Asthma

An asthma attack may begin dramatically, with simultaneous onset of many severe symptoms, or insidiously, with gradually increasing respiratory distress. It typically includes progressively worsening shortness of breath, cough, wheezing, and chest tightness or some combination of these signs or symptoms. During an acute attack, the cough sounds tight and dry. As the attack subsides, tenacious mucoid sputum is produced (except in young children, who don't expectorate). Characteristic wheezing may be accompanied by coarse rhonchi, but fine crackles aren't heard unless associated with a related complication. Between acute attacks, breath sounds may be normal. The intensity of breath sounds in symptomatic asthma is typically reduced. A prolonged phase of forced expiration is typical of airflow obstruction. Evidence of lung hyperinflation (use of accessory muscles, for example) is particularly common in children. Acute attacks may be accompanied by tachycardia, tachypnea, and diaphoresis. In severe attacks, the patient may be unable to speak more than a few words without pausing for breath. Cyanosis, confusion, and lethargy indicate the onset of respiratory failure.

Allergic rhinitis

In seasonal allergic rhinitis, the key signs and symptoms are paroxysmal sneezing, profuse watery rhinorrhea, nasal obstruction or congestion, and pruritus of the nose and eyes. It's usually accompanied by pale, cyanotic, edematous nasal mucosa; red and edematous eyelids and conjunctivae; excessive lacrimation; and headache or sinus pain. Some patients also complain of itching in the throat and malaise. In perennial allergic rhinitis, conjunctivitis and other extranasal effects are rare, but chronic nasal obstruction is common. In many cases, this obstruction extends to eustachian tube obstruction, particularly in children. In both types of allergic rhinitis, dark circles may appear under the patient's eyes (“allergic shiners”) because of venous congestion in the maxillary sinuses. The severity of signs and symptoms may vary from season to season and from year to year.

Atopic dermatitis

Scratching the skin causes vasoconstriction and intensifies pruritus, resulting in erythematous, weeping lesions. Eventually, the lesions become scaly and lichenified. Usually, they're located in areas of flexion and extension, such as the neck, antecubital fossa, popliteal folds, and behind the ears. Patients with atopic dermatitis are prone to unusually severe viral infections, bacterial and fungal skin infections, ocular complications, and allergic contact dermatitis.

Latex allergy

Early signs that a life-threatening hypersensitivity reaction may be occurring include hypotension, tachycardia, and oxygen desaturation. Other clinical findings include urticaria, flushing, bronchospasm, difficulty breathing, pruritus, palpitations, abdominal pain, and syncope. Mild signs and symptoms may include itchy skin, swollen lips, nausea, diarrhea, and red, swollen, teary eyes.

Anaphylaxis

An anaphylactic reaction produces sudden physical distress within seconds or minutes (although a delayed or persistent reaction may occur for up to 24 hours) after exposure to an allergen. The reaction's severity is inversely related to the interval between exposure to the allergen and the onset of symptoms. Usually, the first symptoms include a feeling of impending doom or fright, weakness, sweating, sneezing, shortness of breath, nasal pruritus, urticaria, and angioedema, followed rapidly by symptoms in one or more target organs. Cardiovascular symptoms include hypotension, shock and, sometimes, cardiac arrhythmias. If untreated, arrhythmia may precipitate circulatory collapse. Respiratory symptoms can occur at any level in the respiratory tract and commonly include nasal mucosal edema, profuse watery rhinorrhea, itching, nasal congestion, and sudden sneezing attacks. Edema of the upper respiratory tract results in hypopharyngeal and laryngeal obstruction (hoarseness, stridor, and dyspnea). This is an early sign of acute respiratory failure, which can be fatal. GI and genitourinary symptoms include severe stomach cramps, nausea, diarrhea, and urinary urgency and incontinence.

