THE PROBLEM OF ECZEMA IN INFANCY AND CHILDHOOD

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The clinical picture of eczema as it appears in infants and young children is sufficiently characteristic to be readily recognized. The earliest lesions consist of minute, pale pink papulo-vesicles which erupt in small groups and at first are set in non-inflamed skin, although the pale pink background soon appears. The eruption is usually symmetrical and in infants most commonly first arises on the cheeks just in front of the ears (Fig. 1). Friction, or the application of irritants, such as penicillin ointment or cream, usually quickly aggravates the affected area of skin, and a brighter redness with some oedema indicates that a frictional or a contact dermatitis has been added to the eruption. Secondary infection with pyogenic organisms will also produce a similar picture of dermatitis, but the pattern of the primary eczematous eruption and the subsequent changes, to be described, clearly indicate that we are dealing with a hypersensitive skin which presents the peculiar pattern of reaction that is called eczema.

Because erythema, oedema and exudation are almost constant factors in the eczematous reaction, and these are fundamentally inflammatory reactions, the term 'dermatitis' can also be applied to the eruption. However, for many dermatologists the term eczema does bring to mind a clinical picture as sharp in its definition as psoriasis or lichen planus, and it is felt that the term is almost universally adopted to designate the eruption which is peculiar to a hypersensitive skin. This hypersensitivity can be inherited or acquired, but in infants and young children there is good reason to believe that the hypersensitivity is largely inherited and familial cases are common.

Pathology

A focal dilatation of capillaries in the papillae of the dermis is the earliest histological feature of eczema. A larger collection of lymph then collects at the tip of the papillae and exudes through the epidermis, producing a moderate or marked intercellular oedema until it collects as microscopic vesicles under the stratum corneum. This ac-

FIG. 1.—The early lesion.

counts for the clinical picture of red papulo-vesicles, the vesicular nature of which, if not visible to the naked eye, is quickly revealed by slight scratching which removes the covering horny layer and leaves a moist, brighter red minute macule which proceeds to dry up, to crust or to exude vigorously. Mild round-celled infiltration may be present in the papillae and in the upper part of the dermis, and there is evidence that sensitivity may be carried by the lymphocytes which are present in the infiltrate. Owing to a further increase of the inflammatory reaction under the stimuli of scratching, treatment or infection, all intensive studies of the histopathology merely lead one away from the more characteristic features of the early eruption into the common but more marked changes of non-specific inflammation.

Aetiology

The most accepted factor in the aetiology of eczema at all ages is the inherited or acquired hypersensitivity commonly called allergy, and many observations have been made on the reaction of the skin to various allergens. This may be done by intradermal injections or by scratching the clean surface of the forearm and rubbing in prepared solutions of food or other common allergens, but a simpler procedure is the use of the patch test. To perform this test, 1 in. squares of adhesive plaster are prepared with a centrally attached dressing of a $\frac{1}{2}$ in. square of plain open mesh bandage. On this central fabric a little powder or solution of a suspected irritant is applied and the dressing is then affixed to the clean surface of the skin. A number marked on the outside of the plaster serves to record the nature of the allergen which is being tested. Some dermatologists use this method to test a patient's reaction to a number of common medicaments before they are used in treatment, and while this is a sensible precaution, experience usually enables one to decide upon a suitable bland preparation. It is sometimes more speedy and equally satisfactory to treat several areas of the body with different medicaments and note which produce the best clinical response and which, if any, act as irritants. It is a curious fact that while many enthusiastic allergists obtain evidence to support their thesis, an equally large number of practicing dermatologists almost entirely ignore the complicated ritual of the cult of allergy and get equally good results by using the bland methods of local treatment which have been evolved over the last half century.

Rarely an infant's eczema may be dependent upon offending substances applied to the skin, such as various types of soap, soda, the detergents used in laundering, the perfumes of cosmetic powders or certain ingredients of dusting powders, such as orris root, or even the metals which are present in the oxides used in powder bases. It is certainly advisable to keep in mind the possibility of a contact allergen being responsible for an eczematous eruption, but the matter should be readily established by patch tests and, if the specific allergen is avoided, the eczema should clear up quickly.

