**
 3. **Asthma**
 - C. **Generalized or systemic anaphylaxis** are rare, but serious and can lead to shock and death
 - D. **Immunotherapy or desensitization** is often effective in decreasing the type I hypersensitivity state. Engineered anti-IgE, is effective in treating asthma.
- 18.2 **Type II Hypersensitivities: Cytotoxic hypersensitivities**
- A. Caused by antibodies that can destroy normal cells by **complement lysis** or by **antibody-dependent cellular cytotoxicity (ADCC)**.
 - B. **Transfusion reactions**: The ABO blood groups have been the major cause of transfusion reactions.
 - C. **Hemolytic disease of the newborn**: The Rhesus blood groups are usually responsible for this disease.
- 18.3 **Type III Hypersensitivities: Immune complex-mediated hypersensitivities**
- A. Mediated by small **antigen-antibody complexes** that activate complement and other inflammatory systems, attract neutrophils and contribute to inflammation.
 - B. Immune complexes cause **inflammatory disease** including **glomerulonephritis** and **arthritis**.
- 18.4 **Type I Hypersensitivities: Delayed hypersensitivities**
- A. Depend on the actions of sensitized T lymphocytes.
 - B. **Tuberculin skin test**
 - C. **Contact hypersensitivities** occur in response to substances such as poison ivy, nickel in jewelry and chromium salts in leather products.
 - D. **Delayed hypersensitivity** is important in responses to many chronic, long-lasting infectious diseases.
- 18.5 **Transplantation rejection** of allografts is caused largely by Type IV cellular reactions.
- 18.6 **Autoimmune diseases** result from responses against self antigens and may be organ-specific or widespread.
- A. Some autoimmune diseases are caused by **antibodies produced to body components** and others result from **cell-mediated reactions**.
 - B. Autoimmune diseases are usually **treated with drugs that suppress the immune and/or inflammatory responses**.
- 18.7 **Immunodeficiency disorders** may be primary **genetic** or **developmental** defects in any components of the immune response, or they may be **secondary** and **acquired**.
- A. **Primary immunodeficiencies**
 1. **B cell immunodeficiencies** result in diseases involving a lack of antibody production, such as agammaglobulinemias and selective IgA deficiency.
 2. **T cell deficiencies** result.
 - B. **Secondary immunodeficiencies (acquired)** can result from malnutrition, immunosuppressive agents, infections (such as AIDS) and malignancies.