ERYTHRODERMA

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Exfoliative erythroderma, or generalized redness and scaling of the skin, is a morphologic presentation of a wide variety of cutaneous diseases. The erythrodermic state poses significant risk for morbidity and mortality in addition to the risks inherent to the underlying disease and its therapy.

DISEASES MANIFESTING AS ERYTHRODERMA

Erythroderma is most commonly attributable to psoriasis, atopic dermatitis, cutaneous T-cell lymphoma (CTCL), and drug hypersensitivity reactions. The list of drugs causing erythroderma is extensive (see accompanying box). Pityriasis rubra pilaris (PRP), superficial pemphigus, bullous pemphigoid,[4, 48, 54, 86, 98] contact dermatitis, chronic actinic dermatitis or actinic reticuloid, and Norwegian scabies[73, 90] are less commonly implicated dermatoses. Numerous lymphoproliferative disorders, in addition to CTCL, and a wide range of carcinomas may be associated with erythroderma. Erythrodermic presentations of psoriasis, CTCL, and hypereosinophilic syndrome have been described in human immunodeficiency virus (HIV)–positive patients.[61, 64] Table 1 enumerates dermatoses, infections, and systemic diseases that may manifest as erythroderma. Erythroderma is a feature of some congenital ichthyoses, entities that are beyond the scope of this article.

Drugs Causing Erythroderma

Allopurinol[13, 41, 52, 93]
Amiodarone[32]
Antimalarials[2, 14, 52, 65, 95]
Arsenicals[65, 73]
Aspirin[32]
Aztreonam[32]
Barbiturates[65]
Bromodeoxyuridine[29]
Captopril[96]
Carbamazepine[13, 93, 105]
Cefoxitin[50, 102]
Chlorpromazine[41]
Chlorpropamide[32]
Cimetidine[115]
Cisplatin[57]
Clodronate[72]
Clofazimine[76]
Codeine[65]
Dapsone[74]
Dideoxyinosine[49]
Diltiazem[114]
Ephedrine[16]
Ethylenediamine[11]
Fluorouracil[32]
Gentamicin[38]
Gold[2, 41, 65, 93]
Indinavir[84]
Interleukin-2[5]
Iodine[65]
Isoniazid[52, 73, 90]
Isosorbide dinitrate[52]
Lithium[55]
Mercurials[65, 73]
Mexiletine[32]
Minocycline[32]

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Neomycin[32]
Nifedipine[83]
Omeprazole[82]
Penicillin[2, 52, 65, 73]
Phenobarbital[87]
Phenolphthalein[65]
Phenothiazines[32]
Phenylbutazone[90]
Phenytoin[17, 24, 52, 53, 93]
Practolol[41]
Quinidine[2, 93]
Ranitidine[32]
Retinoids[110]
Streptomycin[65, 90]
Sulfasalazine[103]
Sulfonamide antibiotics[52, 65]
Sulfonylureas[32]
Terbinafine[39]
Terbutaline[52]
Tetrachloroethylene[65]
Thalidomide[12]
Thiacetazone[90]
Thiazide[52]
Timolol eyedrops[91]
Trimethadione[32]
Trimethoprim[41]
Tumor necrosis factor-α[5]
Vancomycin[30]
Zidovudine[26]

EPIDEMIOLOGY

Many large series detailing characteristics of erythrodermic patients have been published. In general, the studies have shown a male predominance, with the male-to-female ratio approximately 2:1 to 4:1. Series based on Veterans Administration[52, 65] patients and a subset of patients with idiopathic erythroderma[101] showed a much higher ratio. The average age of patients is 41 to 61 years; some, but not all, studies excluded pediatric patients. Most reports did not stratify patients according to race. Centers from which series have been published include those located in England[113]; Scandinavia[33, 41, 93, 94, 101]; India[90]; Pakistan[73]; Spain[13]; Italy[104]; Nashville, Tennessee[52]; New York City[2]; and the Veterans Administration and Armed Forces Institute of Pathology in the United States.[65] The last-mentioned two studies included 87 whites and 14 African Americans[2], and 102 whites and 25 African Americans.[65]

In most series, most patients were diagnosed with psoriasis, spongiotic dermatitis, drug reactions, or CTCL. The diagnosis was undetermined in 9% to 47% of cases.

