ABC of Dermatology

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ECZEMA AND DERMATITIS

Eczema.

The term eczema covers a wide variety of conditions, from the child with atopic eczema to the adult with an allergy to cement. This leaves "dermatitis" with nothing to its name except being an undefined general term for any type of skin condition. Here I shall use "eczema" to cover endogenous conditions of various types and "contact dermatitis" for those caused by an external agent other than infection. If you tell patients that they have dermatitis they may assume that this is occupational dermatitis. It is not unusual for industrial workers to say, "Is it dermatitis, doctor?" — that is, "Is it due to my job?"

Morphology

Eczema consists of vesicular lesions with erythema and a poorly defined edge. Dryness and scaling then develop. In severe cases it lives up to the literal meaning of eczema, "to boil," with a dense collection of blisters.

Pathology

Oedema develops between the epidermal cells to form vesicles. The epidermis thickens, with an increase in the keratin layer, while in the dermis there is vasodilatation and an inflammatory infiltrate.

Distribution

The lesions may be generalised, but the following are common patterns.

Atopic eczema.

Atopic eczema affects mainly the flexor surfaces of the elbows and knees and the face and neck. To a variable degree it can affect the trunk as well. *Nummular eczema* appears as coin shaped lesions on legs and trunk.

Atopic eczema.

Nummular eczema.

Nummular eczema.

Stasis eczema occurs around the ankles, where there is impaired venous return.

Stasis eczema.

Neurodermatitis is a localised area of skin with lichenification produced by constant rubbing.

Atopic eczema

The typical patient with atopic eczema is a fretful scratching child with eczema that varies in severity, often from one hour to the next. In the older child or adult eczema is more chronic and widespread and its occurrence is often related to stress. Atopic eczema is common, affecting 3% of all infants, and runs a chronic course with variable remissions. It normally clears during childhood but may continue into adolescence and adult life as a chronic disease. It is often associated with asthma and rhinitis. Sufferers from atopic eczema often have a family history of the condition.

Asteatosis.

Plantar dermatitis.

Variants of atopic eczema are pityriasis alba—white patches on the face of children with a fair complexion—and chronic juvenile plantar dermatosis—dry cracked skin of the forefoot in children. This does not affect the interdigital spaces and thus is not due to a fungal infection.

Other types of eczema

Asteatotic eczema occurs in older people with a dry, "crazy paving" pattern, particularly on the legs.

Lichen simplex is the result of persistent rubbing of the skin, with thickened, lichenified areas.

Pompholyx is itching vesicles on the fingers, with lesions on the palms and soles in some patients.

Infection can modify the presentation of any type of eczema or contact dermatitis.

Lichen simplex.

Pompholyx.

Infected eczema.

Contact dermatitis

Common sources of allergic contact dermatitis

Jewellery, clothing, wristwatch, scissors, cooking utensils	Nickel — cobalt and tin
Cement, leather	Chromate
Hair dyes, tights, shoes	Paraphenylenediamine
Rubber gloves and boots	Rubber preservative chemicals
Creams, ointments, cosmetics	Preservatives (parabenz-quarternium), Balsam of Peru, Fragrances, Lanolin if medicated neomycin, Benzocaine

The skin normally performs its function as a barrier very effectively. If this is overcome by substances penetrating the epidermis an inflammatory response may occur leading to epidermal damage. These changes may be due to either (a) an allergic response to a specific substance acting as a sensitiser or (b) a simple irritant effect. An understanding of the difference between these reactions is helpful in the clinical assessment of contact dermatitis.

The characteristics of allergic dermatitis are (a) previous exposure to the substance concerned; (b) 48 to 96 hours between contact and the development of changes in the skin; (c) activation of previously sensitised sites by contact with the same allergen elsewhere on the body; and (d) persistence of the allergy for many years.

Allergic contact dermatitis can be illustrated by the example of an individual with an allergy to nickel who has previously reacted to a wrist watch. Working with metal objects that contain nickel leads to dermatitis on the hands plus a flare up at the previous site of contact with the watch. The skin clears on holiday but the dermatitis recurs two days after the person returns to work.

On the other hand, *irritant contact dermatitis* has a much less defined clinical course and is caused by a wide variety of substances with no predictable time interval between contact and the appearance of the rash. Dermatitis occurs soon after exposure and the severity varies with the quantity, concentration, and length of exposure to the substance concerned. Previous contact is not required, unlike allergic dermatitis, where previous sensitisation is necessary.

Photodermatitis, caused by the interaction of light and chemical absorbed by the skin, occurs in areas exposed to light. It may be due to (a) drugs taken internally, such as sulphonamides, phenothiazines, and dimethylchlortetracycline, or (b) substances in contact with the skin, such as topical antihistamines, local anaesthetics, cosmetics, and antibacterials.

Morphology—The clinical appearance of both allergic and irritant contact dermatitis may be similar but there are specific changes that help in differentiating them. An acute allergic reaction tends to produce erythema, oedema, and vesicles. The more chronic lesions are often lichenified. Irritant dermatitis may present as slight scaling and itching on extensive epidermal damage resembling a superficial burn, as the child in the illustration shows.

Pathology—The allergic reaction to specific sensitisers leads to a typical eczematous reaction with oedema separating the epidermal cells and blister formation. In irritant dermatitis there may also be eczematous changes but also non-specific inflammation, thickening of keratin, and pyknotic, dead epidermal cells.

Allergic reactions to: (top left) topical neomycin; (right) diethanol; (bottom left) Solarcaine and sun; and (right) sulphapyridine.

Irritant reaction to bleach.

Allergic reactions to: (left) rubber pad on goggles; (middle) cosmetics; and (above) elastic in underpants.

Neomycin
Lanolin (wool alcohol)
Formaldehyde
Tars
Clinaform (the "C" of many proprietary steroids)

Photodermatitis.

Leg dermatitis.

The distribution of the skin changes is often helpful. For example, an itchy rash on the waist may be due to an allergy to rubber in the waistband of under clothing or a metal fastener. Gloves or the rubber lining of goggles can cause a persisting dermatitis. An irritant substance often produces a more diffuse eruption, as shown by the patient who developed itching and redness from dithranol.

Photodermatitis can occur to everyday household substances such as soap—the man in the photograph reacted to the trichlorsalicanilide in soap he had used before working in his garden. The outline of the area protected by his vest can be seen, and the positive photopatch test is shown below.

An allergy to medications used for treating leg ulcers is a common cause of persisting dermatitis on the leg. Common allergens are listed in the box.

Patch testing

Patch testing is used to determine the substances causing contact dermatitis. The concentration used is critical. If it is too low there may be no reaction, giving a false negative result, and if it is too high it may produce an irritant reaction, which is interpreted as showing an allergy (false positive). Another possible danger is the induction of an allergy by the test substance. The optimum concentration and best vehicle have been found for most common allergens, which are the basis of the "battery" of tests used in most dermatology units.

The test patches are left in place for 48 hours then removed, the sites marked, and any positive reactions noted. A further examination is carried out at 96 hours to detect any further reactions.

It is most important not to put a possible causative substance on the skin in a random manner without proper dilution and without control patches. The results will be meaningless and irritant reactions, which are unpleasant for the patient, may occur.

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