Characteristics of Eczema

The skin represents a unique immunologic organ poised to protect the host from invading organisms and environmental antigens.

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The skin is also an important target for a variety of allergic and autoimmune responses.
Mast cells are key to the pathogenesis of urticaria, angioedema, and mastocytosis. Atopic dermatitis is the consequence of an immunoregulatory abnormality resulting in a skin-directed T helper type 2 response.

Eczema is a common, chronically recurring inflammatory skin disorder that usually begins early in life. On average:

- 65% of cases of eczema are diagnosed during the first 12 months of life
- 90% of cases of eczema are diagnosed by age 5 years

Although onset of eczema is less common after the age of 30, approximately 60% of infants with the disease continue to have 1 or more symptoms into adulthood.

Pathogenesis of Eczema

- Pathogenesis of eczema involves 4 stages:
  - **In Stage 1**, cytokines are released in response to a stimulus, causing edema and promoting immune cells to enter the affected tissues from the blood.
  - **In Stage 2**, this process continues, with more fluid accumulating in the spaces between the cells of the tissues, causing more edema. With continuing exposure to a trigger, such as scratching, the process continues into Stage 3.
  - **Stage 3** involves further edema and infiltration of the area by activated white blood cells, which are releasing cytokines and recruiting additional immune cells. Those cells attack other cells in

the vicinity, exposing the body's tissues to more irritant stimuli. This progressive inflammatory process is called the inflammatory cascade.

- **Stage 4** involves chronic eczema that has been in place long enough to produce the characteristic thickened, red, dry, scaly skin and increased production (hyperplasia) of keratinized cells (hyperkeratosis).

Theories of Eczema Pathogenesis

There is increasing recognition that the barrier function of the skin is impaired in individuals with eczema. A deficiency of the lipid ceramide in the stratum corneum is believed to be the cause of impaired function of the skin barrier in atopic individuals

This is now thought to help drive the processes of eczema rather than simply being a consequence of the disease.

There are several theories regarding the pathogenesis of eczema. All involve an irritant that initiates an immune and inflammatory cascade and also involve perpetuation through the itch-scratch cycle.

Different theories describe the possible initiating factor as:

- A nonspecific irritant
- A specific allergenic irritant
- A bacterial endotoxin "super-antigen"
- Stress

Some or all of these factors may be operating in any individual patient at any given time.

The initial irritant event triggers a cascade of immune and inflammatory processes that perpetuate the itching characteristic of eczema and that eventually lead to the hyperkeratosis and other changes characteristic of chronic eczema.

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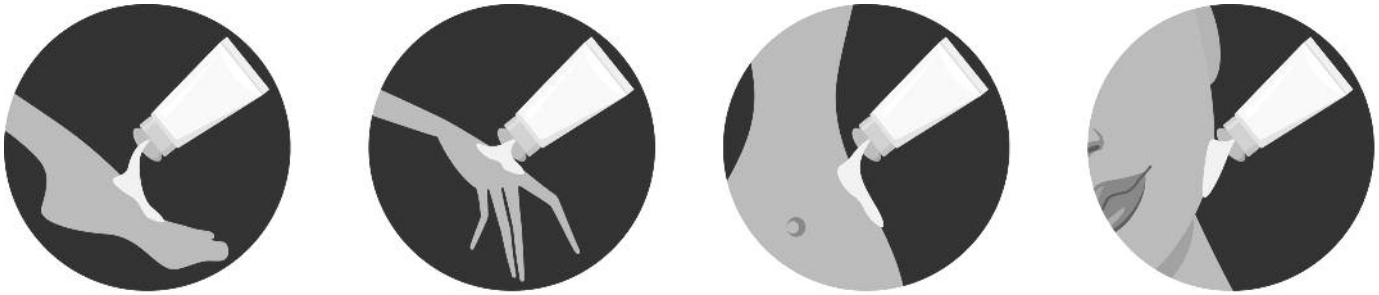
Diagnosis of Eczema

Description of Flares

Flares are the episodes in which the clinical presentation becomes acutely more severe, and remissions are the periods of time between flares during which the disease is less severe or may appear to be completely resolved. Its clinical course is similar to that of asthma, where exacerbations are episodic and occur in response to both internal and external triggers.

Characteristic Appearance of Eczema

The 4 common features of the physical appearance of eczema are erythema (redness), excoriation (lesions), papulation (formation of raised lesions on the skin), and lichenification (skin hardness and thickening). Remember that the hallmark symptom of eczema is pruritus (itching). Since these features are observed by the clinician during the physical examination of the patient, rather than being reported or described by the patient, they are considered to be clinical signs, not symptoms.



Clinical Presentation at Various Ages

The distribution of involved areas of the skin tends to change with age reflecting the "triphasic" clinical expression of eczema.

- During infancy, the so-called "patches" of eczema tend to occur on the face, neck, extensor surfaces of the extremities, and on the abdomen. Interestingly, the diaper area is almost always spared.
- As the infants become toddlers and older children, the patches of eczema tend to appear less on the extensor surfaces and face (although 40% to 60% of these patients continue to have facial involvement) and instead involve the torso and flexural areas (i.e., back of the knees, inside of elbows, and other areas that are stretched and contracted repeatedly). The skin in these flexural areas is irritated by the friction created from repeated contact with clothing and the environment.
- In adolescence and adulthood, the eczema often improves and becomes clinically insignificant in about half of diagnosed patients. However, for the remaining 50%, patients tend to have sensitive or overly dry skin, which develops into dermatitis upon exposure to specific stimuli, including irritating chemicals, materials, and allergens.
- Eczema can become chronic and very difficult to treat, as lichenification (skin hardening and thickening) is common.

Diagnosis

The diagnosis of eczema is not based on the results of any specific test, such as a blood test or skin biopsy. Rather, it is a clinical diagnosis combined with the patient's medical and family history (for example: itching, crying, irritability, scratching, a family history of atopy, and the physical examination).

Skin conditions to be considered in the differential diagnosis of eczema include seborrhoeic dermatitis, allergic contact dermatitis, scabies, and psoriasis

The Impact of Eczema on the Patient

Eczema reduces the quality of a person's life, and its consequences can often be great and far-reaching, so that eczema has a major personal and social impact on patients and their families.

Children and adolescents are especially vulnerable to the effects of eczema.

Treatment

The goals of treatment include: control of symptoms (especially itching), restoration of the skin's moisture and function, treatment of the underlying inflammatory process, and avoidance of exposure to triggers and exacerbating factors, including all infections

Components of the typical multi-pronged treatment regimen include:

- Patient education about the condition
- Prescription and nonprescription therapies
- Identification of potential triggers and exacerbating factors, followed by attempts to avoid those triggers
- Proper skin hydration through proper bathing and use of emollients
- Use of adequate anti-inflammatory agents (usually topical corticosteroids or, more recently, pimecrolimus cream and tacrolimus ointment)
- Use of antibiotic therapy to treat skin infections

KEY POINTS

- The hallmark symptoms of eczema are itching and redness.
- A deficiency of the lipid ceramide in the stratum corneum is believed to be the cause of impaired function of the skin barrier in atopic individuals
- Eczema is diagnosed from medical history and examination because there are no reliable laboratory tests for it. Useful pointers to a diagnosis of eczema include:
  - The age at which symptoms first occur (e.g., by the age of 2)
  - The part of the body involved
  - Events that appear to be associated with flares (e.g., specific triggers)
  - A family history of eczema or another atopic disorder
- Components of the typical multi-pronged treatment regimen include:
  - Patient education, prescription and nonprescription therapies and identification of potential triggers