Dermatology in Relation to Industrial Medicine*

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This is a vast subject, even if one restricts oneself to conditions that might well be encountered in this region at the present time. My aim will therefore be to give a brief survey of the main features of common interest, and I look forward to gleaning much from all of you in the subsequent discussion, about methods of prevention that are practised in different industries and of the success that attends these measures. There is no question, in my mind, as to the value of these preventive measures, for one has only to contrast the relatively small numbers of industrial dermatitis cases seen in clinic practice with the unending stream of unfortunate women suffering from housewife’s dermatitis to realise something of your contribution to the common weal.

It is unfortunate that in dermatology the two most prevalent conditions, dermatitis and eczema, have for long given rise to confusion. This may be attributable firstly to an incomplete understanding of the pathogenesis of the two processes, secondly to an acceptance of the term allergy by many people as constituting a diagnostic label, and thirdly to the development by dermatologists of terminologies which vary, not only from continent to continent, nor yet from country to country, but even from teaching school to teaching school. I think it would be well to define dermatitis as merely meaning an inflammation of the skin and as such it embraces manifold dermatoses including psoriasis, lichen planus, pityriasis rosea, etc. Industrial dermatitis is an inflammation of the skin resulting from the application of irritants encountered at work, and such irritants may be mechanical, e.g. friction, chemical resulting from contact with strong acids or alkalis, or many organic and inorganic substances, and physical as with the effect of heat or cold, electricity and radioactivity. These are irritants which, in adequate concentration and after sufficiently long exposure, will cause reactions on all skins, resulting first in erythema and later in necrosis of the affected areas. The patient may complain of irritation in the early stages, and later of burning sensations and pain. On the other hand, eczema is a specific type of dermatitis reaction commencing with erythema of the affected part, proceeding through a popular stage to vesiculation, the vesicles being typically of pinhead size. This process takes approximately forty-eight hours. Itching is usually a prominent feature, and the scratching that results removes the roofs of the vesicles giving rise to weeping eczema pits and hence the terminology from the Greek word "to weep". Eczema is said to be an allergic reaction in that only a small proportion of the general public reacts to any given substance in this way. On the other hand, it is true to say that there are few substances—chemical or biological—to which there is not a idiosyncratic skin.

In industry, dermatitis is much commoner than eczema, the usual proportion being 4:1. Both conditions should be recognised as industrial hazards and the workpeople suffering from them entitled to compensation; bureaucrats will recognise only dermatitis for compensation purposes, and the term eczematoid dermatitis might therefore be substituted for eczema to obviate injustice to the worker.

Following is a list of factors involved in the occurrence and prevention of industrial dermatitis.

a. The normal defence mechanism of the skin includes the protective function of the stratum corneum, the exudation of sweat which acts as a diluent of irritants and the secretion of sebaceous material which lubricates the surface and has bacteriostatic and fungicidal properties.

b. The type of skin is significant; thin blonde skins are more susceptible to trauma and to irritants than are thick hirsute skins which are, however, particularly liable to react to products such as tar, chlornaphthalene, etc., giving rise to acneiform eruptions.

c. Excessive perspiration and friction remove the softened stratum corneum and pave the way to infective conditions.

d. The age of the individual has to be considered as young people tend to react acutely and recover satisfactorily, while dermatitis occurring in older age groups frequently persists and becomes chronic.
e. As regards sex, females are apt to react more readily than males. Nevertheless, females are in general, more careful in the handling of irritants, in the carrying out of protective measures and in cleansing of the skin, and so the incidence of extensive dermatitis is lower than in males.

f. A seasonal incidence of dermatitis cases is not infrequently found in industry and elsewhere, the more acute conditions occurring in the summer season.

g. The presence of other dermatoses (e.g. asthma—eczema syndrome and seborrhoeic dermatitis) may predispose a worker to further skin trouble especially in hot, dusty occupations.

h. Personal factors including cleanliness, presence of foci of infection and the individual's psychological attitude to life, work and environment all require attention by the patient's medical attendant.

The main group of causative irritants includes:

1. Keratin solvents, e.g. alkalis, including strong soaps and detergents.
2. Fat solvents, e.g. turpentine, petroleum products and volatile hydrocarbons.
3. Desiccators—calcium oxide, acids and alkalis.
4. Protein precipitants—salts of heavy metals, e.g. copper, silver, etc.
5. Oxidisers, e.g. chlorine, hydrogen peroxide, chromic acid and salts.
6. Potassium oxidising agents, e.g. petroleum products, tar, chlorinated hydrocarbons and cutting oils.
7. Potential sensitisers, including organic nitro- and nitroso-groups, formalin, mercury, woods and plants, etc.
8. Photosensitisers, including tar, petroleum products, sulphonamides, acriflavine and eosin.
9. Physical agencies, including friction, pressure, dust, heat, cold, water, sunlight, and X-rays.
10. Biological products, e.g. bacteria—anthrax; viruses—orf, cowpox, etc.; fungi and monilia, e.g. epidermophytosis and conditions seen in bakers and confectioners; parasites, e.g. mites present in straw, grain, fruit, cheese, etc.

The diagnosis of industrial dermatitis is made primarily on the history, on the sites affected and to a less extent on the actual appearance of the condition, e.g. oil acne.

Patch tests are of value in determining which of several potential irritants is responsible, but the test is by no means specific and requires experience in interpretation. Differential diagnosis will include other dermatoses, e.g. lichen planus, pityriasis rosea, and psoriasis, but cases which give rise to most difficulty are those in which irritants at work serve as a trigger mechanism to set off extensive and intractable dermatitis in which psychogenic factors play the dominant role.

Dermatitis artefacta is rarely encountered.

Treatment

The only satisfactory solution of this problem rests fairly and squarely on your shoulders in the application of adequate preventive measures. It will be of interest to hear of these measures in subsequent discussion and in particular of the value of barrier creams. I should also like to hear something of the process of "hardening", which is, I believe, well recognised in industry.

Where preventive measures have broken down, early diagnosis and treatment is of first importance. Might I plead with you to avoid the application of potential sensitisers in the treatment of these cases. It is generally recognised now that topical application of sulphonamides, penicillin, antihistamines and local anaesthetic preparations to the skin exposes the patient to unwarranted risk of sensitisation and their use should be actively discouraged. Approved lines of treatment, varying with the stage and degree of the reaction, are available in all standard textbooks.

In a few instances specific treatment is available as with anthrax in which penicillin and Sclavo's serum have completely changed the prognosis.

Much has been written about the value of desensitising courses of injections to protect workers who have reacted to biological products. Results are very variable, but where a skilled workman is in danger of losing his employment, he should, I think, be given the appropriate course in the hope that he will benefit sufficiently to maintain his skill and his economic position.

Treatment of skin conditions will be the responsibility of the medical officer, but results of treatment depend very largely on the skill with which the nursing staffs carry out their duties. Training of nursing staffs in a dermatological department will undoubtedly improve the standard of treatment and reduce the time lost by the worker suffering from skin trouble.

In conclusion, the main task of the industrial medical officer might be regarded as producing better and safer working conditions for the personnel at the place of employment. The employees should be trained in the methods of protection available to them, and should have confidence in the medical department. Once they are trained and supported by a medical service, the main difficulty will be to instil into them that sense of responsibility whereby they will avail themselves of these factors and avoid anything that could result in irritation of the skin. The dermatologist will be available for consultation in cases in which the diagnosis is in doubt and for the treatment of extensive conditions which may need clinic or in-patient treatment.