Urticaria and angioedema

The characteristic features of urticaria are distinct, raised, evanescent (temporary) dermal wheals surrounded by an erythematous flare. These lesions may vary in size. In cholinergic urticaria, the wheals may be tiny and blanched, surrounded by erythematous flares. Angioedema characteristically produces nonpitted swelling of deep subcutaneous tissue, usually on the eyelids, lips, genitalia, and mucous membranes. These swellings don't usually itch but may burn and tingle.

Blood transfusion reaction

Immediate effects of a hemolytic transfusion reaction develop within a few minutes or hours after the start of the transfusion and may include chills, fever, urticaria, tachycardia, dyspnea, nausea, vomiting, tightness in the chest, chest and back pain, hypotension, bronchospasm, angioedema, and signs and symptoms of anaphylaxis, shock, pulmonary edema, heart failure, and renal failure. In a surgical patient under anesthesia, these symptoms are masked, but blood oozes from mucous membranes or the incision site. Delayed hemolytic reactions can occur up to several weeks after a transfusion, causing fever, an unexpected fall in serum hemoglobin (Hb) level, and jaundice. Allergic reactions are typically afebrile and characterized by urticaria and angioedema, possibly progressing to cough, respiratory distress, nausea, vomiting, diarrhea, abdominal cramps, vascular instability, shock, and coma. The hallmark of febrile nonhemolytic reactions is mild to severe fever that may begin at the start of transfusion or within 2 hours after its completion. Bacterial contamination produces a high fever, nausea, vomiting, diarrhea, abdominal cramps and, possibly, shock. Symptoms of viral contamination may not appear for several weeks after transfusion.

Rheumatoid arthritis

RA usually develops insidiously and initially produces nonspecific signs and symptoms, such as fatigue, malaise, anorexia, persistent low-grade fever, weight loss, lymphadenopathy, and vague articular symptoms. Later, more specific localized articular symptoms develop, commonly in the fingers at the proximal interphalangeal, metacarpophalangeal, and metatarsophalangeal joints. These symptoms usually occur bilaterally and symmetrically and may extend to the wrists, knees, elbows, and ankles. The affected joints stiffen after inactivity, especially upon rising in the morning. The fingers may assume a spindle shape from marked edema and joint congestion. The joints become tender and painful, at first only when the patient moves them, but eventually even at rest. They commonly feel hot to the touch. Ultimately, joint function is diminished. Deformities are common if active disease continues. Proximal interphalangeal joints may develop flexion deformities or become hyperextended. Metacarpophalangeal joints may swell dorsally, and volar subluxation and stretching of tendons may pull the fingers to the ulnar side (“ulnar drift”). The fingers may become fixed in a characteristic “swan's neck” appearance, or “boutonnière” deformity. The hands appear foreshortened, the wrists boggy; carpal tunnel syndrome from synovial pressure on the median nerve causes tingling paresthesia in the fingers. The most common extra-articular finding is the gradual appearance of rheumatoid nodules — subcutaneous, round or oval, nontender masses — usually on pressure areas such as the elbows. Vasculitis can lead to skin lesions, leg ulcers, and multiple systemic complications. Peripheral neuropathy may produce numbness or tingling in the feet or weakness and loss of sensation in the fingers. Stiff, weak, or painful muscles are common. Other common extra-articular effects include pericarditis, pulmonary nodules or fibrosis, pleuritis, scleritis, and episcleritis. Another complication is destruction of the odontoid process, part of the second cervical vertebra. Rarely, cord compression may occur, particularly in patients with long-standing deforming disease. Upper P motor neuron signs and symptoms, such as a positive Babinski's sign and muscle weakness, may also develop. RA can also cause temporomandibular joint disease, which impairs chewing and causes earaches. Other extra-articular findings may include infection, osteoporosis, myositis, cardiopulmonary lesions, lymphadenopathy, and peripheral neuritis.

