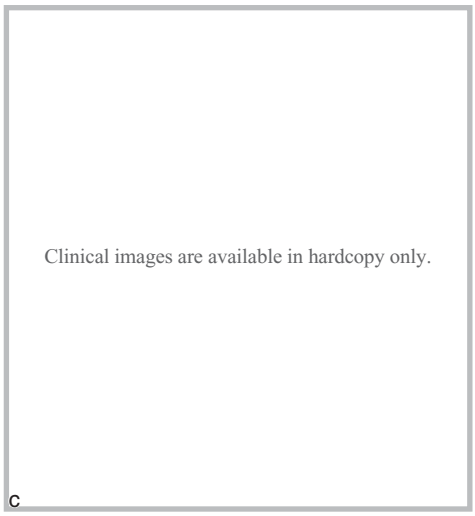


**Fig. 9.6-2 Erythema annulare centrifugum (EAC).**
c: On the upper arm.

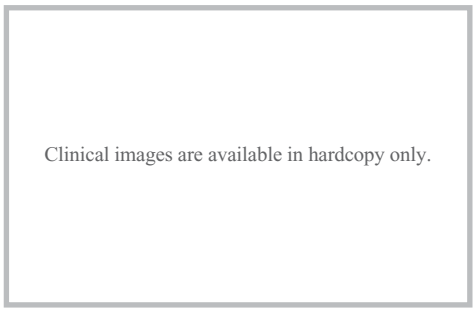


**Fig. 9.7 Erythema gyratum repens.**

### 3. Erythema chronicum migrans (ECM) ★

**Clinical features**

Within 1 month after a tick bite, a papule or erythema occurs on the bitten site. It quickly enlarges centrifugally to form a characteristic ring-shaped eruption: The edge is scarlet and may elevate, and the center partly or totally fades. It is asymptomatic. The eruption may reach 40 cm in diameter. Erythema chronicum migrans (ECM) is the cutaneous hallmark of Lyme disease (refer to Chapter 28 for other symptoms and treatments of ECM).

**Pathogenesis**

ECM can be attributed to infection by *Borrelia burgdorferi*, a spirochete whose usual hosts are ticks of the genus Ixodes.

### 4. Erythema gyratum repens ★

Cutaneous eruptions of concentric raised erythematous bands move in waves over the body surface in a "wood grain" pattern. Accompanied by intense itching, they enlarge quickly (**Fig. 9.7**). The eruption is associated with internal malignancy. Immunoglobulin and immune complex deposit in the dermo-epidermal junction, suggesting the involvement of immunoreaction.

### 5. Necrolytic migratory erythema ★

Necrolytic migratory erythema is a marker for glucagonoma. It typically involves the face and the intertriginous areas. There is a cyclic pattern in the course of the eruption. Vesicles and pustules tend to become confluent. Irregular centrifugal expansions of the annular lesions coalesce into a map-like serpeginous pattern.

## Erythroderma ★★

**Outline**

- Erythroderma is the term applied to any inflammatory skin disease with erythema and scaling which affects more than 90% of the body surface.
- The causes are various.

**Clinical features, Pathogenesis**

Erythroderma is often of sudden onset. Patchy erythema which rapidly generalizes may be accompanied by desquamation (**Table 9.6**, **Figs. 9.8-1** and **9.8-2**). The underlying dermatologic disorder is often impossible to identify, but in some causes, patients have the specific clinical features of the original causative disorder. Intense itching is present. When the palms and soles are affected, erythroderma may cause acanthosis,

hyperkeratosis, and fissures in the horny cell layer. The scalp hair may be shed and the nails become ridged. The skin becomes shiny and pigmented in the chronic stages of the eruptions. These may be accompanied by fever, shivering and malaise.

### Pathology

There are no characteristic pathological findings for erythroderma, because the findings vary depending on the underlying disease. In most cases, histopathologically, there are hyperkeratosis, parakeratosis, acanthosis and chronic inflammatory infiltrates. The submission of multiple biopsy specimens from a patient enhances the accuracy of histopathologic diagnosis.

