1 Skin Disease in Perspective

This chapter presents an overview of the causes, prevalence and impact of skin disease.

The many roles of the skin

The skin is the largest organ in the body. It is the boundary between ourselves and the world around us, and its primary role is that of a barrier, preventing the entry of noxious chemicals and infectious organisms, and the exit of water and other chemicals. It is a sort of 'space suit', nicely evolved to house all the other organs and chemicals in our body.

Skin has other roles too. It is an important sense organ, and controls heat and water loss. It reflects internal changes (see Chapter 21) and reacts to external ones. It can sweat, grow hair, erect its hairs, change colour, smell, grow nails, secrete sebum, synthesize vitamin D and release nitric oxide. When confronted with insults from outside, it usually adapts easily and returns to a normal state, but sometimes it fails to do so and a skin disorder appears. Some of the internal and external factors that are important causes of skin disease are shown in Figure 1.1. Often several will be operating at the same time. Just as often, however, no obvious cause for a skin abnormality can be found, and here lies much of the difficulty of dermatology. When a cause is obvious, for example when the washing of dishes leads to an irritant hand dermatitis, or when episodes of severe sunburn are followed by the development of a melanoma, education and prevention are just as important as treatment.

The prevalence and cost of skin disorders

Skin diseases are very common. Probably everyone has experienced a skin disorder, such as sunburn, irritation, dry skin, acne, warts or pigment changes. The most common skin disorders in the United Kingdom are given in Table 1.1. People in other countries and in other environments may also develop skin diseases peculiar to their surroundings, or common skin diseases at different rates. For example, people living in tropical areas develop infectious diseases, such as leishmaniasis, not seen in more temperate climates. Different age groups experience different skin conditions. In the United States, for example, diseases of the sebaceous glands (mainly acne) peak at the age of about 18 years and then decline, while the prevalence of skin tumours steadily mounts with age (Figure 1.2).

The idea that 'common things occur commonly' is well known to surgeons as an aid to diagnosis. It is equally true of dermatology – an immense subject embracing more than 2000 conditions. In the United Kingdom some 70% of a dermatologist’s work is caused by only nine types of skin disorder (Table 1.1). Latest figures suggest that approximately one-quarter of the population of England and Wales, some 13 million people, will have a skin condition for which they will seek medical advice over a 12-month period. In the United States approximately one-third of the population has a skin disorder at any given time.

The most recent estimate of the annual cost of skin disease in the United States was $39.3 billion dollars ($29.1 billion dollars in direct medical costs and $10.2 billion in lost productivity costs). Table 1.2 shows a breakdown of the top five most costly skin conditions seen in the United States.

In the United Kingdom, skin disorders are the most common reason for a patient to consult their general practitioner with a new problem; on average each general practitioner conducts over 600 consultations per year related to skin disorders. These figures are likely to be an under-estimation of the problem given the complexities of the classification of skin conditions. However, this is only the tip of an iceberg of skin disease, the sunken part...
Chapter 1

Chemicals

Infections

Trauma

Friction

Skin

Psychological factors

Genetic factors

Internal disease

Drugs

Infections

Figure 1.1 Internal and external factors causing skin diseases.

of which consists of problems that never get to doctors, being dealt with or ignored in the community.

How large is this problem? No one quite knows, as those who are not keen to see their doctors seldom star in the medical literature. People tend to be shy about skin diseases, and many of them settle spontaneously, often before patients seek help. The Proprietary Association of Great Britain (PAGB) conducted a survey in 2005 in which 1500 members of the general public were asked questions about their everyday health in the preceding 12 months. Of these, 818 (54%) respondents had experienced a skin condition, of which 69% 'self cared' for their condition and only 14% sought professional advice, usually from their general practitioner or practice nurse.

Table 1.1 The most common categories of skin disorder in the United Kingdom.

<table>
<thead>
<tr>
<th>Skin cancer</th>
<th>Acne</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acute</td>
<td>Atopic eczema</td>
</tr>
<tr>
<td>Psoriasis</td>
<td>Viral warts</td>
</tr>
<tr>
<td>Other infective skin disorders</td>
<td>Benign tumours and vascular lesions</td>
</tr>
<tr>
<td>Leg ulcers</td>
<td>Contact dermatitis and other eczemas</td>
</tr>
</tbody>
</table>

Figure 1.2 The age-dependent prevalence of some skin conditions.
Table 1.2 Most costly skin conditions in the United States (2004).