Juvenile rheumatoid arthritis

Signs and symptoms vary with the type of JRA. Affecting boys and girls almost equally, systemic JRA accounts for about 10% of cases. The affected children may have mild, transient arthritis or frank polyarthritis with fever and rash. Joint involvement may not be evident at first, but the child's behavior may clearly suggest joint pain. Such a child may constantly want to sit in a flexed position, may not walk much, or may P refuse to walk at all. Young children with JRA are noticeably irritable and listless. Fever in systemic JRA occurs suddenly and spikes to 103° F (39.4° C) or higher once or twice daily, usually in the late afternoon, then rapidly returns to normal or subnormal. (This “sawtooth” or intermittent spiking fever pattern helps differentiate JRA from other inflammatory disorders.) When fever spikes, an evanescent rheumatoid rash commonly appears, consisting of small pale or salmon pink macules, usually on the trunk and proximal extremities and occasionally on the face, palms, and soles. Massaging or applying heat intensifies this rash. It's usually most conspicuous where the skin has been rubbed or subjected to pressure such as the areas of

skin covered by underclothing. Other signs and symptoms of systemic JRA may include hepatosplenomegaly, lymphadenopathy, pleuritis, pericarditis, myocarditis, and nonspecific abdominal pain. Polyarticular JRA accounts for about 40% of cases and is three times more common in females than in males; affected children may be seronegative or seropositive for rheumatoid factor (RF). It involves five or more joints and usually develops insidiously. Most commonly involved joints are the wrists, elbows, knees, ankles, and small joints of the hands and feet. Polyarticular JRA can also affect larger joints, including the temporomandibular joints, cervical spine, hips, and shoulders. These joints become swollen, tender, and stiff. Usually, the arthritis is symmetrical; it may be remittent or indolent. The patient may run a low-grade fever with daily peaks. Listlessness and weight loss can occur, possibly with lymphadenopathy and hepatosplenomegaly. Other signs of polyarticular JRA include subcutaneous nodules on the elbows or heels and noticeable developmental retardation. Seropositive polyarticular JRA, the more severe type, usually occurs late in childhood and can cause destructive arthritis that mimics adult rheumatoid arthritis. Pauciarticular JRA involves few joints (usually no more than four), typically affecting the knees and other large joints. This form accounts for 50% of cases and has major subtypes. The first, pauciarticular JRA with chronic iridocyclitis, most commonly strikes females younger than age 6 and involves the knees, elbows, ankles, or iris. Inflammation of the iris and ciliary body is commonly asymptomatic but may produce pain, redness, blurred vision, and photophobia. The second subtype, pauciarticular JRA with sacroiliitis, usually strikes males (9:1) older than age 8, who tend to test positive for human leukocyte antigen (HLA)-B27. This subtype is characterized by lower extremity arthritis that produces hip, sacroiliac, heel, and foot pain as well as Achilles' tendinitis. These patients may later develop the sacroiliac and lumbar arthritis characteristic of ankylosing spondylitis. Some also experience acute iritis, but not as many as those with the first subtype. The third subtype includes patients with joint involvement who are antinuclear antibody (ANA) and HLA-B27 negative and don't develop iritis. These patients have a better prognosis than those with the first or second subtype. Common to all types of JRA is joint stiffness in the morning or after periods of inactivity. Back pain and limited range of motion is common. Growth disturbances may also occur, resulting in uneven length of arms or legs due to overgrowth or undergrowth adjacent to inflamed joints.

Psoriatic arthritis

Psoriatic lesions usually precede the arthritic component; however, after the full syndrome is established, joint and skin lesions recur simultaneously. Arthritis may involve one joint or several joints symmetrically. Spinal involvement occurs in some patients. Peripheral joint involvement is most common in the distal interphalangeal joints of the hands, which have a characteristic sausage-like appearance. Nail changes include pitting, transverse ridges, onycholysis, keratosis, yellowing, and destruction. The patient may experience general malaise, fever, and eye involvement.