### Laboratory findings

In cases in which the underlying disease is not identified, laboratory findings are referred to for diagnosis (**Table 9.7**).

### Treatment

Oral antihistamines and topical steroids are useful; nevertheless, side effects from topical agents tend to occur as a result of enhanced skin barrier function, which accelerates percutaneous absorption. Systemic corticosteroids are needed in severe cases. Treatment in hospital is advisable for cases with systemic symptoms, including protein or electrolyte imbalance.

## 1. Eczematous erythroderma ★

Eczematous erythroderma accounts for about 50% of all erythroderma cases. Although it most frequently affects elderly men, it may occur in patients of other ages with atopic dermatitis. Atopic dermatitis and various types of eczema generalize to become erythroderma under the influence of intrinsic or extrinsic factors. Intrinsic factors include dysfunction of T cells, liver or kidney; paranephros; and autonomic dystonia. Extrinsic factors include inappropriate treatments for eczema, home remedies and environmental changes. Edematous redness and scaling are present over the entire body skin. This is accompanied by intense itching and, sometimes, indolent lymphadenopathy, particularly of the inguinal lymph nodes. Systemic symptoms such as fever, dehydration, protein loss, body temperature instability and opportunistic infection may be found. Skin atrophy, pigmentation, pityroid scaling and skin glossiness become noticeable as the eruptions become chronic. Eczematous erythroderma is often caused by atopic dermatitis, contact atopic dermatitis, seborrheic dermatitis and autosensitization dermatitis. Topical steroids are extremely effective as a treatment. Antihistamines are useful. Oral administration of steroids should be avoided as much as possible.

**Table 9.6 Causative conditions of erythroderma.**

| Inflammatory disorder |
|---|
| Eczema, atopic dermatitis |
| Drug eruption |
| Psoriasis |
| Erythema multiforme |
| Viral eruption (measles, rubella) |
| Pityriasis rubra pilaris |
| Reiter's syndrome |
| Congenital ichthyosiform erythroderma |
| Bullous pemphigoid |
| Pemphigus foliaceus |
| Dermatitis herpetiform (Duhring) |
| Hailey-Hailey disease |
| Lupus erythematosus |
| Dermatomyositis |
| Sarcoidosis |
| Fungal infections |
| Scabies |
| Staphylococcal scalded-skin syndrome |
| Ofuji papuloerythroderma |
| Graft-versus-host disease |
| HIV infection |
| **Neoplasm** |
| Mycosis fungoides |
| Sézary syndrome |
| Adult T-cell leukemia/lymphoma |
| Leukemia |
| Malignant lymphoma, especially Hodgkin's disease |
| Multiple myeloma |
| Other malignant disorder |

**Table 9.7 Examinations for diagnosis and severity of erythroderma.**

| Examination | Points |
|---|---|
| Complete blood count, blood picture | Essential for the diagnosis of infections, malignant lymphoma, leukemia and Sézary syndrome. In atopic dermatitis, drug eruption and eosinophil levels are elevated. |
| Liver function | Liver dysfunction suggests drug reaction or collagen disease such as dermatomyositis. |
| Skin biopsy | Underlying disorder (mycosis fungoides, psoriasis, etc.) may be found by repeated skin biopsy. |
| Bacteriological examination | Bacterial culture and potassium hydrate (KOH) from scales/pustules may reveal underlying disorders. |
| Plasma protein fraction | Indicates hypoalbuminemia from scaling and skin metabolic dysfunction. |
| Renal function, cardiopulmonary function, electrolytes | Indicates dehydration and edema. |

Clinical images are available in hardcopy only.

Clinical images are available in hardcopy only.

**Fig. 9.8-1 Erythroderma associated with Hodgkin's disease.**
Flushing and marked scaling are seen on the entire body. The severity of the skin lesions mirrors that of the Hodgkin's disease.

## 2. Drug-induced erythroderma ★

Drug-induced erythroderma accounts for about 10% of all erythrodermas. It is most frequently caused by antibiotics, antiepileptic drugs and NSAIDs (**Table 9.8**). After intake of any of those drugs, the disease starts as erythematous papules. These spread rapidly until bright red erythema affects the entire skin surface. Causative drugs should be discontinued. Oral steroids and pulse therapy are effective at the early stages. Although most cases resolve relatively soon after the causative drug is discontinued, lichenification may continue for a long period. Drug-induced hypersensitivity syndrome (DIHS, Chapter 10) is a persistent severe drug eruptions with organ failure; the disorder may also cause erythroderma.