<table>
<thead>
<tr>
<th>Condition</th>
<th>Direct medical cost ($billions)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Skin ulcers/wounds</td>
<td>9.7</td>
</tr>
<tr>
<td>Acne</td>
<td>2.5</td>
</tr>
<tr>
<td>Herpes simplex/zoster</td>
<td>1.7</td>
</tr>
<tr>
<td>Cutaneous fungal infection</td>
<td>1.7</td>
</tr>
<tr>
<td>Contact dermatitis</td>
<td>1.6</td>
</tr>
</tbody>
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Adapted from Bickers et al. (2006). Reproduced with permission of Elsevier.

Figure 1.3 summarizes what happens to those with skin problems in the United Kingdom.

Psoriasis is a common chronic inflammatory condition of the skin which affects approximately 1.5% of the population. Figure 1.4 demonstrates how the ‘iceberg’ analogy can be applied to UK psoriasis patients. In the course of a single year most of those with psoriasis see no doctor, and only a few will see a dermatologist. Some may have fallen victim to fraudulent practices, such as ‘herbal’ preparations laced with steroids, and baseless advice on ‘allergies’.

Several population-based studies have confirmed that this is the case with other skin diseases too. In another UK study, 14% of adults and 19% of children had used a skin medication during the previous 2 weeks; only one-tenth of these were prescribed by doctors. In a study of several

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*Between one-third and two-thirds of the population self-treat their condition.

†A significant proportion of these are day case admissions.
3% are referred to a dermatologist
17% see a general practitioner only
80% see no doctor

Figure 1.4 The ‘iceberg’ of psoriasis in the United Kingdom during a single year.

Table 1.3 Factors influencing the prevalence of skin diseases in a community.

<table>
<thead>
<tr>
<th>High level of</th>
<th>High incidence of</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ultraviolet radiation</td>
<td>Skin malignancy in Caucasoids</td>
</tr>
<tr>
<td>Heat and humidity</td>
<td>Fungal and bacterial infections</td>
</tr>
<tr>
<td>Industrialization</td>
<td>Contact dermatitis</td>
</tr>
<tr>
<td>Underdevelopment</td>
<td>Infestations</td>
</tr>
<tr>
<td></td>
<td>Bacterial and fungal infections</td>
</tr>
</tbody>
</table>

The impact of skin disorders

Much of this book is taken up with ways in which skin diseases can do harm. Most fit into the five D’s shown in Figure 1.5; others are more subtle. Topical treatment, for example, can seem illogical to those who think that their skin disease is emotional in origin; it has been shown recently that psoriatics with great disability comply especially poorly with topical treatment.

In addition, the problems created by skin disease do not necessarily tally with the extent and severity of the eruption as judged by an outside observer. In all branches of medicine, quality-of-life studies have come to the fore. They give a different, patient-based, view of the skin condition, and provide an objective, validated and reproducible outcome measure. They have many applications, ranging from the monitoring of a response to treatment, to the justification of clinical expenditure. There are specialty specific questionnaires such as the Dermatology Life Quality Index (DLQI) and disease-specific questionnaires such as the Cardiff Acne Disability Score.

Figure 1.5 The five D’s of dermatological disease.
Skin Disease in Perspective

Figure 1.6 (a) This patient has a port-wine stain. (b) Her life is transformed by her clever use of modern camouflage cosmetics, which take her less than a minute to apply.

Questionnaires have been designed to compare the impact of skin diseases with those of other conditions; patients with bad psoriasis, for example, have at least as great a disability as those with angina and some cancers. Given the high cost of some of the newer dermatological treatments, the biological drugs for example, quality of life questionnaires are becoming commonplace in the office or clinic.

**Disfigurement**

The possible reactions to disfiguring skin disease are described in Chapter 23. They range from a leper complex (e.g. some patients with psoriasis, p. 52), to embarrassment (e.g. port-wine stains, Figure 1.6, or androgenetic alopecia in both men and women, p. 175). Disorders of body image can lead those who have no skin disease to think that they have, and even to commit suicide in this mistaken belief (dermatological non-disease, p. 335).

