An overview of topical treatment for atopic eczema

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Abstract

Atopic eczema is a chronic, relapsing inflammatory disease of the skin. It is characterised by dry, itchy skin and a typical distribution on the elbows and knees in younger children, and the cubital and popliteal fossae in older children and adults. Treatment modalities include emollients, topical corticosteroids, calcineurin inhibitors, phototherapy and immunosuppressive therapy. This article provides a brief overview of topical treatments for atopic eczema.

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Introduction

Atopic eczema is a common skin disease, often manifesting in early childhood in the majority of patients. About 50% are affected in the first year of life, and a further 15% in the first five years[1]. It often occurs in association with other allergic conditions such as asthma, hay fever, allergic rhinitis and allergic conjuctivitis. The aetiology involves a complex interplay between genetic factors, disrupted skin barrier function, a food allergy, and many other extrinsic factors like skin irritants, inhalant allergens and superficial bacterial infections of the skin.[2] The pathogenesis is a complex inflammatory process involving cellular and immunological processes, but T-lymphocyte activation plays a central role.[3]

Discussion

The clinical presentation varies with the different stages of life. In infants, the disease affects the entire body, and has no specific distribution (see Figure 1). In younger children, the lesions are usually on extensors surfaces of the limbs, that is, the elbows and the knees (see Figure 2). In older children and adults, lesions usually appear on the flexors surfaces of the limbs, that is, the cubital and popliteal fossae (see Figure 3). However, distribution of the lesions does not always follow this pattern.

Clinical features include erythema, oedema, vesiculation, crusting, dryness, scaling, excoriations and lichenification. Pruritus is a chief symptom, and can be very troublesome. Children with atopic eczema are more prone to bacterial and viral infections of the skin. The most common bacterial infection is due to *Staphylococcus aureus*, causing folliculitis, impetigo or even ecthyma.[4] It has been shown that 90% of patients with atopic eczema are colonised with *S. aureus.* A direct relationship between the disease activity and the degree of colonisation has been shown.[5] Patients with atopic eczema are also prone to infection with herpes simplex virus, causing a condition called eczema herpeticum, or Kaposi's varicelliform eruption.[6] Susceptibility to these infections

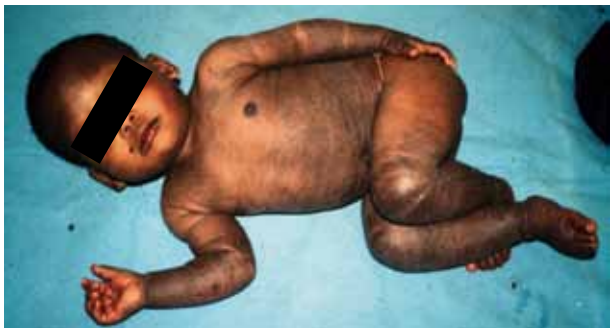

Figure 1: Atopic eczema in a six-month-old baby

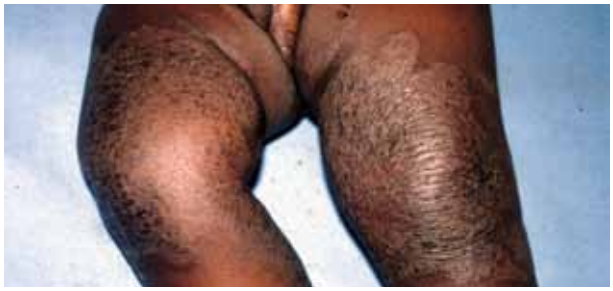

Figure 2: Atopic eczema in a two-year old. Note the distribution on the knees. This patient has lesions on the elbows as well.

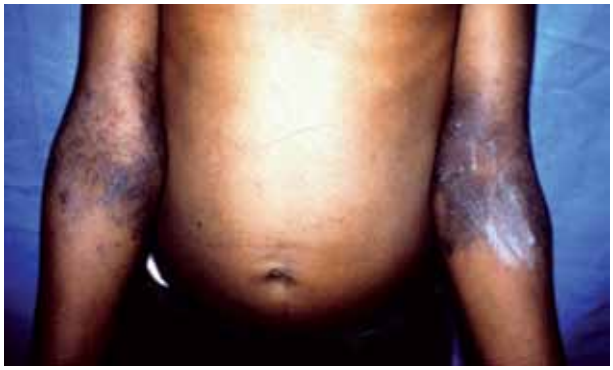

Figure 3: Atopic eczema in an older child. Note the distribution on cubital fossae. This patient has lesions on the popliteal fossae as well.

seems to be related to disrupted skin barrier function, and possibly the use of systemic and topical steroids, although this is not always the case. Topical corticosteroids should be temporarily stopped while these infections are treated.

