Current Practice

DISEASES OF THE SKIN

Treatment of Atopic Eczema

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"If only you could stop me scratching I feel sure my skin would soon heal up" is a phrase spoken so often by sufferers from atopic eczema that it is almost diagnostic. The advances in treatment in the last decade offer good, though not complete, control of scratching with a minimum of inconvenience from messy applications, but outright cure is still not possible.

The atopic state is an inherited defect which involves immunity mechanisms and abnormalities of the vasomotor system in addition to skin lesions, and a remission rather than permanent relief is the best that can be achieved. Treatment must be based on an understanding of aetiology, but there have been so many misconceptions about the role of allergy in the causation of the skin changes that some clarification may be necessary.

Atopy

The term atopy was introduced¹ to define the inherited tendency to develop asthma, hay-fever, urticaria, infantile eczema, and the more severe and persistent lichenified flexural eczema known as Besnier's prurigo. In contrast to the mechanisms of contact dermatitis, patients suffering from atopic states have a high incidence of circulating antibodies—reagins—which are responsible for immediate weal reactions when the patient is skin-tested to numerous antigens such as food proteins and pollens. The titre of the immunoglobulins in these patients is so high that it has been suggested their assay could be used as a diagnostic test.² The result of a positive skin reaction to a protein is, however, valueless as a guide to the cause of eczema; it is probable that there is no causal link between the immediate weal sensitivities and the skin changes.^{3,4} This is borne out in practice, since elimination of substances to which the patient has given strongly positive skin tests is not followed by improvement in the eczema. If any reaction does occur following the ingestion of an allergen it will be urticaria and not eczema.⁵

Atopy is associated also with an alteration in the physiological response of the skin to stroking, when white dermographism occurs. A similar delayed blanch reaction follows an intracutaneous injection of acetylcholine.⁶ Both these effects are evidence of an abnormal vasoconstrictor mechanism, which has been found in patients with hay-fever and asthma without skin lesions⁷ and in the unaffected relatives of atopic subjects. The vascular responses of the skin vessels to environmental temperature changes are also abnormal.⁸ Lastly, a significant proportion of patients suffering from atopic eczema develop juvenile ocular cataracts.⁹

It can be seen, therefore, that any treatment for this condition must take into account the wide nature of the underlying inherited faults.

Natural History

The incidence of atopic disorder in the general population is probably about 10%,¹⁰ but not all these persons will suffer from eczema. It has been estimated¹¹ that at least 3% of children under the age of 5 will have some degree of infantile eczema, and about three-quarters of those with eczema have a positive family history of atopy, but there is no clear genetic hypothesis to explain the mode of inheritance. There is also an association with ichthyosis of the dominant type, which affects 10% of all patients with atopic eczema and a higher proportion of the more severe cases, so that even when the eczematous condition has abated the sufferer will still have a dry, scaly skin.

Both the rate of natural recovery and the liability to asthma and hay-fever are difficult to assess because of the different criteria of diagnosis and severity in reported series. In a follow-up of children who had infantile eczema severe enough to necessitate hospital admission 50% still had skin lesions at the age of 20, and of these half suffered from asthma.¹² A much more cheerful prospect can be given from a recent survey of 218 children¹³ with infantile eczema who attended hospital as outpatients. They were reviewed ten years after their first attendance; 70% were free from eczema, 13% had mild lesions, and only 17% had a moderate or severe disability. It is probable that a quarter of the patients with atopic eczema will suffer from asthma or hay-fever. In those who have both, exacerbation of respiratory and skin symptoms usually occur together, though infrequently one condition improves as the other worsens. Cold frosty weather aggravates eczema in most patients, as it causes fissuring of the dry, greaseless skin. Intense heat with high humidity also brings problems, as there is defective sweating in the affected skin.

Management in Infancy and Childhood

Since atopic eczema starts in infancy in over 80% of cases, the majority of patients will be seen in early childhood. At this stage it is the parents who need more management than the children. Overanxiety and even guilt are frequently present, and it is most important to correct the parents' misconceptions and fears about this disorder. At the first interview time must be spent in explanation that this is an inherited defect, likely to improve spontaneously, which may have compensations in that the child may be more intelligent than the average—as many doctors believe to be the case. As a result of the general aura of anxiety which surrounds these children they often have behavioural and feeding difficulties in addition to their skin disorder. The parents should be told of the dangers of overprotection; their aim should be to bring up the child with as few restrictions as possible. At the same time it is as well to explain that though these children are sensitive to allergens nothing is to be gained by changing the diet unless there is a clear history of an urticarial swelling after a particular

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food. If a milk allergy does occur in infants it does not cause atopic eczema, and there is no need to encumber the household with a goat.

