

e10 Atlas of Skin Manifestations of Internal Disease

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In the practice of medicine, virtually every clinician encounters patients with skin disease. Physicians of all specialties face the daily task of determining the nature and clinical implication of dermatologic disease. In patients with skin eruptions and rashes, the physician must confront the question of whether the cutaneous process is confined to the skin, representing a pure dermatologic event, or whether it is a manifestation of internal disease relating to the patient's overall medical condition. Evaluation and accurate diagnosis of skin lesions are also critical given the marked rise in both melanoma and nonmelanoma skin cancer. Dermatologic conditions can be classified and categorized in many different ways, and in this Atlas, a selected group of inflammatory skin eruptions and neoplastic conditions are grouped in the following manner: (A) common skin diseases and lesions, (B) nonmelanoma skin cancer, (C) melanoma and pigmented lesions, (D) infectious disease and the skin, (E) immunologically mediated skin disease, and (F) skin manifestations of internal disease.

COMMON SKIN DISEASES AND LESIONS

(Figs. e10-1 to e10-19) In this section, several common inflammatory skin diseases and benign neoplastic and reactive lesions are presented. While most of these dermatoses usually present as a predominantly dermatologic process, underlying systemic associations may be made in some settings. Atopic dermatitis is often present in patients with an atopic diathesis, including asthma and sinusitis. Psoriasis ranges from limited patches on the elbows and knees to severe erythrodermic involvement and associated psoriatic arthritis. Some patients with alopecia areata may have an underlying thyroid abnormality requiring screening. Finally, even acne vulgaris, one of the most common inflammatory dermatoses, can be associated with a systemic process such as polycystic ovarian syndrome.



FIGURE e10-1 Acne vulgaris with inflammatory papules, pustules, and comedones. (Courtesy of Kalman Watsky, MD; with permission.)



FIGURE e10-2 Acne rosacea with prominent facial erythema, telangiectasias, scattered papules, and small pustules. (Courtesy of Robert Swerlick, MD; with permission.)



FIGURE e10-3 Psoriasis is characterized by small and large erythematous plaques with adherent silvery scale.



FIGURE e10-4 Atopic dermatitis with hyperpigmentation, lichenification, and scaling in the antecubital fossae. (Courtesy of Robert Swerlick, MD; with permission.)



FIGURE e10-5 Dyshidrotic eczema, characterized by deep-seated vesicles and scaling on palms and lateral fingers, is often associated with an atopic diathesis.



FIGURE e10-6 Seborrheic dermatitis showing central facial erythema with overlying greasy, yellowish scale. (Courtesy of Jean Bolognia, MD; with permission.)



FIGURE e10-7 Stasis dermatitis showing erythematous, scaly, and oozing patches over the lower leg. Several stasis ulcers are also seen in this patient.



A



B

FIGURE e10-8 **A.** Allergic contact dermatitis, acute phase, with sharply demarcated, weeping, eczematous plaques in a perioral distribution. **B.** Allergic contact dermatitis to nickel, chronic phase demonstrating an erythematous, lichenified, weeping plaque on skin chronically exposed to a metal snap. (B, Courtesy of Robert Swerlick, MD; with permission.)



FIGURE e10-9 Lichen planus showing multiple flat-topped, violaceous papules and plaques. Nail dystrophy as seen in this patient's thumbnail may also be a feature. (Courtesy of Robert Swerlick, MD; with permission.)



FIGURE e10-10 Seborrheic keratoses are seen as “stuck on,” waxy, verrucous papules and plaques with a variety of colors ranging from light tan to black.



FIGURE e10-12 Alopecia areata characterized by a sharply demarcated circular patch of scalp completely devoid of hairs. Follicular orifices are preserved, indicating a nonscarring alopecia. (Courtesy of Robert Swerlick, MD; with permission.)



FIGURE e10-11 Vitiligo in a typical acral distribution demonstrating striking cutaneous depigmentation, as a result of loss of melanocytes.



FIGURE e10-13 Pityriasis rosea. Multiple round to oval erythematous patches with fine central scale are distributed along the skin tension lines on the trunk.



A



B

FIGURE e10-14 **A.** Urticaria showing characteristic discrete and confluent, edematous, erythematous papules and plaques. **B.** Dermatographism. Erythema and whealing that developed after firm stroking of the skin. (B, Courtesy of Robert Swerlick, MD; with permission.)