A smaller number of practitioners believe that treatment on more general lines with particular attention to constitutional and metabolic factors is of major importance in the treatment of eczema, while others put stress upon inherited qualities of hypersensitivity and believe that the psychological adjustment of the individual to his or her malady is of outstanding importance. It is probably fair comment to state that no school of thought has a monopoly of success in the treatment of this

troublesome complaint and that the best results are likely to ensue if consideration is given to every point of view.

Naturally endocrine preparations have been tried out in the treatment of various types of eczema. As many cases of Besnier's prurigo have very dry skins they seemed to offer an indication for thyroid treatment, but xeroderma of congenital origin is really due to a defect in the development of the sweat glands, and one cannot stimulate absent glands by giving thyroid extract. Further, thyroid may make a reactive child more nervous and reactive and this hormone is of little use in infantile eczema. Cortisone and ACTH have not been used fairly extensively, and although there is some evidence that they diminish the sensitivity of the skin and in experimental animals diminish or inhibit the response to allergens, they do not appear to produce any lasting benefit in the treatment of eczema. Whether some more potent fraction will be discovered remains to be seen, but at present there is no endocrine which has any constant specific effect in the treatment of infantile eczema, so no rational indication for their use exists.

Much thought has been given to dietetic factors. In our experience the incidence of eczema is just as common in breast fed babies as in those who are bottle fed. Since mother's milk is far less likely to contain offending allergens than any other food it is obviously wiser to let the mother nurse the child as long as possible. One disadvantage, however, is the emotional bond which develops between mother and child more strongly, it is suspected, in the case of breast fed infants. If mother is emotional and easily distressed, as she may well be by the appearance and discomfort of her suffering infant, this distress may be conveyed to the baby at her breast. Some dermatologists believe that this factor justifies the weaning of the child, but this should be done with considerable reluctance after every other measure has been tried.

Once an infant is put on cow's milk or a proprietary food one always wonders whether an offending allergen is being introduced. It would seem that milk allergens are rarely important and the various preparations of dried milk specially modified for allergic infants rarely produce sufficient improvement to justify the expense of their continued use. This is not to say that a few weeks' experience with a different brand of milk or a modified milk, should not be given a therapeutic trial, but a mother should not be asked to bear the extra cost if the response is too indefinite to be recognized. Probably the ordinary pooled milk as supplied to the public is as satisfactory as any, and there is no particular merit in having T. T. milk, while Jersey milk is usually too rich and has been known to be a factor in the eczema of fat babies.

The milk for a days' feed should be lightly boiled for five minutes, then allowed to stand and the resulting film removed. This takes with it the light foreign bodies which may have contaminated the milk before it was boiled. Although cane sugar or lactose may be added to the feeds in normal babies, or to those with mild eczema, in the more severe cases it is probably better to add glucose with or without vitamin D, one teaspoonful to each feed. This sugar is less likely to produce gastro-intestinal disturbance because cane sugar is split into dextrose and laevulose. It is known that the liver has more difficulty in dealing with the latter, and as the liver is the great detoxifying organ of the body it is well to make its task as light as possible in an allergic subject. In some cases the addition of 1 gr. of sodium citrate to each ounce of undiluted milk, or the addition of one tablespoonful of lime water to the feed or, more rarely, the addition of 5 to 10 m. of hydrochloric acid to each feed, modifies the clotting or facilitates the gastric digestion of the milk and appears to benefit the infant.

The usual vitamin supplements may be given but sometimes vitamins A and D are better given as 1 minim of halibut oil instead of 60 minims of cod liver oil, because the larger amount of the latter introduces a greater amount of the fish allergens and, in some children, produces fatty dyspepsia. It may be better in some cases to avoid the fish oil altogether and give the synthetic vitamins. Cases have been reported in which orange juice appeared to be an offending allergen, so that a trial should be made with other sources of natural vitamin C and occasionally ascorbic acid may be added in 5 or 10 mg. doses to each bottle. As many of the patients are reactive and nervous it is thought that there is an indication for extra vitamin B complex and the most economical source of it is undoubtedly dried brewers' yeast powder. As this is often too granular to be sucked through a teat, it is better to mix the dried powder, which may be obtained from a crushed tablet, in a spoonful of milk, interrupting the feed to give it. When exudation is marked feature of an infant's eczema, it is possible that extra vitamin K may be helpful by increasing the viscosity of the plasma. At this stage of the review of vitamin therapy in eczema, it is well to note that the most extensive use of vitamins has so far produced so little response in eczema that many clinicians remain content with the routine supplements of the normal diet.