Series limited to cases of psoriatic erythroderma have also been published. The report by Boyd and Menter[14] of 50 cases in Dallas, Texas, observed an average age of onset of erythroderma of 48 years; an average of 14 years elapsed between onset of psoriasis and onset of erythroderma. Men were affected approximately twice as often as women. Of patients, 46 were white, and 4 were African American.

Table 1. DISEASES ASSOCIATED WITH ERYTHRODERMA

Dermatoses	Infections	Systemic	Hematologic	Malignancy
Psoriasis	Dermatophyte[65, 101]	Subacute cutaneous lupus[23]	Hodgkin's[52, 65, 73]	Prostate[65, 101]
Atopic dermatitis	Norwegian scabies	Dermatomyositis[62, 68, 78, 81]	B-cell lymphoma[58]	Lung[65, 93, 101]
CTCL	Toxoplasmosis[28]	Acute GVHD[44]	Anaplastic large cell lymphoma[22]	Thyroid[65]
Drug reactions	Histoplasmosis[88]	Postoperative transfusion induced[43]	Acute myelomonocytic leukemia[20]	Liver[65, 66]
PRP	Leishmaniasis[10]	Sarcoidosis[27, 63]	Adult T-cell leukemia[42]	Breast[101]
Superficial pemphigus	HIV	Thyrotoxicosis[116]	Chronic lymphocytic leukemia[52]	Ovary[101]
Bullous pemphigoid		Common variable hypogammaglobulinemia[111]	Reticulum cell sarcoma[2]	Fallopian tube[6]
Contact dermatitis		Severe combined immune defect with Omenn's[80]	Myelodysplasia[18]	Rectum[101]
Chronic actinic dermatitis		Leiner's disease		Esophagus[21]
Hailey-Hailey[60]		Maple syrup urine disease[67]		Stomach[40, 93]
Pseudolymphoma[9]		Histiocytosis[75]		Melanoma[100, 101]

CTCL = Cutaneous T-cell lymphoma; GVHD = graft-versus-host disease; PRP = pityriasis rubra pilaris; HIV = human immunodeficiency virus.

CLINICAL FEATURES

Clinical features of erythroderma have been delineated in published series and case reports. Patients with erythroderma attributed to psoriasis or spongiotic dermatitis are likely to have a prior history of more localized disease before the onset of erythroderma,[33] although in some cases, erythroderma is the first manifestation of the dermatosis. Psoriatic erythroderma may be triggered by a variety of precipitants, including withdrawal of topical or systemic corticosteroids; abrupt discontinuation of methotrexate; systemic medications, such as antimalarials (Fig. 1); topical irritants, such as tars; phototherapy burns; infection, including HIV; pregnancy; systemic illness; and emotional stress.[14]

Erythroderma usually evolves slowly over months to years.[33] An acute and rapid onset may be observed in patients with drug hypersensitivity, superficial pemphigus, and PRP. Drug reactions also tend to regress more quickly than other forms of erythroderma.

Thermoregulatory disturbance,[31] malaise, fatigue, and pruritus are prominent symptoms in erythroderma. Although some erythrodermic patients experience hypothermia, fever is more common and is frequently observed in patients with drug hypersensitivity.[17, 103] Severe pruritus is especially frequent in patients with Sézary's syndrome, atopic dermatitis, and allergic contact dermatitis.[90, 112] Lichenification and excoriations may be evident on physical examination.

