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THREE SKIN DISEASES IN WARTIME*

BY

HENRY MacCORMAC, C.B.E., M.D., F.R.C.P.

Physician for Diseases of the Skin, Middlesex Hospital

Dermatologists are supposed to be fortunate because they are not called out of bed at night, and because their patients never get well and never die. I have deliberately prefaced my observations with this cynicism since it embodies the germ of a widespread belief in the chronicity and rebellious nature of skin diseases—a belief I desire at once to challenge and to traverse by saying, first, that the majority of skin diseases are characterized by their satisfactory response to treatment provided the established therapeutic principles are followed; and, secondly, that although patients rarely die, the disability—for example, from eczema—has a formidable economic significance: the afflicted individual cannot work, and becomes a liability rather than an asset to the community, and this is particularly true of industrial dermatitis under the present condition of intensive endeavour. In the last war, as Prof. McNee pointed out, 90% of all the sickness in one army resulted from the effects of skin diseases, especially scabies and pediculosis. History repeats itself. It is therefore an important part of our national service to set up a programme with the object of preventing or limiting, so far as we can, a similar wastage of man-power in civil as well as in military life.

I can here only profitably review a very limited cross-section of a large subject, but this will represent the hard core, leaving out the less important, perhaps even ornamental, framework. I have ventured to choose scabies, impetigo, and eczema as a representative group. Scabies and impetigo, as I fully realize, have recently been very widely discussed. The present occasion may nevertheless, and for that reason, be a suitable one to sum up.

Scabies

Note that in scabies the incubation period may be as long as two months: this explains the apparent freedom of the sleeping partner even six or seven weeks after intimate contact. The eruption on the anterior axillary folds and the abdomen consists of scratched papules; on the fingers and wrists occasional vesicles with the characteristic burrow, from which, with practice, the mite can be extracted. In the adult male, papules and impetiginous lesions on the penis provide invaluable confirmatory signs—the means of settling at once the diagnosis in many doubtful cases. The presence of grouped impetigo on the lower buttocks is equally reliable as positive evidence of scabies, especially where the characteristic scabietic eruption is insufficiently or irregularly developed elsewhere. The diagnosis of scabies may be very easy or very difficult. Recognition of its prevalence with a sharp look-out for its presence, even in the most unexpected quarters, will best serve as a means of detection. The deceptive qualities of the disease were well illustrated recently in an in-patient who had typical and almost universal eczema. The routine examination revealed one

burrow on the web between the fingers, from which a living acarid was removed. Here treatment had of necessity to be tempered to the superimposed eczema: this case is mentioned not for this reason, but because it illustrates the importance of a detailed examination even where the diagnosis appears established beyond doubt upon a more superficial survey.

Treatment.—The treatment of scabies as a war measure has been standardized as follows: A hot bath, with soaping, is followed by the application of 25% benzyl benzoate emulsion all over below the neck; the benzyl benzoate is applied again—that is, two applications in all—either on the next day or one week later. To obtain uniformly good results it is important to follow this procedure and this method exactly, no more and no less, and to use the agreed concentration of benzyl benzoate, thus avoiding the pitfalls of over-treatment or under-treatment by one of the many alternative procedures, which, except sulphur ointment, have proved under careful testing to be incompetent in varying degrees. On the question of disinfection of contact garments and bedding I shall find myself at variance with the view that this is unnecessary. Reinfection, I submit, may occur either from other persons in the household, especially the sleeping partner, or from garments and bedding: any complete scheme should therefore exclude reinfection from both these sources, and in this belief I am fortified by, as it seems to me, the minor epidemic occurring among fire-watching parties through communal blankets.

Impetigo

As in the case of scabies, war conditions have revived in epidemic form another parasitic disease—impetigo contagiosa. I am confident that the clinical manifestations of this complaint have become considerably modified during the last two or three decades, the eruption having changed from the delicate circinate blisters and very superficial crusted patches to a much more polymorphic and refractory reaction. Earlier observations seemed to establish a streptococcal invasion of the skin as the causal agency, but it has recently been shown that a staphylococcus may also, and equally, be the causal organism, and there are even some who profess to be able to recognize differences in the clinical picture resulting from each type of infection. Be that as it may, it is at least possible that this alternative parasitology accounts for the greater variation in the clinical appearance. For some curious reason this seems to apply only to impetigo of the facial region. The secondary impetigo of the body and limbs, such as that met with in association with scabies, still breeds true to form.