With the introduction of the antihistamine group of drugs it was hoped that the vascular dilatation and exudation, which are prominent features of eczema, would be controlled as effectively as in some cases of urticaria. No doubt every anti-

histamine preparation has now been extensively used with this hope but rarely with evidence of any specific action. It seems doubtful whether histamine is in this case the trigger which releases the eczematous eruption. Fortunately many of these drugs have a narcotic or anti-pruritic action, and if one hits upon the right preparation it may considerably relieve the intense itching which does so much, through the resulting scratching, to aggravate and extend the first localized eruption of eczema. Occasionally an antihistamine drug will ensure sound sleep when the ordinary sedatives have failed.

More recently considerable attention, particularly in the matter of proprietary preparations, has been given to the use of oils containing unsaturated fatty acids. While there can be little doubt that these acids are an essential part of a well-balanced diet, and they are probably necessary in lipoid metabolism, there is little evidence that an ordinary diet is deficient in this respect. It has been shown that some dry skins, especially if associated with scaly follicular papules, suggestive of a mild phrynodermia, may be improved much more by giving oils rich in unsaturated fatty acids than by giving extra vitamin A, which was once thought to be responsible for follicular dyskeratosis. Cod liver oil and arachis oil, which are in common use internally and externally, are good sources of the unsaturated fatty acids, and arachis oil is the usual substitute for olive oil in the manufacture of creams and oily lotions. If a child is not reactive to fish or its products and is not obese and seborrhoeic it may be advantageous to give full doses of cod liver oil by mouth and when the skin lesions are dry and scaly to use creams and pastes made more emollient by the addition of cod liver oil or arachis oil. Apart from such modifications we are unconvinced that the unsaturated fatty acids have any specific effect in the treatment or control of infantile eczema.

It will be noted that the preceding review of the aetiology of eczema gives no clue to a specific factor in causation with the rare exception of an occasional discovery of a specific allergy. Because of this one becomes increasingly convinced that many of these infants inherit a hypersensitive skin which is intolerant of the ordinary environmental factors which do not affect the normal child. There is nothing particularly novel about this concept because we are familiar with other cases of inherited hypersensitivity. For instance, in epidermolysis bullosa the infant's skin will not tolerate ordinary degrees of injury without producing large bullae, and in xeroderma pigmentosa the child is unable to tolerate exposure to bright light without severe reactions ending in freckling, atrophy and actinic keratoses which have a

tendency to become malignant. Many cases of eczema have a familial incidence and this is particularly marked in cases of Besnier's prurigo which, in severe instances, is associated with the well-known congenital ectodermal defect of xeroderma. In xeroderma there is a demonstrable structural defect of the epidermis seen as a relative absence of sweat and sebaceous follicles. Associated with it is a marked instability of the skin, manifest by severe irritation of the flexural surfaces. Many patients with Besnier's prurigo also suffer from asthma or hay fever and these subjects are regarded as conspicuous examples of allergy or of atopic dermatitis. In these cases the significance of the inherited hypersensitivity is surely made more credible by the association with a congenital structural defect.

Considering these facts it is reasonable to believe that an infant with eczema simply has a skin so reactive to the common metabolic and environmental factors that nothing more can be done than to protect the skin from every possible external hazard and to control the symptoms while the child is reared in a sensible and unemotional manner.