Diffuse alopecia, keratoderma, nail dystrophy, and ectropion (Fig. 2) are usually associated with long-standing and severe erythroderma.[13, 52, 73] Keratoderma is especially common in Norwegian scabies, PRP, and Sézary's syndrome. In PRP, keratoderma is an early finding. Painful, fissured keratoderma is typical in chronic cases of Sézary's syndrome.[112] Nearly three quarters of patients with idiopathic erythroderma in the series by Thestrup-Pedersen et al[101] had prominent keratoderma. Discoloration, brittleness, dullness, paronychia, pitting, subungual hyperkeratosis, Beau's lines (Fig. 3), shininess, onycholysis, onychauxis, and splinter hemorrhages are among the nail changes that have been described in erythrodermic patients.[73, 90, 97]

Peripheral edema may occur in 50% of patients; pitting pretibial and pedal edema is common, and phimosis may occur.[73, 90, 93] Facial edema frequently affects patients with drug hypersensitivity.[17] Erythrodermic patients may experience tachycardia[90] and high-output cardiac failure.[92] Gynecomastia has been described (*see* Fig. 1*A*).[65]

Lymphadenopathy is usually dermatopathic and has been reported in most erythrodermic patients.[65] Lymphadenopathy with organomegaly is suggestive for drug hypersensitivity or malignancy.[65]

Deck chair sign has been described in which erythroderma spares abdominal skin folds.[73] This sign is classic for papuloerythroderma of Ofuji, which has been reported in Japan and Europe.[45, 70] Elderly men are affected with flat-topped erythematous papules that coalesce into erythroderma; abdominal, axillary, and inguinal folds are spared. This clinical variant may be idiopathic or may be associated with underlying conditions, such as atopic dermatitis, lymphoma, and visceral malignancy. Sparing of the nose has been observed in patients from Pakistan and India with erythroderma of varied causes.[3, 73, 77]

CLUES TO SPECIFIC DIAGNOSES

Unique clinical features may suggest a specific diagnosis. Typical psoriasiform plaques may be evident in early or remitting cases of erythrodermic psoriasis (Fig. 4). Generalized pustular psoriasis may evolve into erythroderma. Psoriatic arthritis with accompanying psoriatic nail changes may be apparent (Fig. 5).

PRP classically shows salmon-colored erythema, small areas of uninvolved skin known as *islands of sparing*, and keratoderma (Fig. 6). Often the erythroderma of PRP is preceded by a seborrheic rash, which generalizes after intense sun exposure. Follicular pink papules may be present, especially on the dorsal fingers, elbows, and wrists.[34] Nail dystrophy in PRP may be indistinguishable from that observed in other forms of erythroderma, including psoriasis and Sézary's syndrome.[97]

Superficial pemphigus may show superficial impetigo-like erosions or collarettes of scale suggestive for a previously ruptured blister (Fig. 7). Erythrodermic bullous pemphigoid typically shows tense blisters as well as erythroderma. One case has been reported without blisters but with rapid-onset erythroderma with keratoderma, ectropion, nail dystrophy, and alopecia in which the diagnosis of pemphigoid was made by biopsy.[4] A lichenoid variant of erythrodermic pemphigoid

described in Africa shows cutaneous and mucosal blisters.[48]

Heliotrope, poikiloderma, Gottron's papules, periungual telangiectasias, and muscle weakness may be evident in erythrodermic dermatomyositis.[68, 78] Photoaccentuation may be observed in erythrodermic patients with chronic actinic dermatitis or actinic reticuloid.[56] Patients with long-standing Sézary's syndrome may develop leonine facies secondary to lymphomatous infiltration of the skin.[112]

Ichthyosiform erythroderma is a rare cutaneous presentation of sarcoidosis. Concomitant apple jelly lesions[27] and keratotic spinous follicular papules[63] have been observed.