Ankylosing spondylitis

The first indication of ankylosing spondylitis is intermittent low back pain that's usually most severe in the morning or after a period of inactivity. Other signs and symptoms depend on the disease stage and may include: hip deformity and associated limited range of motion

kyphosis in advanced stages, caused by chronic stooping to relieve symptoms mild fatigue, fever, anorexia, or weight loss; occasional iritis; aortic insufficiency and cardiomegaly; and upper lobe pulmonary fibrosis (mimics tuberculosis) pain and limited expansion of the chest due to involvement of the costovertebral joints peripheral arthritis involving shoulders, hips, and knees stiffness and limited motion of the lumbar spine tenderness over the inflammation site. These signs and symptoms progress unpredictably, and the disease can go into remission, exacerbation, or arrest at any stage.
Sjögren's syndrome

About 50% of patients with Sjögren's syndrome have confirmed RA and a history of slowly developing sicca complex. However, some patients seek medical help for rapidly progressive and severe oral and ocular dryness, in many cases accompanied by periodic parotid gland enlargement. Ocular dryness (xerophthalmia) leads to foreign body sensation (gritty, sandy eye), redness, burning, photosensitivity, eye fatigue, itching, and mucoid discharge. The patient may also complain of a film across his field of vision. Oral dryness (xerostomia) leads to difficulty swallowing and talking; abnormal taste or smell sensation or both; thirst; ulcers of the tongue, buccal mucosa, and lips (especially at the corners of the mouth); and severe dental caries. Dryness of the respiratory tract leads to epistaxis, hoarseness, chronic nonproductive cough, recurrent otitis media, and increased incidence of respiratory infections. Other effects may include dyspareunia and pruritus (associated with vaginal dryness), generalized itching, fatigue, recurrent low-grade fever, and arthralgia or myalgia. Lymph node enlargement may be the first sign of malignant lymphoma or pseudolymphoma. Specific extraglandular findings in Sjögren's syndrome include interstitial pneumonitis; interstitial nephritis, which results in renal tubular acidosis in 25% of patients; Raynaud's phenomenon (20%); and vasculitis, usually limited to the skin and characterized by palpable purpura on the legs (20%). About 50% of patients show signs of hypothyroidism related to autoimmune thyroid disease. A few patients develop systemic necrotizing vasculitis.

Lupus erythematosus

The onset of SLE may be acute or insidious and produces no characteristic clinical pattern. However, its symptoms commonly include fever, weight loss, malaise, and fatigue as well as rashes and polyarthralgia. SLE may involve every organ system. In 90% of patients, joint involvement is similar to that in rheumatoid arthritis. Skin lesions are most commonly erythematous rashes in areas exposed to light. The classic butterfly rash over the nose and cheeks occurs in fewer than 50% of the patients. (See Butterfly rash, page 468.) Ultraviolet rays often provoke or aggravate skin eruptions. Vasculitis can develop (especially in the digits), possibly leading to infarctive lesions, necrotic leg ulcers, or digital gangrene. Raynaud's phenomenon appears in about 20% of P patients. Patchy alopecia and painless ulcers of the mucous membranes are common. Constitutional symptoms of SLE include aching, malaise, fatigue, lowgrade or spiking fever, chills, anorexia, and weight loss. Lymph node enlargement (diffuse or local, and nontender), abdominal pain, nausea, vomiting, diarrhea, and constipation may occur. Females may experience irregular menstrual periods or amenorrhea during the active phase of SLE. About 50% of SLE patients develop signs of cardiopulmonary abnormalities, such as pleuritis, pericarditis, and dyspnea. Myocarditis, endocarditis, tachycardia, parenchymal infiltrates, and pneumonitis may occur. Renal effects may include hematuria, proteinuria, urine sediment, and cellular casts, which may progress

to total kidney failure. Urinary tract infections may result from heightened susceptibility to infection. Seizure disorders and mental dysfunction may indicate neurologic damage. Central nervous system (CNS) involvement may produce emotional instability, psychosis, and organic mental syndrome. Headaches, irritability, and depression are common. (See Signs of systemic lupus erythematosus.)