Topical treatments

Emollients

The dryness in eczema worsens the disease. Therefore, regular use of emollients is important. Emollients maintain hydration of the skin, and may even protect against inflammation provoked by irritants. These emollients should be applied as frequently as possible throughout the day.[7] Although there are no clear randomly controlled trials showing evidence of the benefits of emollients in atopic eczema, there is currently no evidence to doubt that their regular use is beneficial for the treatment of the dry skin, and the barrier defect that is associated with atopic eczema.[4,8]

Topical corticosteroids

Despite their side-effects, topical corticosteroids still remain the mainstay of atopic eczema treatment. Anxiety relating to steroid phobia among the general public and doctors has led to undertreatment of many patients with atopic dermatitis.[7] When prescribing topical corticosteroids, factors to be considered are the patient's age, the site to be treated, severity of the eczema, and the potency of the preparation.[9] Generally, mild potency corticosteroids, such as 1% hydrocortisone, are suitable for use on the face. More potent corticosteroids are used to treat flare-ups of severe disease, and should be used for a limited period only.[4] Skin atrophy is not problematic if these preparations are used correctly.[8] When treating areas like the face, eyelids, breasts, thighs and flexures, special attention should be made when choosing the potency of topical corticosteroids. There are various vehicles in which corticosteroids preparations are contained, e.g. lotions, creams, gels, foams, and fatty ointments. Since eczema is a dry skin disease, ointments are generally preferred because they increase percutaneous absorption by increasing hydration of the skin.

Calcineurin inhibitors

Topical calcineurin inhibitors are a major advance in the management of atopic eczema. They inhibit inflammatory cytokine transcription in activated T cells and other inflammatory cells, through inhibition of calcineurin.[10] The two available preparations are pimecrolimus and tacrolimus.

Pimecrolimus is an ascomycin macrolactum derivative and a selective inhibitor of the production and release of pro-inflammatory cytokines and mediators of T cells and mast cells. It is available in a preparation of 1%, and is indicated for the treatment of mild to moderate atopic dermatitis, especially for steroid-sensitive areas like the face and skin folds.[4,11] It can be used in patients as young as two years of age. It effectively controls the acute signs of eczema, especially on the face, and prevents flares in mild, moderate and severe eczema. It can be used singly, or in combination with topical steroids. Pimecrolimus has a strong anti-inflammatory effect, favourable safety profile, and is well tolerated.

Tacrolimus is a macrolide lactone isolated from the fermentation product of *Streptomyces tsukubaensis*. It has potent and selective immunosuppressant activity, inhibiting T helper cells, cytokines, mast cells and basophils.[9] It is available in preparations of 0.03% and 0.1%, and is indicated for the treatment of moderate to severe eczema. Tacrolimus is also indicated for use in the face and intertrigenous area.[12] The 0.03% preparation can be used in children older than two years, and the 0.1% preparation in those older than 15 years.[4] Tacrolimus has a strong anti-inflammatory effect, favourable safety profile, and is well tolerated.

Tar preparations

Tar preparations have been used in the form of bath solutions, creams, ointments and paste bases to treat atopic eczema lesions, but their potential carcinogenic effects have made their use less fashionable.[9]

Antiseptics

These products are used to decrease skin colonisation by *S. aureus*. The ideal antiseptic should be effective in reducing *S. aureus* colonisation, non-irritating to eczematous skin, and non-sensitising. One should also establish that the antiseptic is bactericidal at the concentration used.[9] Topical antibiotics should only be used to treat clinically infected lesions. They should not be used in an attempt to reduce staphylococcal colonisation, as this may lead to the emergence of resistant strains of *S. aureus* and superinfection with other organisms.[4,9]

Sponsorship

None.

Conflicts of interest

None.

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