FIGURE e10-15 Epidermoid cysts. Several inflamed and noninflamed firm, cystic nodules are seen in this patient. Often a patulous follicular punctum is observed on the overlying epidermal surface.



FIGURE e10-16 Keloids resulting from ear piercing, with firm exophytic flesh-colored to erythematous nodules of scar tissue.

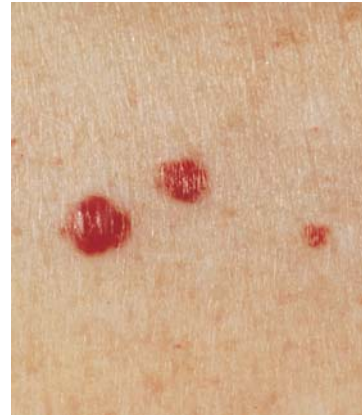


FIGURE e10-17 Cherry hemangiomas are very common and arise in middle-aged to older adults. They are characterized by multiple erythematous to dark purple papules, usually located on the trunk.



FIGURE e10-18 Frostbite with vesiculation, surrounded by edema and erythema. (Courtesy of Daniel F. Danzl, MD; with permission.)



FIGURE e10-19 Frostbite with vesiculation, surrounded by edema and erythema. (Courtesy of Daniel F. Danzl, MD; with permission.)

NONMELANOMA SKIN CANCER

(Figs. e10-20 to e10-27) In more fair-skinned ethnic populations, nonmelanoma skin cancer is increasing at an alarming rate. Basal cell carcinoma is the most common cancer in humans and is strongly linked to ultraviolet radiation. Squamous cell carcinoma, including keratoacanthoma-type squamous cell carcinoma, is the second most common skin cancer in most ethnic populations and is also most commonly linked to ultraviolet radiation. Less common cutaneous malignancies include cutaneous T cell lymphoma (mycosis fungoides) and carcinoma and lymphoma metastatic to skin.



FIGURE e10-20 Kaposi's sarcoma in a patient with AIDS demonstrating patch, plaque, and tumor stages.

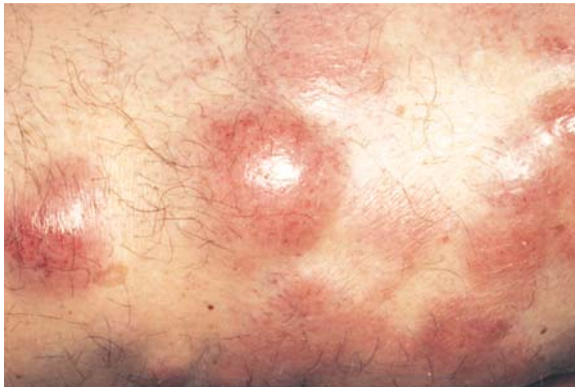


FIGURE e10-21 Non-Hodgkin's lymphoma involving the skin with typical violaceous, "plum-colored" nodules. (Courtesy of Jean Bologna, MD; with permission.)

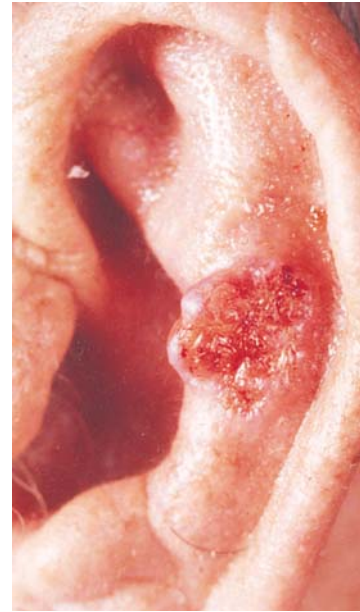


FIGURE e10-22 Basal cell carcinoma showing central ulceration and a pearly, rolled, telangiectatic tumor border.



FIGURE e10-23 Mycosis fungoides is a cutaneous T cell lymphoma, and plaque stage lesions are seen in this patient.



FIGURE e10-24 Metastatic carcinoma to the skin is characterized by inflammatory, often ulcerated dermal nodules.



FIGURE e10-25 Keratoacanthoma is a low-grade squamous cell carcinoma that presents as an exophytic nodule with central keratinous debris.