Fibromyalgia syndrome

The primary symptoms is diffuse, dull, aching pain that's typically concentrated across the neck and shoulders and in the lower back and proximal limbs. It can involve all body quadrants (bilateral upper trunk and arms, and bilateral lower trunk and legs) and typically is worse in the morning, when it's associated with stiffness. The pain can vary form day to day and be exacerbated by stress, lack of sleep, weather changes, and inactivity. Sleep disturbance and fatigue are commonly reported. The patient awakens feeling fatigued and remains so throughout the day. Fatigue is commonly present from a half hour to several hours after rising in the morning and can last for the rest of the day. Other associated features that can occur with FMS include irritable bowel syndrome, tension headaches, puffy hands (sensation of hand swelling, especially in the morning), and paresthesia.

Goodpasture's syndrome

Goodpasture's syndrome may initially cause malaise, fatigue, and pallor associated with severe iron deficiency anemia. Pulmonary findings range from slight dyspnea and cough with blood-tinged sputum to hemoptysis and frank pulmonary hemorrhage. Subclinical pulmonary bleeding may precede overt hemorrhage and renal disease by months or years. Usually, renal findings are subtler, although some patients note hematuria and peripheral edema.

Reiter's syndrome

The patient with Reiter's syndrome may complain of dysuria, hematuria, urgent and frequent urination, and mucopurulent penile discharge, with swelling and reddening of the urethral meatus. Small painless ulcers may erupt on the glans penis (balanitis). These coalesce to form irregular patches that cover the penis and scrotum. He may also experience suprapubic pain, fever, anorexia with weight loss, and other genitourinary (GU) complications, such as prostatitis and hemorrhagic cystitis. Arthritic symptoms usually follow GU or enteric symptoms and last from 2 to 4 months. Asymmetrical and extremely variable polyarticular P arthritis is most common, with a tendency to develop in weight-bearing joints of the legs and sometimes in the low back or sacroiliac joints. The arthritis is usually acute, with warm, erythematous, and painful joints, but it may be mild, with minimal synovitis. Muscle wasting is common near affected joints. Fingers and toes may swell and appear sausagelike. Ocular symptoms include mild bilateral conjunctivitis, possibly complicated by keratitis, iritis, retinitis, or optic neuritis. In severe cases, burning, itching, and profuse mucopurulent discharge are possible. In 30% of patients, skin lesions (keratoderma blennorrhagicum) develop 4 to 6 weeks after onset of other symptoms and may last for several weeks. These macular to hyperkeratotic lesions commonly resemble those of psoriasis. They usually occur on the palms and soles but can develop anywhere on the trunk, extremities, or scalp. Nails become

thick, opaque, and brittle; keratic debris accumulates under the nails. In many patients, painless, transient ulcerations erupt on the buccal mucosa, palate, and tongue.

Scleroderma

Scleroderma typically begins with Raynaud's phenomenon — blanching, cyanosis, and erythema of the fingers and toes in response to stress or exposure to cold. Progressive phalangeal resorption may shorten the fingers. Compromised circulation, which results from abnormal thickening of the arterial intima, may cause slowly healing ulcerations on the tips of the fingers or toes that may lead to gangrene. Raynaud's phenomenon may precede scleroderma by months or years. Later symptoms include pain, stiffness, and finger and joint swelling. Skin thickening produces taut, shiny skin over the entire hand and forearm. Facial skin also becomes tight and inelastic, causing a masklike appearance and “pinching” of the mouth. As tightening progresses, contractures may develop. GI dysfunction causes frequent reflux, heartburn, dysphagia, and bloating after meals. These symptoms may cause the patient to decrease food intake and lose weight. Other GI effects include abdominal distention, diarrhea, constipation, and malodorous floating stools.

Polymyositis and dermatomyositis

Polymyositis begins acutely or insidiously with muscle weakness, tenderness, and discomfort. It affects proximal muscles more than distal muscles and impairs performance of ordinary activities. The patient may have trouble getting up from a chair, combing his hair, reaching into a high cupboard, climbing stairs, or even raising his head from a pillow. Other muscular symptoms include inability to move against resistance, proximal dysphagia, dysphonia, and difficulty breathing. In dermatomyositis, an erythematous rash usually erupts on the face, neck, upper back, chest, and arms as well as around the nail beds. A characteristic heliotropic rash appears on the eyelids, accompanied by periorbital edema. Gottron's papules (violet, flat-topped lesions) may appear on the interphalangeal joints.