Patients with erythroderma secondary to hypersensitivity to antibiotics, anticonvulsants, and allopurinol may appear toxic and may develop systemic manifestations, such as fever, leukocytosis with eosinophilia, edema, lymphadenopathy, organomegaly, liver dysfunction, and renal dysfunction.[17, 103] An infectious mononucleosis–like syndrome may also develop in which atypical lymphocytes are evident in the peripheral blood; concomitant infection with human herpesvirus 6 may predispose to this reaction.[103] Hypersensitivity usually develops 2 to 5 weeks into drug therapy and may persist for weeks despite discontinuation of the drug. Hepatic necrosis may occur and may eventuate in death. Sterile pustulosis may accompany the erythroderma in reactions to anticonvulsants (Fig. 8).[17, 53] Phenytoin can also cause an erythroderma that is indistinguishable from Sézary's syndrome but that resolves with discontinuation of the medication.[24]

LABORATORY FEATURES

Common laboratory abnormalities observed in patients with erythroderma include mild anemia, leukocytosis with eosinophilia, elevated IgE, elevated sedimentation rate, decreased serum albumin, and increased uric acid.[2, 13, 33, 41, 52, 65, 73, 90, 93] Eosinophilia and elevated IgE are nonspecific findings that are not limited to patients with atopic dermatitis or drug reactions. Decreased serum albumin is more likely in patients with chronic disease.[2]

Lymphocytopenia with decreased circulating $CD4^+$ T lymphocytes may be observed in acute erythroderma associated with multiple causes as a consequence of sequestration of the lymphocytes in the skin.[36] Leukocytosis with marked lymphocytosis is suggestive for lymphoma/leukemia. Circulating Sézary's cells can be a nonspecific finding and have been observed in many skin diseases, including atopic dermatitis, psoriasis, lichen planus, discoid lupus, and parapsoriasis.[25] The number of circulating Sézary cells diagnostic for Sézary's syndrome is uncertain. Sigurdsson et al[93, 94] found that more than 20% circulating Sézary cells is specific for Sézary's syndrome, but that less than 10% is a nonspecific finding in erythroderma. T-cell receptor β gene rearrangement analysis of peripheral blood has been shown to be a sensitive and highly specific tool to differentiate Sézary's syndrome from benign forms of erythroderma.[7] Immunophenotypic analysis of skin and blood samples helps to distinguish Sézary's syndrome from actinic reticuloid; the latter shows increased proportions of $CD8^+$ T cells.[8] Nuclear contour index of peripheral blood lymphocytes also differentiates between Sézary's syndrome and actinic reticuloid.[79]

HISTOPATHOLOGY

The histology of skin biopsy specimens from patients with erythroderma may be nondiagnostic. Botella-Estrada et al[13] observed that clinicopathologic correlation in erythroderma is difficult because the specific features of a dermatosis are masked by nonspecific features of erythroderma. For example, although the diagnosis of Sézary's syndrome had been clearly established by detection of a clonal population of T cells in the peripheral blood, diagnostic features of CTCL were absent in skin biopsy specimens of 11 of 41 patients.[106]

Diagnostic accuracy of 53% was achieved when a group of dermatopathologists, blinded from clinical information, read 56 skin biopsy specimens obtained from 40 erythrodermic patients.[109] Multiple skin biopsy specimens submitted simultaneously enhanced diagnostic accuracy. Microscopy was more sensitive in establishing the underlying cause of erythroderma as spongiotic dermatitis, psoriasis, and CTCL than in determining the cause as PRP or a drug eruption.

An earlier report from the same center concludes that in most cases of erythroderma with an identifiable cause, the histopathology resembles but is more subtle than that seen in more conventional presentations of the