Treatment.—If impetigo has thus become complicated, its treatment has undergone a remarkable simplification since the introduction and use of sulphathiazole gr. 25 in zinc paste 1 oz.: by some a water-miscible cream as a vehicle is considered superior. The remedy should not be applied for more than six days—first, because by then it has either proved or disproved its suitability; and, secondly, because by prolonged use or inadequate dosage a drug-resistant species of the micro-organism may be created. The alternative treatment relies on ammoniated mercury gr. 10 in zinc paste 1 oz., which should

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in any case be prescribed for impetigo on the body and limbs. Where the impetigo develops on the face in rings or circles with a superficial raw surface or "stuck-on" crust, diagnosis is easy and straightforward. An infected or impetiginized seborrhoeic eczema also attacks the face, and it is then very difficult to distinguish it from the variety of impetigo with multiple small lesions. An infected eczema is much more symmetrical, the eyebrows may be simultaneously involved, and as a rule the eruption tends to be confluent, in contrast to the areas of healthy skin between the infected regions which are observed in impetigo. When in doubt treatment by dabbing the face with 1 in 2,000 perchloride of mercury lotion, followed by oily calamine lotion, is usually an efficient compromise.

Eczema

For my third and last subject I have chosen eczema because it is always with us, because it has become increasingly prevalent during the war, and because it provides a major problem in the recognition and treatment of industrial dermatitis. Thrice armed indeed is he who is familiar with the diagnosis, prognosis, and treatment of this, the commonest and most troublesome skin disorder. I have deliberately used the word "disorder" instead of "disease," as this glosses over the differences of opinion of those who on the one hand regard eczema as a specific entity and on the other as a cutaneous reaction provoked by a variety of different internal and external agents. In eczema the minute changes in the skin determine the objective phenomena and also show us how the different clinical varieties are connected. The earliest changes occur in the dermis in the form of dilatation of the papillary and subpapillary blood vessels with exudation of serum. This results in a congestive erythema seen as redness of the skin, most pronounced in eczema rubrum. The serous exudation accounts for the swelling observed in certain acute types of the disease, especially the form affecting the face and genitals. The exudate has further and important effects; for the fluid invades the epidermis separating the prickle cells, and at a certain point the pressure of this fluid ruptures the intercellular filaments, producing tiny cavities filled with serum, constituting the vesicles—the most important and characteristic element of the multiform eruption. If the discharge of serum is considerable a weeping surface is observed; or the coagulated serum may form crusts; or secondary infection may occur; or where an imperfect attempt is made to reproduce the horny surface, squamæ or scales develop. All these changes occur in every case of eczema, but in different degrees, thus constituting the different clinical varieties. To attempt to explain these complicated dermo-epidermic reactions would require a chapter in humoral and cellular pathology far beyond the scope of this address and my own competence. We are, however, entitled to assume as a working hypothesis that in every eczematous eruption both an endogenous and an exogenous factor exist, but in such disproportionate degrees as to require us to classify some cases as examples of endogenous and others as examples of exogenous dermatitis. Or, in the descriptive terms of the patient, either the blood or the skin is at fault, or both. This hypothesis does not require confirmation by laboratory methods; observation of the patient and his reactions provides all the evidence necessary for proof. This leads me to suggest that the modern tendency relies too much on the guinea-pig and the test-tube and too little on that rich and still unworked field of clinical observation.

The first clinical assumption relates eczema to certain age periods. The age incidence of 648 male and 489 female patients taken from my case-books shows a special liability in infancy and early childhood, then a fall, followed by a pronounced increase in the liability to eczema as age advances, reaching a peak at 50 to 60 years. The assumption is that there is an endogenous or constitutional factor in eczema which in certain predisposed people and at certain predisposing ages induces an eczematous eruption. In endeavouring to explain this internal or constitutional factor we are bound to touch upon the theory of a hypothetical allergic mechanism. There is a well-known but rare form of so-called eczema affecting the flexures, developing in early life and persisting for years, which is classified as allergic because of an association with asthma or hay-fever. But an allergic background such as this is very rarely observed in common eczema. Clinical

experience thus entitles us to do no more than concede the existence of a hypothetical internal factor without further qualification. This does not prevent us from recognizing an occasional contributory factor, such as focal infection or food allergy. Lawyers have a maxim that hard cases make bad law. Those clinical curiosities in which eczema clears up after the extraction of a decayed tooth, or the parallel example of the appearance and disappearance of an eruption following the taking or withholding of an article of food, impressive although they may be, are, like the hard cases of the law, very insecure foundations upon which to base practice. These theoretical considerations lead to the following conclusions. Where re-education of the skin is called for in endogenous eczema we are compelled, because of our ignorance of the nature of the endogenous factor, to rely on a form of desensitization based upon a non-specific model, such as whole-blood injections, peptone, or methods which aim at exciting a febrile reaction. These procedures are based upon constructive clinical observations—for example, the obliteration of an eczema during the febrile period of pneumonia: their scientific explanation is still outside the range of pathological or biochemical attainment. They hint at the existence of a mechanism for rehabilitation, the shadow factories of Nature, which operate only under conditions of duress.