X-linked infantile hypogammaglobulinemia

Typically, the infant with X-linked hypogammaglobulinemia is asymptomatic until age 6 months, when transplacental maternal immunoglobulins that provided immunity have been depleted. He then develops recurrent bacterial otitis media, pneumonia, dermatitis, bronchitis, and meningitis — usually caused by pneumococci, streptococci, Haemophilus influenzae, or other gram-negative organisms. Purulent conjunctivitis, abnormal dental caries, and polyarthritis resembling rheumatoid arthritis may also occur. Severe malabsorption associated with infestation by Giardia lamblia may retard development. Despite recurrent infections, lymphadenopathy and splenomegaly are usually absent.

Common variable immunodeficiency

In common variable immunodeficiency, pyogenic bacterial infections are characteristic but tend to be chronic rather than acute (as in X-linked hypogammaglobulinemia). Recurrent sinopulmonary infections, chronic bacterial conjunctivitis, and malabsorption (commonly associated with infestation by Giardia lamblia) are usually the first clues to

immunodeficiency. Common variable immunodeficiency may be associated with autoimmune diseases, such as systemic lupus erythematosus, rheumatoid arthritis, hemolytic anemia, and pernicious anemia, and with cancers, such as leukemia and lymphoma.

IgA deficiency

Some IgA-deficient patients have no symptoms, possibly because they have extra amounts of low-molecular-weight IgM. This immunoglobulin takes over IgA function and helps maintain immunologic defenses. Among patients who develop symptoms, chronic sinopulmonary infection is the most common. Other effects are respiratory allergy, often triggered by infection; GI tract diseases, such as celiac disease, ulcerative colitis, and regional enteritis; autoimmune diseases, such as rheumatoid arthritis, systemic lupus erythematosus, immunohemolytic anemia, and chronic hepatitis; and malignant tumors, such as squamous cell carcinoma of the lungs, reticulum cell sarcoma, and thymoma. Age of onset varies. Some IgA-deficient children with recurrent respiratory disease and middle ear inflammation may begin to synthesize IgA spontaneously as recurrent infections subside and their condition improves.

DiGeorge syndrome

Symptoms are usually obvious at birth or shortly thereafter. An infant with DiGeorge syndrome may have low-set prominent ears, notched ear pinnae, a mouth without the usual bow-shaped lip, an undersized jaw, and abnormally wide-set eyes (hypertelorism) that are low-set and posteriorly angulated. Additionally, an infant may have a bifid uvula and a high, arched palate. Congenital heart anomalies are common. Cardiovascular abnormalities include great blood vessel anomalies (these may also develop soon after birth) and tetralogy of Fallot. An infant with thymic hypoplasia (rather than aplasia) may experience a spontaneous return of cell-mediated immunity but can develop severe Tcell deficiencies later in life. This allows exaggerated susceptibility to viral, fungal, or bacterial infections, which may be overwhelming. Hypoparathyroidism, usually associated with DiGeorge syndrome, typically causes tetany, hyperphosphatemia, and hypocalcemia. Hypocalcemia (calcium levels less than 7 mg/dl) develops early and is unusually resistant to treatment. It can lead to tetany, seizures, central nervous system damage, and early heart failure. Rare cases of partial immunoglobulin (Ig) A deficiency have been linked to chromosome 1 and deletions of the IgA1 or IgA2 genes. Alterations in chromosome 6 suggest altered major histocompatibility complex, which is reflected in decreased T-cell responses. Aberrations in chromosome 18 are linked to facial abnormalities, nystagmus, hypotonia, atretic or stenotic ear canals, hearing loss, and mental retardation.