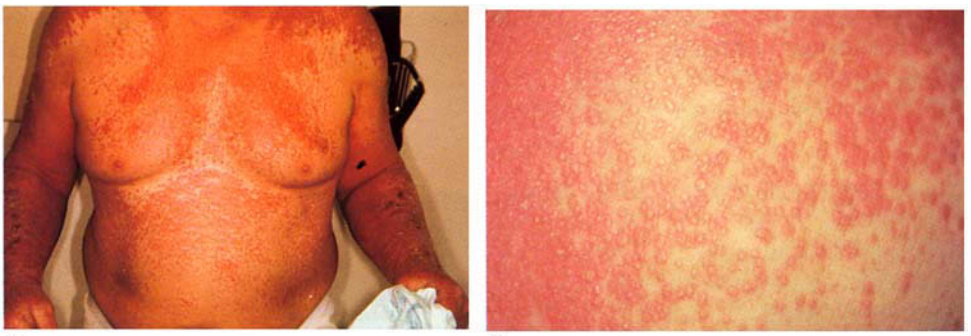

Figure 1. *A*, Erythroderma developed after hydroxychloroquine was initiated to treat disseminated granuloma annulare. Biopsy from the erythroderma showed psoriasis. Gynecomastia related to erythroderma is evident. (Courtesy of Maxwell Fung, MD.) *B*, Underlying papules of granuloma annulare. (Courtesy of Maxwell Fung, MD, Farmington, CT.)

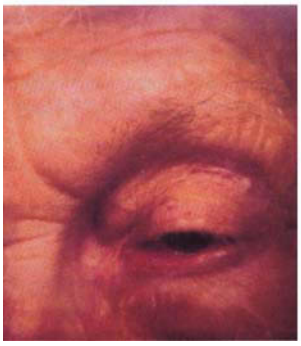

Figure 2. Ectropion secondary to erythroderma.

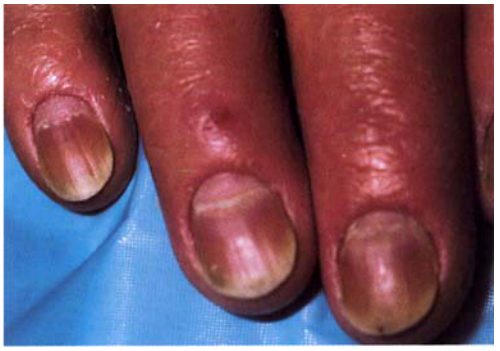

Figure 3. Beau's lines in patient with erythrodermic pityriasis rubra pilaris.

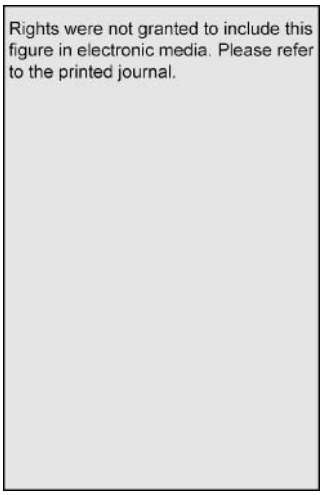

Figure 4. As erythrodermic psoriasis resolved, typical plaques of psoriasis vulgaris became evident. (*From* Rothe MJ, Grant-Kels JM: Dermatologic emergencies. Consultant 37:2380, 1997; with permission.)

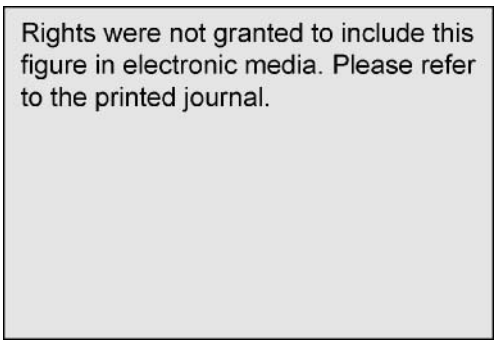

Figure 5. Mutilating psoriatic arthritis and severe nail dystrophy in patient with erythrodermic psoriasis. (*From* Rothe MJ, Grant-Kels JM: Dermatologic emergencies. Consultant 37:2380, 1997; with permission.)