Some Methods of Desensitization

In 1925 in a communication to the *British Medical Journal* I described the mode and application of some of these then relatively unknown methods of desensitization. A ripened experience has confirmed my belief in their value, and I desire to reassert their importance when used under suitable conditions, which I shall summarize as follows.

In the acute phases of eczema, especially those associated with heat and swelling, intravenous injections of thiosulphate of soda are especially valuable. Five c.cm. of a 10% solution—that is, half a gramme of the pure salt—constitutes a dose: this intravenous injection should be repeated every other day on from 3 to 6 occasions. Whole-blood injections have a wider range of usefulness, and may be required in the subacute and chronic stages of eczema. The withdrawal from a vein and the intramuscular reinjection of 5 c.cm. of the patient's blood every 5 to 7 days for a course of 10 injections provides a suitable routine procedure which can be modified where circumstances seem so to dictate. Intramuscular injections of peptone offer an additional therapeutic resource in rebellious and refractory eruptions.

Procedures such as the above are described as safe, inasmuch as they rarely upset the patient or aggravate the disease. They can therefore be employed freely and with confidence. Methods which seek to induce febrile reactions, such as intravenous injections of typhoid vaccine, cannot be similarly classified, because they are capable of converting a simple and local eczema into a generalized and acute variety. Such therapeutic devices are forms of protein shock and should only be used, if used at all, in the treatment of, for example, established lichenized eruptions when methods of appeasement have not been discarded at the proper time. Although this form of treatment is not without disadvantage and even risk, I am bound to say it has given results where other methods have failed.

Varicose Eczema

Every practitioner is familiar with the combination of eczema and varicose veins, a half-way house linking the endogenous and exogenous conception of the eczema process, as the following clinical phenomena clearly reveal. First, varicose veins are common, but only a few of those who suffer from this complaint develop a complementary eczema. Therefore the presence of both varicose veins and eczema points to an endogenous eczema factor in that individual. Secondly, it is also constantly observed that if the varicose veins are successfully treated the eczema disappears. And, thirdly, it is possible to treat the varicose eczema successfully by suitable local applications without interfering with the varix either by surgery or by injections. The interpretation of these facts seems to be as follows: the varix produces a *locus minoris resistentiae* upon which, but only in a potentially eczematous subject, the eruption develops; but there is also a local or cellular dysfunction which can be overcome and set right by local treatment alone, despite the endogenous factor.

Eczematous Reactions

We can now pass under review certain paradoxical reactions observed in the more extensive forms of eczema. We are all familiar with the type which, beginning symmetrically on the legs, subsides or even clears up notwithstanding an extension in an acute form to other regions—the arms, for example. In these cases a process of autosensitization may be presumed whereby the skin has become sensitized to the products of its own damaged cells set free because the original eruption has been scratched or otherwise irritated. To satisfy the facts, this and other hypotheses must in such cases concede the presence of a circulating agent which is carried to the skin and there provokes the eczema eruption. But under these circumstances all the skin areas should react in the same way at the same time, which does not happen. Therefore as certain portions of the skin recover as the result of treatment or spontaneously, while elsewhere the eruption extends or develops, we are entitled to infer that the skin is in a sense self-governing and can restore its integrity despite the continued action of the internal or humoral factor. Exogenous dermatitis, now to be considered, is that form of eczema in which the eruption is brought out by contact with one or several skin hazards—that is to say, certain external agents which are known to be capable of provoking an eczematous reaction by contact. The distribution will therefore usually be on the backs of the hands, fingers, and forearms. To this rule there are necessarily many exceptions, depending upon the kind of occupation and the nature of the skin hazard, of which a formidable list could easily be prepared from those in common use in the various industrial processes to-day. Nor do the circumstances of home life confer freedom from exogenous dermatitis, as witnessed by the housewife's hands, chapped and excoriated by contact with soap and water or other agents used for cleansing and similar purposes; or from the use of chemical fertilizers in the garden. In these cases there is some degree of the internal factor, otherwise all workmen and all housewives would become similarly affected. Nevertheless, as in this class of eruption the cause is clearly external, it is properly described as an exogenous or contact eczema.