FIGURE e10-26 Squamous cell carcinoma seen here as a hyperkeratotic crusted and somewhat eroded plaque on the lower lip. Sun-exposed skin such as the head, neck, hands, and arms are other typical sites of involvement.



FIGURE e10-27 Actinic keratoses consist of hyperkeratotic erythematous papules and patches on sun-exposed skin. They arise in middle-aged to older adults and have some potential for malignant transformation. (Courtesy of Robert Swerlick, MD; with permission.)

MELANOMA AND BENIGN PIGMENTED LESIONS

(Figs. e10-28 to e10-33) As the prognosis of melanoma is primarily related to microscopic depth of invasion, and early detection with surgical treatment can be curative in a high percentage of patients, it is essential that all clinicians acquire some facility in evaluating pigmented lesions. Three of the clinicopathologic subtypes of melanoma, superficial spreading, lentigo maligna, and acral lentiginous melanoma, typically display features noted in the “ABCD rule.” *Asymmetry*—one half of the lesion varies from the other half. *Border irregularity*—the circumferential border exhibits an irregular, sometimes jagged appearance. *Color*—there is uneven coloration and tone to the pigmented lesion with varying shades of brown, black, red, and white within different areas of the lesion. *Diameter*—is typically >6 mm. The more uncommon subtype, nodular melanoma, may not manifest all these features but present as a more symmetric, evenly pigmented or amelanotic lesion. Dysplastic (atypical) melanocytic nevi may occur as solitary or multiple lesions as well as in the setting of familial melanoma. They display some degree of asymmetry, border irregularity, and color variation. Ordinary nevi may be acquired or congenital and are quite common.



FIGURE e10-28 Nevus. Nevi are benign proliferations of nevomelanocytes characterized by regularly shaped hyperpigmented macules or papules of a uniform color.



FIGURE e10-29 Dysplastic nevi are irregularly pigmented and shaped nevomelanocytic lesions which may be associated with familial melanoma.



FIGURE e10-30 Superficial spreading melanoma is the most common type of malignant melanoma and demonstrates color variegation (black, blue, brown, pink, and white) and irregular borders.



FIGURE e10-33 Acral lentiginous melanoma is more common in blacks, Asians, and Hispanics and occurs as an enlarging hyperpigmented macule or plaque on the palms or soles. Lateral pigment diffusion is present.

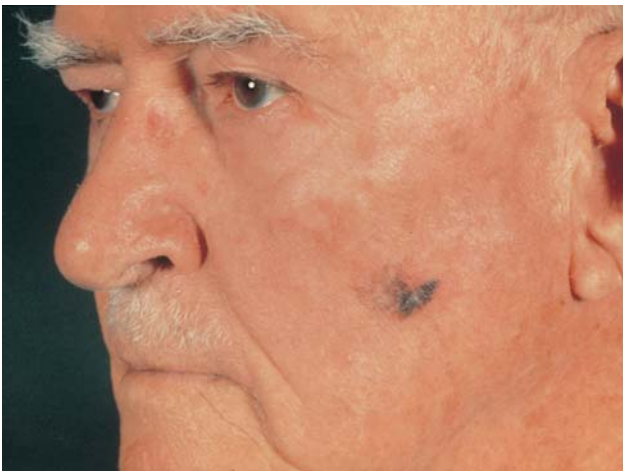


FIGURE e10-31 Lentigo maligna melanoma occurs on sun-exposed skin as a large, hyperpigmented macule or plaque with irregular borders and variable pigmentation. (Courtesy of Alvin Solomon, MD; with permission.)



FIGURE e10-32 Nodular melanoma most commonly manifests itself as a rapidly growing, often ulcerated or crusted black nodule. (Courtesy of S. Wright Caughman, MD; with permission.)

INFECTIOUS DISEASE AND THE SKIN

(Figs. e10-34 to e10-59) One of the roles of the skin is to function as a barrier from the outside world. In this capacity, exposure to infectious agents occurs, and bacterial, viral, fungal, and parasitic infections may result. In addition the skin may be secondarily involved and provide diagnostic clues to systemic infections such as meningococemia, Rocky Mountain spotted fever, Lyme disease, and septic emboli. Most sexually transmitted bacterial and viral diseases exhibit cutaneous involvement, and examples include primary and secondary syphilis, chancroid, genital herpes simplex, and condyloma acuminatum.