Clinical Types

The commonest type of infantile eczema first appears as groups of minute papulo-vesicles arising on the sides of the face, and may aptly be termed the facial type, although in severe cases the eruption rapidly involves the whole of the face, neck, limbs and, later, the body. A second variety may be termed the flexural type, and the most obstinate and impressive cases in this group have already been described as Besnier's prurigo. In many cases of eczema, however, the eruption arises in the flexures or ultimately persists there when other lesions have disappeared. In severe cases of Besnier's prurigo associated with a very dry skin (xeroderma) the characteristic eruption of eczema may be lacking and one sees areas of thickened and

excoriated skin (Fig. 2) which are the result of scratching because of intolerable itching. The third type of infantile eczema is that associated with a scurfy scalp and seborrhoeic dermatitis which produces areas of scaly inflamed skin in the scalp, behind the ears, in the folds of a fat neck and on the other moist flexural surfaces of the body (Fig. 3). Eczematous lesions are very prone to erupt through these areas of seborrhoeic dermatitis, and it is thought that the mild infection

FIG. 2.—The flexural type.

FIG. 3 (below).—Generalized, dry scaly type.

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is the provocative factor in many cases. Such cases are not uncommon and unless attention is given to control the scurfy condition of the scalp progress is unsatisfactory.

The chief complications of infantile eczema are pyogenic infections and, very rarely, a primary infection with the virus of herpes or vaccinia which produces the dramatic picture of Kaposi's varicelliform eruption. This latter complication is associated with pyrexia and the sudden appearance of a varioliform eruption, so that those unfamiliar with it readily mistake the disease for smallpox or very severe chickenpox.

In the later stages the eczematous areas become crusted with plasma or persist for some time as scaly pink patches or, if much scratched, the affected areas of skin become thickened and show exaggerated lines which are the features described as lichenification.

Treatment of Infantile Eczema

Much space has been given to the aetiological factors of eczema because it is upon a knowledge of these that the principles of treatment are based. It is probably unnecessary to say anything more about diet, whilst general treatment consists mainly in the psychological management of a hyper-sensitive patient and the control of distressing symptoms by adequate sedatives which may be said to include some of the antihistamine drugs. In the irritable phases the little patients suffer greatly, and it is important to ensure sound sleep at night at any cost for the sake of the mother as much as for the child. A tired, emotional parent is the worst possible nurse for an infant or child with eczema, so that full doses of chloral, bromide or a barbiturate should be given. It is strange how often phenobarbitone fails as a sedative in infancy, but in older children it is a more useful drug for controlling the irritation and scratch reflex.

Local Treatment

The most common mistake in treating cases of

infantile eczema is the prohibition of bathing. While plain water obviously irritates a broken and exuding skin, normal saline is almost invariably well tolerated and daily bathing is a very convenient method of cleansing the skin and removing crusts and exudate. When the skin is very dry, as a temporary measure it is useful to cream 1 oz. of the emulsifying ointment B.P. in a jug of warm water and tip this into the bath to make a thin emulsion. A trace of a bland soap may usually be used without ill effect, and by trial and error one soon determines the best procedure to follow. After bathing, the skin should be dabbed dry with a soft towel because any friction is apt to light up irritation which might otherwise have been dispersed by the bath. In most phases bland lotions, such as calamine, liquor proflavine or 1 per cent. of crystal violet in water may be used to dry the skin and control secondary infection.

Later the emollient creams, such as that of zinc oxide and castor oil or of the oily calamine lotion, may be used with or without the addition of 2 per cent. of solution of coal tar or of ichthyol. Alternatively, one may use the plain zinc paste, and this may be modified by the addition of 2 per cent. salicylic acid or 2 per cent. yellow oxide of mercury, if infection is present, and 3 or 4 per cent. of the tar solution may be added to the plain paste or to its modifications. The lichenized areas which are so common in Besnier's prurigo sometimes respond better to a stronger tar paste and that commonly used is pasta picis carbonis. The main purpose of local treatment is to soothe and protect the skin, and it is often necessary to use loose splints or restraining bandages until the irritation has been controlled. If the little patient can be diverted by toys and cheerful playmates it is often possible to do without sedatives or restraining splints. The progress in each case depends upon the strength of inherited qualities and upon the parents' understanding and co-operation in dealing with their sensitive child.

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