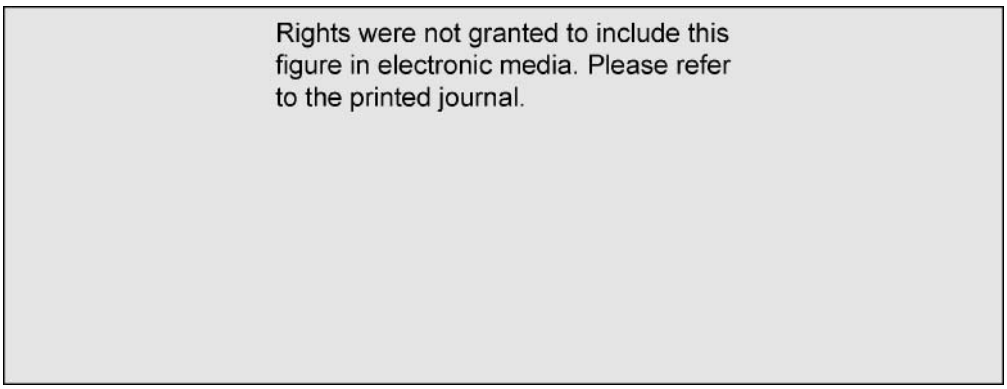

Figure 6. *A*, Salmon-colored erythema and islands of sparing in pityriasis rubra pilaris. (*From* Rothe MJ, Grant-Kels JM: Dermatologic emergencies. Consultant 37:2380, 1997; with permission.) *B*, Keratoderma in pityriasis rubra pilaris. (*From* Rothe MJ, Grant-Kels JM: Dermatologic emergencies. Consultant 37:2380, 1997; with permission.)

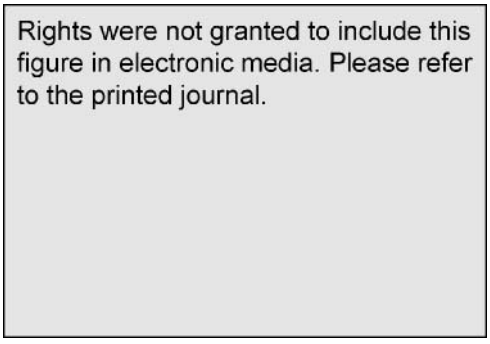

Figure 7. Peripheral collarettes lead to the diagnosis of superficial pemphigus. (*From* Rothe MJ, Grant-Kels JM: Dermatologic emergencies. Consultant 37:2380, 1997; with permission.)

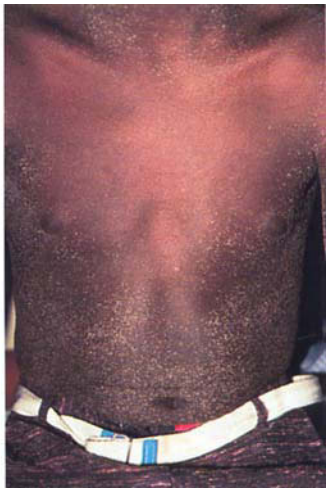

Figure 8. Sterile pustulosis and erythroderma in patient with anticonvulsant hypersensitivity. (Courtesy of Caron Grin, MD, Farmington, CT.)

dermatosis.[117] Microscopic details in the stratum corneum, epidermis, and dermis should be reviewed in an orderly manner to assess for specific clues required to establish a definitive diagnosis (Table 2).

Further histopathologic tests can help identify the underlying cause of erythroderma. Immunophenotyping and the study of clonality by the polymerase chain reaction can help establish the diagnosis of CTCL. Most monoclonal antibody studies can now be performed on formalin-fixed, paraffin-embedded tissue. Direct immunofluorescence findings can confirm the diagnosis of immunobullous diseases and may be suggestive for the diagnosis of collagen vascular disease and graft-versus-host disease (GVHD). IgG fluorescence of intercellular epidermal spaces is seen in pemphigus, whereas linear IgG or C3 (or both) along the basement membrane zone is seen in bullous pemphigoid. Granular deposition of usually two or more immunoreactants along the dermoepidermal junction is a feature of collagen vascular disease. Approximately 40% of acute cases of GVHD show IgM in a granular pattern at the basement membrane zone[107]; IgM and C3 may also be found around vessels.[108]

Histopathologic features in cases concluded to represent idiopathic erythroderma can be separated into subacute and chronic changes. Subacute disease shows parakeratosis, spongiosis, epidermal hyperplasia, and papillary dermal edema with a superficial perivascular, predominantly lymphohistiocytic infiltrate. Chronic disease shows hyperkeratosis (often somewhat compact), psoriasiform epidermal hyperplasia, little if any spongiosis, and thickening of the papillary dermis.

