Atopic eczema

Clive B Archer

Abstract

Atopic eczema (AE) affects 15—30% of children and up to 10% of adults. Null mutations in the filaggrin gene are associated with AE. Filaggrin plays a key role in epidermal barrier function and the resultant barrier dysfunction may allow increased exposure to irritants and allergens. Having a child with atopic eczema can be difficult and can affect many aspects of family life.

Patient and parent education is an important aspect of the management of AE. Emollients applied frequently, even when the eczema is under control, can help prevent exacerbations. Appropriate use of topical corticosteroids, used at various strengths depending on body site and age of the patient, is still a mainstay of treatment. Topical calcineurin inhibitors can also be useful immunomodulators, particularly in children. Intermittent use of sedative antihistamines and oral or topical antibiotics may be required, and garments and bandages can be very helpful to decrease scratching, especially in children.

In a secondary care setting, it is often more effective to gain control of the disease using a combination of treatments and then to maintain control once achieved. Second-line treatments with narrowband ultraviolet B or immunosuppressive drugs may be required for chronic severe atopic eczema.

Keywords atopic dermatitis; atopic eczema; emollients; filaggrin; quality of life; second-line treatments; topical calcineurin inhibitors; topical corticosteroids

This article discusses atopic eczema in terms of its impact on patients' lives and how to diagnose and treat it.

Atopic eczema (atopic dermatitis, AE) is the commonest childhood inflammatory skin condition and now affects 15—30% of children and 2—10% of adults. Atopy, the triad of eczema, asthma and allergic rhinitis, is on the increase worldwide, and the prevalence of atopic dermatitis has doubled or tripled in industrialized countries over the past three decades.[1] Approximately 30% of children with AE will develop asthma and 35% will develop allergic rhinitis.[2,3]

AE frequently starts in infancy (45% of cases beginning in the first 6 months of life) and 70% of children are affected before the age of 5 years.[4] Approximately 60% of children will grow out of their eczema by adolescence, although up to 50% may then have further episodes as an adult. Adults can present with atopic eczema and probably account for up to 10% of cases seen in secondary care.[5]

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What's new?

- Null mutations in the filaggrin gene are associated with atopic eczema. Filaggrin plays a key role in epidermal barrier function and the resultant barrier dysfunction may allow increased exposure to irritants and allergens
- The topical calcineurin inhibitors, tacrolimus and pimecrolimus, were developed following the success of oral ciclosporin as a treatment for eczema

The aetiology of AE is complex and involves both genetic and environmental factors.[6] Twin studies and family studies have shown that genetic factors are important in the predisposition to AE.[7] Eczema and other atopic disorders show clustering in families, and children whose parents have atopic eczema have a higher risk of developing eczema than children of parents with hay fever or asthma.[8] The discovery that null mutations in the filaggrin gene are associated with AE has proved a significant breakthrough in our understanding of the genetic basis of AE.[9] Filaggrin plays a key role in epidermal barrier function and the resultant barrier dysfunction may allow increased exposure to irritants and allergens, resulting in hyper-reactivity to environmental triggers and the induction of immunoglobulin E (IgE) autoantibodies. Studies in migrant populations have shown the importance of environmental factors; for example, children moving from Jamaica to London are twice as likely to have AE.[10] A higher incidence of AE is associated with urban and industrial settings, higher socioeconomic status and smaller family size.

Impact on quality of life

Having a child with atopic eczema can be difficult and can affect many aspects of family life.[11] Eczematous skin is dry and itchy leading to scratching, particularly at night. Studies have shown that over 60% of children with AE have a disturbed sleep pattern. Infants with moderate-to-severe AE can have poor weight gain, and problems with play and social interaction. In fact, the impairment of quality of life caused by childhood eczema has been shown to be equal to or greater than other common childhood disorders such as diabetes and asthma.

AE can cause psychological difficulties for all the family. Caring for a child with eczema is time consuming and costly. The financial burden includes direct costs such as the purchase of special bedding or washing machines and hidden costs such as loss of parental financial income. These have the greatest impact on low-income families. There are many other consequent family restrictions.