**Discomfort**

Some people prefer pain to itch; skin diseases can provide both. Itchy skin disorders include eczema (p. 76), lichen planus (p. 69), scabies (p. 253) and dermatitis herpetiformis (p. 119). Pain is marked in shingles (p. 231), pyoderma gangrenosum (p. 321) and glomus tumours (p. 187).

**Disability**

Skin conditions are capable of ruining the quality of anyone's life and each carries its own set of problems. At the most obvious level, dermatitis of the hands can quickly destroy a manual worker’s earning capacity, as many hairdressers, nurses, cooks and mechanics know to their cost. In the United States, skin diseases account for almost half of all cases of occupational illness and cause more than 50 million days to be lost from work each year; in 2004, days lost as a result of contact dermatitis alone accounted for an annual cost of $294.6 million dollars.

Disability and disfigurement can blend in a more subtle way, so that, for example, in times of unemployment people with acne find it hard to get jobs. People with psoriasis in the United States, already plagued by tactless hairdressers and messy treatments, have been shown to lose thousands of dollars in earnings by virtue of time taken off work. Even trivial psoriasis, if it is on the fingertips of a blind person can have a huge effect by making it impossible to read Braille.

**Depression**

The physical, sensory and functional problems listed above often lead to depression and anxiety, even in the most stable people. Depression also seems to modulate the perception of itching, which becomes much worse. Feelings of stigmatization and rejection are common in patients with chronic skin diseases: latest figures suggest that 17–32% of patients with psoriasis will report depression, 22% have symptoms of anxiety and up to 10% of patients with psoriasis that they think is bad have had suicidal thoughts. The risk of suicide in patients with severe acne is discussed on p. 163.
Table 1.4 The consequences of skin failure.

<table>
<thead>
<tr>
<th>Function</th>
<th>Skin failure</th>
<th>Treatment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Temperature control</td>
<td>Cannot sweat when too hot; cannot vasoconstrict when too cold. Hence temperature swings dangerously up and down.</td>
<td>Controlled environmental temperature</td>
</tr>
<tr>
<td>Barrier function</td>
<td>Raw skin surfaces lose much fluid and electrolytes.</td>
<td>Monitor and replace</td>
</tr>
<tr>
<td></td>
<td>Heavy protein loss.</td>
<td>High protein diet</td>
</tr>
<tr>
<td></td>
<td>Bacterial pathogens multiply on damaged skin.</td>
<td>Antibiotic</td>
</tr>
<tr>
<td>Cutaneous blood flow</td>
<td>Shunt through skin may lead to high output cardiac failure in those with poor cardiac reserve.</td>
<td>Bathing/wet compresses</td>
</tr>
<tr>
<td>Others</td>
<td>Erythroderma may lead to malabsorption.</td>
<td>Aggressively treat skin</td>
</tr>
<tr>
<td></td>
<td>Hair and nail loss later.</td>
<td>Support vital signs</td>
</tr>
<tr>
<td></td>
<td>Nursing problems handling patients particularly with toxic epidermal necrosis (p. 121) and pemphigus (p. 113).</td>
<td>Usually none needed</td>
</tr>
</tbody>
</table>

Death
Deaths from skin disease are fortunately rare, but they do occur (e.g. in pemphigus, toxic epidermal necrolysis and cutaneous malignancies). In 2005 there were nearly 4000 deaths from skin disease in the United Kingdom, of which 1817 were attributable to malignant melanoma. In addition, the stresses generated by a chronic skin disorder such as psoriasis predispose to heavy smoking and drinking, which carry their own risks.

In this context, the concept of skin failure is an important one. It may occur when any inflammatory skin disease becomes so widespread that it prevents normal functioning of the skin, with the results listed in Table 1.4. Its causes include erythroderma (p. 74), toxic epidermal necrolysis (p. 121), severe erythema multiforme (p. 105), pustular psoriasis (p. 57), and pemphigus (p. 113).

Learning points
1 'Prevalence' and 'incidence' are not the same thing. Learn the difference and join a small select band.
   - The **prevalence** of a disease is the proportion of a defined population affected by it at a particular point in time.
   - The **incidence** rate is the proportion of a defined population developing the disease within a specified period of time.
2 Quality of life studies have revealed that many skin diseases that seem trivial to a doctor can still wreck a patient’s life.
3 Remember that many patients, by the time they see you, will have tried numerous home remedies.

Further reading