FIGURE e10-34 Erysipelas is a streptococcal infection of the superficial dermis and consists of well-demarcated, erythematous, edematous, warm plaques.



FIGURE e10-35 Spread of herpes zoster with chemotherapy. The patient reported external ear pain. A vesicular rash on the concha and antihelix suggested Ramsay Hunt syndrome.



FIGURE e10-36 **Varicella** showing numerous lesions in various stages of evolution: vesicles on an erythematous base, umbilicated vesicles, and crusts. (Courtesy of Robert Hartman, MD; with permission.)



FIGURE e10-37 **Herpes zoster** is seen in this HIV-infected patient as hemorrhagic vesicles and pustules on an erythematous base grouped in a dermatomal distribution. (Courtesy of Robert Swerlick, MD; with permission.)



FIGURE e10-38 **Impetigo contagiosa** is a superficial streptococcal or *Staphylococcus aureus* infection consisting of honey-colored crusts and erythematous weeping erosions. Occasionally, bullous lesions may be seen. (Courtesy of Mary Spraker, MD; with permission.)



FIGURE e10-39 **Tender vesicles and erosions** in the mouth of a patient with hand-foot-and-mouth disease. (Courtesy of Stephen D. Gellis, MD; with permission.)



FIGURE e10-40 **Lacy reticular rash of erythema infectiosum** (fifth disease).



FIGURE e10-41 **Molluscum contagiosum** is a cutaneous poxvirus infection characterized by multiple umbilicated flesh-colored or hypopigmented papules. (Courtesy of Yale Resident's Slide Collection; with permission.)



FIGURE e10-42 Oral hairy leukoplakia often presents as white plaques on the lateral tongue and is associated with Epstein-Barr virus infection. (From K Wolff, RA Johnson, D Suurmond: *Fitzpatrick's Color Atlas & Synopsis of Clinical Dermatology*, 5th ed. New York, McGraw-Hill, 2005. www.accessmedicine.com.)



FIGURE e10-45 Erythema chronicum migrans is the early cutaneous manifestation of Lyme disease and is characterized by erythematous annular patches, often with a central erythematous papule at the tick bite site. (Courtesy of Yale Resident's Slide Collection; with permission.)



FIGURE e10-43 Fulminant meningococemia with extensive angular purpuric patches. (Courtesy of Stephen D. Gellis, MD; with permission.)



FIGURE e10-46 Primary syphilis with a firm, nontender chancre. (Courtesy of Gregory Cox, MD; with permission.)



FIGURE e10-44 Rocky Mountain spotted fever demonstrating pinpoint petechial lesions on the palm and volar aspect of the wrist. (Courtesy of Robert Swerlick, MD; with permission.)



FIGURE e10-47 Secondary syphilis commonly affects the palms and soles with scaling, firm, red-brown papules. (Courtesy of Alvin Solomon, MD; with permission.)



FIGURE e10-48 Condylomata lata are moist, somewhat verrucous intertriginous plaques seen in secondary syphilis. (Courtesy of Yale Resident's Slide Collection; with permission.)



FIGURE e10-49 Secondary syphilis demonstrating the papulosquamous truncal eruption.



FIGURE e10-50 Tinea corporis is a superficial fungal infection, seen here as an erythematous annular scaly plaque with central clearing.



FIGURE e10-51 Scabies showing typical scaling erythematous papules and few linear burrows.



FIGURE e10-52 Skin lesions caused by *Chironex fleckeri* sting. (Courtesy of V. Pranava Murthy, MD; with permission.)



FIGURE e10-53 Chancroid with characteristic penile ulcers and associated left inguinal adenitis (bubo).



FIGURE e10-54 Condylomata acuminata are lesions induced by human papillomavirus and in this patient are seen as multiple verrucous papules coalescing into plaques. (Courtesy of S. Wright Caughman, MD; with permission.)