Children with eczema are hyperactive and sleep less than usual. It is important, therefore, that if circumstances permit they should sleep in a room separate from their parents, though many mothers resist this suggestion because they wish to prevent the child scratching by holding its hands. It is far preferable to control the irritation and sedate the child with a nightly dose of an antihistamine elixir such as syrup of trimeprazine tartrate (0.5 mg./kg.) or elixirs of diphenhydramine or promethazine in comparable dosage. Sedation with barbiturates is usually unsatisfactory, and it is preferable to raise the dose of antihistamines until the child does sleep.

There has in recent years been a swing away from the prohibition of bathing eczematous babies and a revulsion against cleaning them with liquid paraffin and olive oil. Infants with ichthyosis may safely be bathed in an emulsion of water and 20–30 g. of an emulsifying ointment. The moderate use of toilet soap is not harmful to eczematous skin and there is little evidence that special non-alkaline soaps offer much advantage. Possibly the addition to bath water of a mixture of hexachlorophane and allantoin, as recently advised, may be the method of choice.¹⁴

The effect of seabathing and sand is unpredictable. Many children improve while on a seaside holiday, though a minority will find the abrasive effect of the sand aggravates the flexural lesions.

The normal immunization programme should not be varied, with the exception of the vaccination against smallpox. This should not be carried out, as there is a risk of a fatal reaction. It is also a wise precaution to prevent the child having contact with others who have active vaccinia lesions. Active immunization against tetanus should be encouraged above all, since atopic subjects react adversely to tetanus antitoxin.

Local Applications

Though it might be expected that early and successful control of an eczematous eruption should improve the eventual prognosis, there is as yet no evidence that treatment alters the natural course of the complaint. Nevertheless, the sooner a baby becomes an object of admiration rather than shame the better. Therefore the first choice in treatment should be clean and speedily effective, and this means the local application of a topical corticosteroid. Initially 1% hydrocortisone alone is both safe and economical. There are theoretical grounds for believing that a cream base is more effective than an ointment, but in eczema, particularly with ichthyosis, an ointment may provide more protection. Recent work has demonstrated the importance of bases, solvents,¹⁵ and the particle size^{16 17} of active corticosteroids, and this should be kept in mind when prescribing dilutions of corticosteroid creams, which may be inactive if the wrong base is used.

The hydrocortisone cream should be applied three times daily until the skin appears normal, and the interval between treatments lengthened to perhaps once every other day or even twice weekly, since it is now known that the corticosteroid is held in a reservoir in the stratum corneum.¹⁸ After the eczematous eruption has been controlled for some days an attempt to change to ung. aquosum *B.P.C.* or Boots E.45 cream may be tried, but it may be necessary to continue small amounts of topical corticosteroid ointment for many months.

Often after an initial good response the beneficial effect of hydrocortisone wears off. The explanation of this is not yet clear, but there certainly is some point in changing to a different type of corticosteroid, and the next step would be to one of the more potent and penetrating corticosteroids such as fluocinolone, betamethasone valerate, flurandrenalone, or triamcinolone.

In the treatment of eczema these are all effective. This type of preparation will also be required for thickened and lichenified plaques in the flexures and on the fingers. Once the eczematous eruption has been controlled it may be possible to maintain the improvement with a dilution of the corticosteroid to one-tenth of the standard strength. Pharmaceutical advice should be sought, so that an appropriate base is used and contamination with bacteria avoided. Polyethylene occlusion should not be used in the treatment of infants and children, as it carries with it a considerable risk of systemic absorption of the corticosteroid and possible adrenal suppression. Even without polyethylene occlusion it would be wise to avoid the potent corticosteroid creams in full strength on more than 30% of the body surface—the formation of striae in the groins and axillae is a real possibility. Such restriction does not apply to hydrocortisone, and mothers of babies may be reassured that even if applied for years hydrocortisone does not produce systemic effects.

Secondary infection with pyogenic organisms may complicate eczema and is prone to occur after upper respiratory infections. It is easy to miss, since it may present only as an exacerbation of the eczema and without obvious pus formation. It can be dealt with by including in the local applications of corticosteroid cream either an antibiotic or an antiseptic. There is some theoretical risk of inducing an allergic contact dermatitis to antibiotics, though this is not likely in children. However, it is preferable to use one of the many quinoline antiseptics now combined with corticosteroids, their only disadvantage being that they cause some staining of the skin and garments.

Naturally the clean and odourless corticosteroid creams are preferred by patients and parents of patients, but there is still a place for tar preparations. The occasional nummular lesions of atopic eczema which occur on the trunk often fail to respond to topical corticosteroid medication but will clear more readily if Lassar's paste containing 1% crude coal tar is applied sparingly. This preparation is also effective for localized persistent flexural plaques of eczema. The more refined preparations of tar, such as liquor picis carbonis and the purified fractions of prepared coal tar in many proprietary preparations may be preferred to the crude tar, though they are not quite as effective.