SYSTEMIC COMPLICATIONS

The most significant systemic complications of erythroderma include fluid and electrolyte imbalance, hypoalbuminemia, thermoregulatory disturbance, cardiac failure, capillary leak syndrome, and infection. Confirming previous observations of significant protein loss in the scale of erythrodermic patients, Kanthraj et al[51] showed that the daily protein loss was increased by 25% to 30% in psoriatic erythroderma and by 10% to 15% in nonpsoriatic erythroderma. The ensuing negative nitrogen balance can cause hypoalbuminemia, peripheral edema, and loss of muscle mass.

The thermoregulatory disturbance of erythroderma is a consequence of a compromised ability to respond to changes in environmental temperature as well as evaporation of heat through dilated cutaneous vasculature.[51, 59] Life-threatening complications of high-output cardiac failure, adult respiratory distress syndrome, and capillary leak syndrome have been described in erythroderma.[14, 35, 69, 85] High-output cardiac failure has been attributed to increased blood flow through the dilated cutaneous vasculature. Enhanced systemic vascular permeability in the latter two

Table 2. HISTOLOGIC CLUES TO THE SPECIFIC DIAGNOSIS OF ERYTHRODERMA

Disease	Histologic Clues
Psoriasis	Parakeratosis layered with neutrophils, suprapapillary plate thinning, dilated tortuous papillary blood vessels
Drug reaction	Vacuolar alteration, necrotic keratinocytes
Atopic or contact dermatitis	Spongiosis, eosinophils within dermal infiltrate
Seborrheic dermatitis	Parakeratosis with neutrophils at lips of follicular ostia
Dermatophytosis	Focal parakeratosis, hyphae within cornified layer
Scabies	Superficial and deep perivascular and interstitial infiltrate with eosinophils, scabetic mite, or excreta in cornified layer
CTCL/Sezary	Exocytosis of mononuclear cells unassociated with spongiosis
Actinic reticuloid	Superficial and deep mixed inflammatory infiltrate with some atypical mononuclear cells, overlying lichen simplex chronicus
PRP	Alternating orthokeratosis and parakeratosis (vertically and horizontally)
Pemphigus	Acantholytic keratinocytes
Pemphigoid	Subepidermal bulla with eosinophils
Dermatomyositis/SCLE	Vacuolar alteration, colloid bodies, increased dermal mucin
Acute GVHD	Vacuolar alteration, satellite cell necrosis
Sarcoidosis	Dermal epithelioid cell granulomas surrounded by lymphoctyes and eosinophils
Lymphoproliferative diseases	Interstitial pattern of atypical cells between collagen bundles

CTCL = Cutaneous T-cell lymphoma; RP = pityriosis rubra pilaris; SCLE = subacute cutaneous lupus erythematosus; GVHD = graft-versus-host disease.

conditions may be related to cutaneous synthesis of vascular permeability factor and vascular endothelial growth factor.[19]

Widespread endothelial activation in erythroderma is suggested by increased circulating levels of the adhesion molecules intercellular adhesion molecule-1 (ICAM-1), vascular cell adhesion molecule-1 (VCAM-1), and E-selectin in patients with erythroderma secondary to psoriasis and eczema. It has been hypothesized further that the presence of increased circulating adhesion molecules promotes immunosuppression and infection in erythroderma.[37]

Staphylococcal sepsis can complicate erythroderma, particularly in patients with immunosuppression secondary to HIV or CTCL.[35, 46, 47] Bacterial colonization of widely inflamed, fissured, and excoriated skin may promote erythroderma further. Improvement of erythroderma has been observed with systemic antibiotics.