The Children's Dermatology Life Quality Index (CDLQI) was the first validated speciality-specific dermatology scale developed for children aged 4—16 years, and over the past 10 years it has been shown to be a useful, reliable, repeatable tool showing good sensitivity to clinical change. Other tools include the Infant's Dermatitis Quality of Life Index, (IDQoL) and the Dermatitis Family Impact (DFI) score.

Diagnosis

Eczema is characterized by poorly defined erythema with oedema, vesicles and weeping in the acute stages, and skin

thickening (lichenification) in the chronic stage. Eczema commonly starts on babies' cheeks, which can become red and sore, often with post-inflammatory hyperpigmentation in deeply pigmented skin (Figure 1). As the eczema progresses it may affect the common flexural sites, such as behind the knees (Figure 2), and in the elbow creases (Figure 3) and neck folds. A common time for eczema to flare is when babies are weaned. At this time children delight in exploring new foods and tend to smear these around the face. Many foods are irritants and this in combination with dribbling can cause severe facial and neck flares, particularly in fat neck folds of toddlers.

The hands should also be checked as many pre-school activities involve playing with irritant substances. By this age, scratching may have become a habitual activity and common sites that are easy to scratch are wrists and ankles, whereas occluded and more protected sites such as nappy area, abdomen and back are often clearer.

It is now known that the epidermal barrier dysfunction affects all skin so it is important to examine non-eczematous skin, which can feel dry. It is interesting to note that hyperlinear palms, which are found in some cases of atopic eczema and in the ichthyoses, are associated with filaggrin gene mutations.

The validated UK Working Party criteria for the diagnosis of atopic dermatitis were modified from the consensus criteria of Hanifin and Rajka.[12] To have a diagnosis of atopic eczema, an individual must have symptoms as set out in Table 1.

Figure 1 Atopic dermatitis of infancy, with lichenified eczema and prominent hyperpigmentation on the forehead and upper chest. (Reproduced from the photographic collection of the the St John's Institute of Dermatology with kind permission.)

Figure 2 Eczema of the popliteal fossae, with lichenification and post-inflammatory hyperpigmentation. (Reproduced from the photographic collection of the St John's Institute of Dermatology with kind permission.)

Differential diagnosis

In infants, seborrhoeic dermatitis should be considered and this may present with cradle cap and salmon-coloured scaly plaques in the nappy area.

Discoid eczema can prove more of a diagnostic challenge and tends to be seen in older children. Patches may be found on the trunk and limbs and can be confused with psoriasis. Differentiating features are the more clearly demarcated plaques and silvery scale of psoriasis, and discoid eczema tends to be itchy.

Other conditions that can be confused with eczema are keratosis pilaris, which is frequently associated with AE. This disorder of keratinization of the hair follicles is usually found on the outer aspects of the upper arms and thighs but can also be found on the cheeks and results in a rough texture and appearance. Whilst it is usually asymptomatic and not itchy, it can cause distress due to the appearance.

Other differential diagnoses to consider are the ichthyoses. Ichthyosis vulgaris commonly co-exists with eczema. This

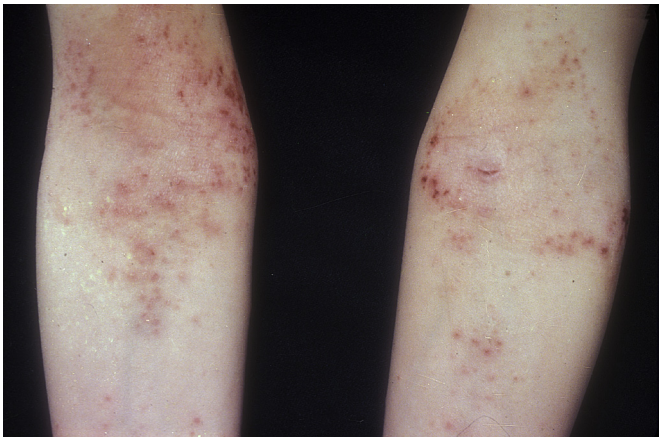

Figure 3 Excoriated lesions affecting the antecubital fossae in atopic dermatitis. (Reproduced from the photographic collection of the St John's Institute of Dermatology with kind permission.)