The habit of scratching becomes so deeply entrenched that it is difficult to break. A useful method of preventing skin damage is to occlude the area with a gauze bandage impregnated with tar. This can be used most effectively on the limbs and is the only form of restraint which should be employed on infants. If such bandages are applied to all four limbs they allow considerable movement without the possibility of excoriation of the skin and can be left in position for seven days when covered by tubular gauze bandages. The only disadvantages are that the tar may sensitize the skin to sunlight if the child is exposed to strong sunshine, and occasionally tar gives rise to a pustular reaction.

Management in the Adolescent and Adult

After a remission of several years atopic eczema may appear again in adolescence, and in a small proportion of patients appears for the first time in the late teens, but the pattern of the eruption and the symptomatology is the same as in those who had infantile eczema.

At this age emotional factors now become more obvious and exacerbations occur with stresses of examinations and personal relationships. Awareness of the unsightly appearance of excoriated and leathery sheets of eczema combines with sleeplessness from irritation to produce a personality which has been described as sensitive, aggressive, insecure, and overdependent. Many patients, realizing that after many years of applying ointments their condition is even more extensive, become seriously depressed and expert psychiatric help may be required at this stage.

In the adolescent there is always the problem of a career. In selecting the type of job the patient should be advised to avoid extremes of heat and cold and undue contact with soap and water and irritant dusts. Many girls with atopy who have taken up such occupations as hairdressing or nursing have found that the eczematous skin of their fingers becomes cracked and irritable in spite of the continuous use of emollients. On the other hand, sufferers from atopic eczema do not develop contact sensitivity more frequently than normal people¹⁹ and they are not more prone to develop industrial dermatitis of sensitization type.

A change of environment will often help more than any local application, and it is remarkable how rapidly the adolescent or adult with intractable eczema improves after admission to hospital. Admission can help by showing the patient and his relatives that the skin condition can clear, though relapse of almost rebound severity is all too common after leaving the sheltering walls of the ward. Boarding school or a job away from home is almost as effective as hospital admission, and I know a number of National Servicemen who were free from atopic eczema for the first time in their lives throughout two years of globe-trotting, but suffered a relapse when they returned to their homes.

The local applications used for these age groups do not differ from those used in childhood, but it may be necessary to employ corticosteroid creams with polyethylene occlusion for the more lichenified lesions in the flexures and on the hands. Some degree of adrenal suppression will occur from absorption if over 50% of the body surface is covered with dressings.²⁰ Secondary pyogenic infection may be a complication, particularly after upper respiratory disease, and systemic antibiotics do assist in control. A watch must be kept for the rare but none the less serious infection of eczema with either vaccinia or herpes simplex virus.

Since the atopic eczematous reaction may be mediated by the release of histamine, there is point in prescribing antihistamine drugs, and in practice they do lessen the paroxysms of irritation. Some experiment may be necessary to find the correct drug and dosage which will relieve symptoms without producing drowsiness in the day. Sleeplessness caused by itching may be difficult to control, and sedatives and tranquillizers may be required in addition to antihistamines.

Systemic Corticosteroids

The majority of patients with atopic eczema can be maintained in reasonable comfort by the use of topical preparations, and in my opinion there is no justification for the use of systemic steroids in the treatment of infants and children. There is, however, a small group of adolescents and adults who by reason of the extent of their disability are unable to earn a living and who spend many months each year in hospital. In a high proportion of these the eczema is complicated also by asthma. Where local treatment, psychotherapy, and several hospital admissions have failed there is justification for the use of systemic corticosteroids. It should be stressed that this group is a very small fraction of those patients in whom atopic eczema persists into adult life, and patients treated in this way must

be free from contraindication such as tuberculosis, hypertension, or peptic ulceration.

It has been my experience that short courses of corticosteroids are of little value in this difficult group and that if corticosteroids are given they have to be maintained for some months or years. Prednisolone, 10 mg. three times daily, will control most of the severe eczemas, and it is usually possible to reduce after several weeks to a maintenance dose which is between 10 and 15 mg. daily, but may be as little as 5 mg. on alternate days. In a series of cases reported in 1960 prednisolone was as effective in controlling eczema as other corticosteroids and gave rise to the fewest side-effects.²¹

If dyspepsia does occur enteric-coated tablets of prednisolone can be used. The result of treatment in the 26 patients reported was reasonably good in all but two. One of the most striking features was the change of the personality of patients from miserable, tense depressives to cheerful individuals more able to cope with life. The only constant side-effect was gain in weight, and women particularly should be warned that an increase of one stone (6 kg.) is probable after one year's treatment. The majority will accept this as a small price to pay for relief of their symptoms. These patients do require constant supervision, with regular estimation of blood pressure, urine examination, and chest x-rays. They should carry corticosteroid warning-cards, since adrenal suppression of some extent may occur in long-continued systemic corticosteroid treatment. The adrenals may not respond adequately under the stress of infection, a general anaesthetic, or an operation, and the dosage of prednisolone must be increased. These precautions must be continued after the corticosteroids have been stopped, since the pituitary-adrenal axis remains subdued for up to five months after weaning.²²

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