Acquired immunodeficiency syndrome

A person with HIV may remain asymptomatic for months or years. Initially, laboratory evidence or seroconversion to HIV antibodies may be the only clinical evidence of infection. However, as the disease progresses, the patient may develop generalized adenopathy and nonspecific signs and symptoms, such as weight loss, fatigue, night sweats, and fevers. As the patient's T-cell count lowers further, neurologic symptoms, opportunistic infections, and

certain normally rare P cancers may develop. HIV also destroys lymph nodes and immunologic organs, leading to major dysfunctions of the immunological system. Eventually, HIV advances to AIDS. (Some individuals, termed nonprogressors, develop AIDS very slowly or not at all. They seem to have genetic differences that prevent the virus from attaching to certain immune receptors.)

Chronic mucocutaneous candidiasis

Chronic candidal infections can affect the skin, mucous membranes, nails, and vagina, usually causing large, circular lesions. These infections seldom produce systemic symptoms but in late stages may be associated with recurrent respiratory tract infections. Other associated conditions include severe viral infections that may precede the onset of endocrinopathy and, sometimes, hepatitis. Involvement of the mouth, nose, and palate may cause speech and eating difficulties. Symptoms of endocrinopathy are peculiar to the organ involved. Tetany and hypocalcemia are most common and are associated with hypoparathyroidism. Addison's disease, hypothyroidism, diabetes, and pernicious anemia are also connected with chronic mucocutaneous candidiasis. Psychiatric disorders are likely because of disfigurement and multiple endocrine aberrations.

Chronic fatigue syndrome

CFS has specific symptoms and signs, based on the exclusion of other possible causes. Its characteristic symptom is prolonged, often overwhelming fatigue that's commonly associated with a varying complex of other symptoms that are similar to those of many infections, including myalgia and cephalgia. It may develop within a few hours and can last for 6 months or more. Fatigue isn't relieved by rest and is severe enough to restrict activities of daily living by at least 50%.

Chronic granulomatous disease

Usually, the patient with CGD displays signs and symptoms associated with infections of the skin, lymph nodes, lung, liver, and bone by age 2. Skin infection is characterized by small, well-localized areas of tenderness. Seborrheic dermatitis of the scalp and axilla is also common. Lymph node infection typically causes marked lymphadenopathy with draining lymph nodes and hepatosplenomegaly. Many patients develop liver abscess, which may be recurrent and multiple; abdominal tenderness, fever, anorexia, and nausea point to abscess formation. Other common infections include osteomyelitis, which causes localized pain and fever, pneumonia, and gingivitis with severe periodontal disease.

Severe combined immunodeficiency disease

An extreme susceptibility to infection becomes obvious in the infant with SCID in the first months of life. The infant fails to thrive and develops chronic otitis; sepsis; watery diarrhea (associated with Salmonella or Escherichia coli); recurrent pulmonary infections (usually caused by Pseudomonas, cytomegalovirus, or Pneumocystis jiroveci [formerly carinii]); persistent oral candidiasis, sometimes with esophageal erosions; and possibly fatal viral infections such as chickenpox. P. jiroveci pneumonia usually strikes a severely

immunodeficient infant in the first 3 to 5 weeks after birth. Onset is typically insidious, with gradually worsening cough, low-grade fever, tachypnea, and respiratory distress. Chest X-ray characteristically shows bilateral pulmonary infiltrates.

Complement deficiencies

Clinical effects vary with the specific deficiency. C2 and C3 deficiencies and C5 familial dysfunction increase susceptibility to bacterial infection (which may involve several body systems simultaneously). C2 and C4 deficiencies are also associated with collagen vascular disease such as lupus erythematosus and with chronic renal failure. C5 dysfunction, a familial defect in infants, causes failure to thrive, diarrhea, and seborrheic dermatitis. C1 esterase inhibitor deficiency (hereditary angioedema) may cause periodic swelling in the face, hands, abdomen, or throat, with potentially fatal laryngeal edema.