TREATMENT

The initial management of all types of erythroderma is the same regardless of the underlying cause. Attention is paid to nutrition and fluid and electrolyte replacement. Local skin care measures are undertaken, including oatmeal baths as well as wet dressings to weeping or crusted sites, followed by application of bland emollients and low-potency topical corticosteroids. Higher-potency topical steroids are generally avoided because of significant risk for systemic absorption secondary to the extensive surface area and enhanced cutaneous permeability.[1] Skin irritants, such as tars, are also avoided. Sedating oral antihistamines are prescribed for relief of pruritus and anxiety. A warm, humidified environment should be provided to prevent hypothermia and to improve moisturization of the skin. Secondary infection is treated with systemic antibiotics. Peripheral pretibial edema failing to respond to leg elevation and skin care measures may require diuretics for patient comfort. Signs and symptoms of cardiac or respiratory failure require urgent intervention and hospitalization.

Systemic dermatologic therapy may be necessary to control erythroderma or to maintain improvement achieved from aggressive local therapy. The systemic therapy of specific dermatoses is beyond the scope of this article.

NATURAL COURSE OF DISEASE AND PROGNOSIS

The prognosis of erythroderma varies depending on its cause. As noted previously, with the exception of severe systemic reactions, erythroderma secondary to drug hypersensitivity is likely to clear rapidly with discontinuation of the drug.[41, 52] Erythroderma secondary to preexisting skin disease, such as atopic dermatitis, contact dermatitis, or psoriasis, usually improves within several weeks to several months.[52] Recurrence of psoriatic erythroderma has been observed in 15% to 20% of patients after initial clearing.[14]

Erythroderma secondary to CTCL or other malignancy is generally persistent or recurrent. Although most patients with idiopathic erythroderma experience partial or complete remissions,[94, 101] patients with persistent chronic idiopathic erythroderma appear to be at increased risk for developing CTCL.[13, 52, 94]

Early series of erythrodermic patients reported significant mortality. Wilson's[113] study of 50 patients, published in 1954, notes 19 deaths from complications of erythroderma. The 1963 publication by Abrahams et al[2] observed 19 deaths among 101 cases; most deaths occurred in patients with pemphigus foliaceus, lymphoproliferative malignancy, severe drug reactions, and idiopathic erythroderma. In 1973, Nicolis and Helwig[65] reported erythroderma-related deaths in 87 of 135 patients. Pneumonia was the most common cause of death in the three series. Cardiac failure and sepsis were also frequently reported causes of death.

Series published from 1983 to the present have found a decreased mortality rate. There were no erythroderma-related deaths in 50 patients reported by Hasan and Jansen.[41] King et al[52] noted that none of the patients with erythroderma secondary to preexisting skin disease died; however, 25% of patients with malignancy-related erythroderma were deceased. Similarly the only erythroderma-related deaths recorded in the series by Sigurdsson et al[93] of 102 patients occurred in patients with malignancy. Two deaths in the group of 56 cases reported by Botella-Estrada et al[13] were due to high-output cardiac failure secondary to erythrodermic psoriasis, and one death was due to lymphomatous pulmonary infiltrate.

SUMMARY

Erythroderma can be caused by a variety of underlying dermatoses, infections, and sys-

temic diseases. Many of the findings on history, physical examination, and laboratory evaluation are nondiagnostic. Distinctive clinical and laboratory features pointing to a specific disease may be evident, however. Conclusive clinicopathologic correlation may require multiple and repeated skin biopsies.

The prognosis of erythroderma has improved with the advent of innovative dermatologic therapies (e.g., cyclosporine and synthetic retinoids) and advances in the management of systemic manifestations. Death from sepsis, cardiac failure, adult respiratory distress syndrome, and capillary leak syndrome continue to be rarely reported. A high index of suspicion for these complications must be maintained to facilitate early medical intervention.

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