Sometimes the skin is specifically sensitized to one agent, as in primula dermatitis. In such cases, because of an idiosyncrasy, the individual is permanently sensitized to the skin hazard.

Treatment of Eczema

From this it follows that the topical treatment of eczema is in all cases essential, and will usually take precedence over the general—which is logical, because we can see and treat the faulty skin and can directly observe its reactions. While there is no standard treatment for eczema as such, there are certain guiding principles, which may be summarized as follows. The eruption presents itself in an acute, subacute, or chronic phase, each calling for a different kind of local application. Thus in the acute phase decongestion of the inflamed skin by an evaporating lotion is required, whereas an ointment is usually contraindicated by reason of the heating effect of an occlusive dressing. In the middle or subacute period a paste is suitable, the powder incorporated in this paste rendering it permeable and allowing the passage through it of exudate. Finally, a stimulating ointment or small doses of x rays are employed in the chronic phase. From this it follows that where eczema is widely distributed, different regions may require different forms of topical treatment to accord with the various forms of local reaction. This design of treatment can be represented in the following framework.

The formula for the lead-glycerin lotion is as follows: glycerin of subacetate of lead, 1 oz.; glycerin, 1 oz.; and water to the pint. It is unfortunate that glycerin is in short supply, because we are thereby deprived of an invaluable remedy for which

there is no real substitute. Lead-glycerin lotion is applied as a moist dressing on white lint, which must be kept constantly wet. A word may be added concerning the form of superficial x-ray therapy prescribed for chronic rebellious eczema. This should be reserved for localized patches of refractory eruption, and especially for occupational dermatitis affecting the backs of the hands. One-half of a full dose—that is, one-half of the amount required to cause the hair to fall out—is given, and is repeated if necessary in four weeks' time. This treatment should, nevertheless, be entrusted only to those experienced in this very highly specialized branch of radiotherapy.

This is the positive approach to topical therapy. There is also the equally important negative—that is, the avoidance of those things which delay recovery or provoke a relapse. Scratching, the injudicious use of soap and water, the effects of sun and wind, which includes therapeutic ultra-violet irradiation, are all to be reduced or excluded so far as possible. In some cases small doses of a sedative may be called for to reduce the over-sensitive reaction to simple external stimuli. Rehabilitation has now become an integral part of modern treatment: the re-education of the skin is an essential to recovery, and this applies in particular to exogenous dermatitis. To resume work before all traces of the eruption have disappeared is to court further trouble; a period of convalescence adds considerably to the prospect of permanent recovery except where there is an idiosyncrasy which precludes any future contact with the specific injurious agent. This is no more than the application of those general principles of treatment which are fundamentally the same throughout all the branches of medicine.

VISUAL PHYSIOLOGY OF THE CINEMA*

BY

GEORGE H. BELL, B.Sc., M.D.

(From the Institute of Physiology, University of Glasgow)

The moving picture has in the past been used to a certain extent for educational purposes both in schools and in universities, and when photographic materials become available once more it is certain that there will be a very great exploitation of this teaching medium. The fighting Services and propaganda authorities have no doubt of the value of this dynamic method of illustration. It is axiomatic that the best way to learn about a thing is to study the thing itself; the next best is to study a motion picture, particularly a slow-motion picture, of it. The other available methods—hearing and reading, which have been so long our only alternatives—are certainly inferior. Since the cinema is likely to play an even larger part in our general environment than it does at present, it is important that medical people should have some elementary knowledge of the physiological problems of moving pictures.

Design of the Cinema

The student comes to the class-room to learn, and no unnecessary difficulties or distractions should be put in his way. The quality of the projection should therefore be better, if possible, than that attained in the commercial cinema. Fortunately a committee of the Society of Motion Picture Engineers (1941) has issued a series of recommendations regarding the proper use of 16-mm. equipment, as this size has been generally accepted as the standard for educational purposes. These recommendations are the basis of the present account of the technical design of the cinema.

The details of the picture can be clearly seen if the observer is seated not more than six screen-widths from the screen. A position too near the screen is not to be recommended, because, as a result of the great magnification of the photographic image, the picture on the screen—even when properly focused—lacks sharpness. It has been stated that efforts of accommodation made in attempts to improve the definition may fatigue the ciliary muscles. Flicker also tends to be prominent when too near the screen, but disappears when the observer moves back (Masterton and Kellog, 1942). At the front of the class-room, where the screen appears largest, the roving movements of the eyes necessary to follow the action may

* Abstract of a lecture delivered in the Tennent Institute of Ophthalmology, Western Infirmary, Glasgow.