

- Increased secretion of mucous glands. Mucosal edema and increased nasal mucus produce the nasal congestion characteristic of allergic rhinitis and the common cold.
- Stimulation of sensory peripheral nerve endings to cause pain and pruritus. Pruritus is especially prominent with allergic skin disorders.
- Dilation of capillaries in the skin, to cause flushing

When H_2 receptors are stimulated, the main effects are increased secretion of gastric acid and pepsin, increased rate and force of myocardial contraction, and decreased immunologic and proinflammatory reactions (eg, decreased release of histamine from basophils, decreased movement of neutrophils and basophils into areas of injury, inhibited T- and B-lymphocyte function). Stimulation of both H_1 and H_2 receptors causes peripheral vasodilation (with hypotension, headache, and skin flushing) and increases bronchial, intestinal, and salivary secretion of mucus.

HYPERSENSITIVITY (ALLERGIC) REACTIONS

Hypersensitivity or allergic reactions are immune responses (see Chap. 42) in which a person's body overreacts to an environmental or ingested substance that does not cause a reaction in most people. That is, the person is hypersensitive or allergic to the substance (called an antigen or allergen). Allergic reactions may result from specific antibodies, sensitized T lymphocytes, or both, formed during exposure to an antigen.

Types of Allergic Reactions

- *Type I* (also called immediate hypersensitivity because it occurs within minutes of exposure to the antigen) is an immunoglobulin E (IgE)-induced response that causes release of histamine and other mediators. For example, *anaphylaxis* is a type I response that may be mild (characterized mainly by urticaria, other dermatologic manifestations, or rhinitis) or severe and life threatening (characterized by respiratory distress and cardiovascular collapse). It is uncommon and does not occur on first exposure to an antigen; it occurs with a second or later exposure, after antibody formation was induced by an earlier exposure. Severe anaphylaxis (sometimes called anaphylactic shock; see Chap. 54) is characterized by cardiovascular collapse from profound vasodilation and pooling of blood in the splanchnic system so that the patient has severe hypotension and functional hypovolemia. Respiratory distress often occurs from laryngeal edema and bronchoconstriction. Urticaria often occurs because the skin has many mast cells to release histamine. Anaphylaxis is a systemic reaction that usually involves the respiratory, cardiovascular, and dermatologic systems. Severe anaphylaxis may be fatal if not treated promptly and effectively.
- *Type II* responses are mediated by IgG or IgM. They produce direct damage to the cell surface. These cytotoxic reactions include blood transfusion reactions, hemolytic disease of newborns, autoimmune hemolytic anemia, and some drug reactions.
- *Type III* is an IgG- or IgM-mediated reaction characterized by formation of antigen-antibody complexes that induce an acute inflammatory reaction in the tissues. *Serum sickness*, the prototype of these reactions, occurs when excess antigen combines with antibodies to form immune complexes. The complexes then diffuse into affected tissues, where they cause tissue damage by activating the complement system and initiating the inflammatory response. If small amounts of immune complexes are deposited locally, the antigenic material can be phagocytized and digested by white blood cells and macrophages without tissue destruction. If large amounts are deposited locally or reach the bloodstream and become deposited in blood vessel walls, the lysosomal enzymes released during phagocytosis may cause permanent tissue destruction.
- *Type IV* hypersensitivity (also called delayed hypersensitivity because it usually occurs several hours or days after exposure to the antigen) is a cell-mediated response in which sensitized T lymphocytes react with an antigen to cause inflammation mediated by release of lymphokines, direct cytotoxicity, or both.

Allergic Rhinitis

Allergic rhinitis is inflammation of nasal mucosa caused by a type I hypersensitivity reaction to inhaled allergens. It is a very common disorder characterized by nasal congestion, itching, sneezing, and watery drainage. Itching of the throat, eyes, and ears often occurs as well.

There are two types of allergic rhinitis. Seasonal disease (often called hay fever) produces acute symptoms in response to the protein components of airborne pollens from trees, grasses and weeds, mainly in spring or fall. Perennial disease produces chronic symptoms in response to nonseasonal allergens such as dust mites, animal dander, and molds. Actually, mold spores can cause both seasonal and perennial allergies because they are present year round, with seasonal increases. Some people have both types, with chronic symptoms plus acute seasonal symptoms.

People with a personal or family history of other allergic disorders are likely to have allergic rhinitis. Once the nasal mucosa is inflamed, symptoms can be worsened by nonallergenic irritants such as tobacco smoke, strong odors, air pollution, and climatic changes.

Allergic rhinitis is an immune response in which normal nasal breathing and filtering of air brings inhaled antigens into contact with mast cells and basophils in nasal mucosa, blood vessels, and submucosal tissues. With initial exposure, the inhaled antigens are processed by lymphocytes that pro-