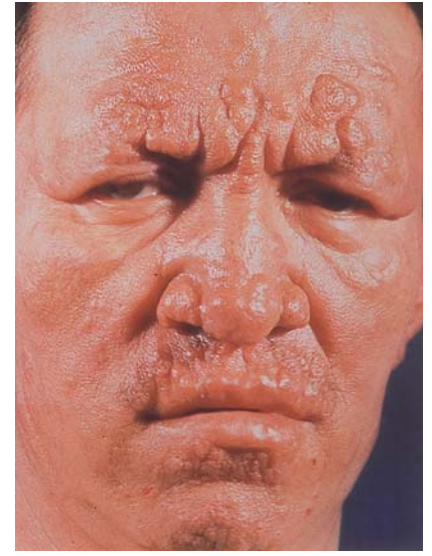


FIGURE e10-55 A patient with features of polar lepromatous leprosy; multiple nodular skin lesions, particularly of the forehead, and loss of eyebrows. (Courtesy of Robert Gelber, MD; with permission.)



A



B



C



D

FIGURE e10-56 Skin lesions of neutropenic patients. **A.** Papules related to *Escherichia coli* bacteremia in a neutropenic patient with acute lymphocytic leukemia. **B.** The same lesion the following day. **C.** Ecthyma gangrenosum in a neutropenic patient with *Pseudomonas aeruginosa* bacteremia. **D.** Papule in a neutropenic patient with *Candida tropicalis* fungemia.



FIGURE e10-57 Septic emboli with hemorrhage and infarction due to acute *Staphylococcus aureus* endocarditis. (Courtesy of L. Baden, MD; with permission.)

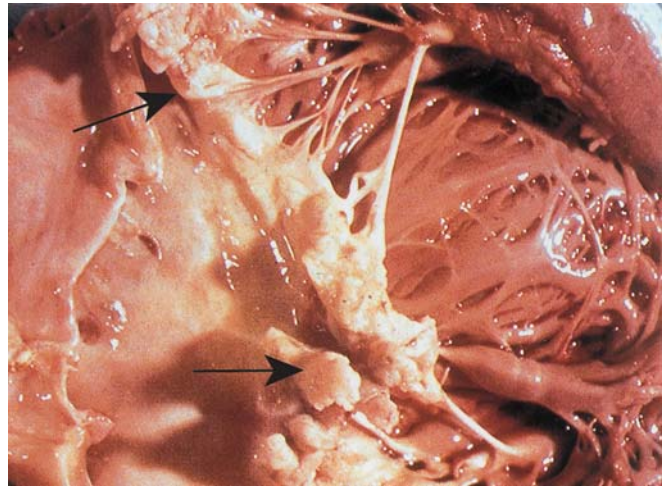


FIGURE e10-58 Vegetations (arrows) due to viridans streptococcal endocarditis involving the mitral valve. (Courtesy of AW Kerchner, MD; with permission.)

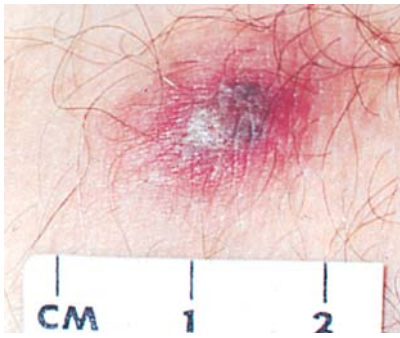


FIGURE e10-59 Disseminated gonococemia in the skin is seen as hemorrhagic papules and pustules with purpuric centers in an acral distribution. (Courtesy of Daniel M. Musher, MD; with permission.)

IMMUNOLOGICALLY MEDIATED SKIN DISEASE

(Figs. e10-60 to e10-71) Immunologically mediated skin disease may be largely localized to skin and mucous membranes and manifest with blisters and erosions such as pemphigus, pemphigoid, and dermatitis herpetiformis. In diseases such as systemic lupus erythematosus, dermatomyositis, and vasculitis, skin manifestations are often only one element of a widespread process.



A



B

FIGURE e10-60 A. Systemic lupus erythematosus showing prominent, scaly, malar erythema. Involvement of other sun-exposed sites is also common. **B.** Acute lupus erythematosus on the upper chest demonstrating brightly erythematous and slightly edematous coalescence of papules and plaques. (B, Courtesy of Robert Swerlick, MD; with permission.)



FIGURE e10-61 Discoid lupus erythematosus. Violaceous, hyperpigmented, atrophic plaques, often with evidence of follicular plugging, which may result in scarring, are characteristic of this cutaneous form of lupus. (Courtesy of Marilynne McKay, MD; with permission.)



FIGURE e10-62 Dermatomyositis. Periorbital violaceous erythema characterizes the classic heliotrope rash. (Courtesy of James Krell, MD; with permission.)