## 3. Psoriasis erythroderma ★

Psoriatic exfoliative dermatitis can occur in association with the use of steroids, and phototherapy, alcohol and stress. Typical psoriatic eruptions often partly remain in erythroderma. Nail deformity frequently occurs. The treatment of oral cyclosporine or etretinate (a vitamin A derivative) is required as treatments in many cases.

## 4. Tumorous erythroderma ★

T-cell lymphoma (e.g., mycosis fungoides, Sézary syndrome), adult T-cell leukemia, Hodgkin's disease, or chronic lymphocytic leukemia may occur as the primary diseases of tumorous erythroderma (**Figs. 9.8-1** and **9.8-2**). Systemic examination is necessary to detect internal lesions. Erythema with intense itching spreads over the whole body surface, and the lymph nodes swelling. The primary disease should be identified and treated.

## 5. Other potential cause of erythroderma ★

①**Bullous dermatosis**: Pemphigus foliaceus (and erythematous), herpetiformis dermatitis may progress to erythroderma. A histopathological examination and a direct immunofluorescent antibody test are useful for diagnosis.
②**Hereditary keratosis**: In nonbullous congenital ichthyosiform erythroderma, diffuse erythema, scaling and hyperkeratosis occur at the time of birth or within several weeks after birth. Keratotic follicular papules are produced on the extensor surface of the joints in pityriasus rubia pilaris, and these may diffuse and progress to erythroderma.
③**Infectious disease**: Erythroderma tends to occur in immunocompromised patients, such as those with AIDS. Scabies (Norwegian scabies, particularly), tinea, candidiasis, and viral infections such as of measles and rubella may also produce erythroderma. In children, staphylococcal scalded-skin syndrome

(SSSS) sometimes progresses to erythroderma.

**Graft-versus-host disease**: Erythroderma may occur as a symptom of graft-versus-host disease (GVHD) after transfusion. It is fatal. About 10 days after transfusion, edematous erythema, fever, diarrhea, liver disorder, pancytopenia and edematous erythema occur and become erythroderma. Postoperative erythroderma can be prevented by X-radiation of blood products before transfusion.

**Ofuji papuloerythroderma**: Ofuji papuloerythroderma is an uncommon entity of unknown etiology, characterized by a pruritic eruption of flat, widespread, reddish-brown papules that progresses to spare skin folds. Some cases may be associated with an internal malignancy or T-cell lymphoma.

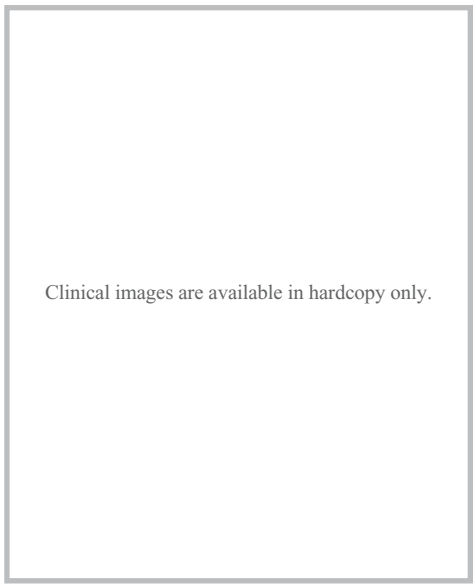


**Fig. 9.8-2 Erythroderma associated with Hodgkin's disease.**
With regression, normal skin areas appear on the abdomen and shoulder (arrows).

**Table 9.8 Causative drugs of erythroderma.**

| |
|---|
| Antibiotics |
| NSAIDs |
| Allopurinol |
| Lithium |
| Phenytoin |
| Calcium channel blockers |
| Carbamazepine |
| Cimetidine |
| Gold |
| Quinidine |
| Other |