FIGURE e10-63 Scleroderma characterized by typical expressionless, mask-like facies.



FIGURE e10-64 Dermatomyositis often involves the hands as erythematous flat-topped papules over the knuckles (Gottron's sign) and periungual telangiectasias.



FIGURE e10-65 Scleroderma showing acral sclerosis and focal digital ulcers.



FIGURE e10-66 Erythema multiforme is characterized by multiple erythematous plaques with a target or iris morphology and usually represents a hypersensitivity reaction to drugs or infections (especially herpes simplex virus). (Courtesy of Yale Resident's Slide Collection; with permission.)



FIGURE e10-67 Dermatitis herpetiformis manifested by pruritic, grouped vesicles in a typical location. The vesicles are often excoriated and may occur on knees, buttocks, and posterior scalp.



FIGURE e10-69 Erythema nodosum is a panniculitis characterized by tender deep-seated nodules and plaques usually located on the lower extremities. (Courtesy of Robert Swerlick, MD; with permission.)



A



B

FIGURE e10-68 A. Pemphigus vulgaris demonstrating flaccid bullae that are easily ruptured, resulting in multiple erosions and crusted plaques. **B. Pemphigus vulgaris** almost invariably involves the oral mucosa and may present with erosions involving the gingiva, buccal mucosa, palate, posterior pharynx, or the tongue. (B, Courtesy of Robert Swerlick, MD; with permission.)



FIGURE e10-70 Vasculitis. Palpable purpuric papules on the lower legs are seen in this patient with cutaneous small vessel vasculitis. (Courtesy of Robert Swerlick, MD; with permission.)



FIGURE e10-71 Bullous pemphigoid with tense vesicles and bullae on an erythematous, urticarial base. (Courtesy of Yale Resident's Slide Collection; with permission.)

SKIN MANIFESTATIONS OF INTERNAL DISEASE

(Figs. e10-72 to e10-79) While many systemic diseases also have cutaneous manifestations, there are some well recognized dermatologic markers of internal disease, and some are demonstrated in this section. Many of these dermatologic markers may precede, accompany, or follow diagnosis of systemic disease. Acanthosis nigricans is a prototypical dermatologic process often occurring in association with underlying systemic abnormalities, most commonly obesity and insulin resistance. It may also be associated with other endocrine disorders and several rare genetic syndromes. Malignant acanthosis nigricans may occur in association with several malignancies, especially adenocarcinoma of the gastrointestinal tract, lung, and breast. Other markers of internal disease in this section include pretibial myxedema, which is associated with thyroid disease, and Sweet's syndrome, which may be associated with hematologic malignancies, solid tumors, or inflammatory bowel disease. The skin is also involved in many systemic inflammatory diseases such as sarcoidosis, rheumatoid arthritis, and lupus erythematosus.



FIGURE e10-72 Acanthosis nigricans demonstrating typical hyperpigmented axillary plaques with a velvet-like, verrucous surface.



FIGURE e10-73 Pretibial myxedema manifesting as waxy, infiltrated plaques in a patient with Graves' disease.



FIGURE e10-74 Plaque of Sweet's syndrome demonstrating an erythematous indurated plaque with a pseudo-vesicular border. (Courtesy of Robert Swerlick, MD, with permission.)



FIGURE e10-75 Bilateral rheumatoid nodules of the upper extremities. (Courtesy of Robert Swerlick, MD; with permission.)



FIGURE e10-76 Neurofibromatosis demonstrating numerous flesh-colored cutaneous neurofibromas.



FIGURE e10-77 Coumarin necrosis showing cutaneous and subcutaneous necrosis of a breast. Other fatty areas such as buttocks and thighs are also common sites of involvement. (Courtesy of Kim Yancey, MD; with permission.)



A



B

FIGURE e10-78 A. Sarcoid. Infiltrated papules and plaques of variable color are seen in a typical paranasal and periorbital location. **B. Sarcoid.** Infiltrated, hyperpigmented, and slightly erythematous coalescent papules and plaques on the upper arm. (**B**, Courtesy of Robert Swerlick, MD; with permission.)



FIGURE e10-79 Pyoderma gangrenosum on the posterior-lateral aspect of the lower leg demonstrating multiple purulent draining ulcers on an infiltrated erythematous plaque. (Courtesy of Robert Swerlick, MD; with permission.)