

General medicine and surgery for dental practitioners.

Part 4 – skin disorders part B

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IN BRIEF

- Skin disorders are common and are likely to be encountered by dental practitioners.
- History and examination (lesion recognition) is important.
- The skin disorder may have oral manifestations.
- Some treatments for skin disorders may impact on dental management. The more important areas where treatments may affect dental management are discussed in this paper.

Skin disorders are potentially important to dentists in diverse ways. The skin disease itself might have oral manifestations, and drugs used to treat skin disorders may impact on dental management. This second paper on skin disorders continues with a consideration of those disorders, and aspects of their treatment, which could have relevance to dental practitioners.

INTRODUCTION

In part 3 of this series,¹ general aspects of the history and examination of a patient with a skin lesion were discussed. Several specific conditions were highlighted. This paper continues with a consideration of further skin conditions and aspects of management as they impact on dental treatment. The skin conditions covered in this paper are summarised in Table 1.

1. BLISTERING DISORDERS

Blistering disorders may be classified according to where the split in the skin leading to the blisters occurs. Intra-epidermal blisters tend to have a thin roof

and rupture easily whereas those occurring sub-epidermally rupture less readily and present with tense, dome shaped blisters.

There are a number of subtypes of pemphigus,² all of which are autoimmune with the autoantibodies (usually IgG) directed against the 'cement' of the prickle cell layer of the epidermis with resultant breakdown and blister formation in this region. Patients, most frequently middle-aged women, present with widespread flaccid blisters of the skin but often involving the mucous membranes of the mouth, conjunctiva, nose, vagina and rectum. In roughly 50% of patients the condition may first manifest as an oral problem. Pemphigus, if untreated, is fatal and warrants vigorous and life-long immunosuppressive treatment.

Pemphigoid is also an autoimmune disorder that usually occurs in the older patient and tends to be a much milder condition than pemphigus. The autoantibodies, usually IgG, are directed towards the basement membrane zone resulting in sub-epidermal blister formation. It tends to spare the mucous membranes but a variant, mucous membrane pemphigoid,³ predominantly involves the oral and conjunctival mucosa. The latter is of significance because, if not treated, it can lead to conjunctival scarring and blindness. Pemphigoid is usually treated symptomatically with topical steroids and only in severe cases is systemic treatment required.

Erythema multiforme⁴ is an immunological reaction to a number of causes such as viral infections (especially herpes simplex) and drugs. The rash can assume several forms, but classically appears as

Table 1 A summary of the conditions discussed in this paper

Blistering disorders
Skin infections
Disorders of hair
Disorders of pigmentation
Miscellaneous conditions



Fig. 1 The oral and skin manifestations of erythema multiforme

'target lesions' with a central bulla surrounded by concentric rings of erythema (Fig. 1). The condition tends to predominantly affect adolescent males with recurrent episodes often diminishing in severity with increasing age. The most severe form involves the eyes, mouth and genitalia (Stevens-Johnson syndrome). The disease is self-limiting and the use of systemic steroids is controversial.

GENERAL MEDICINE AND SURGERY FOR DENTAL PRACTITIONERS

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Dermatitis herpetiformis is a rare blistering disorder in which IgA antibody is directed against the skin causing widespread, often small vesicles that are extremely itchy. The condition is often associated with coeliac disease but oral involvement is unusual. It usually responds well to dapsone and for those with associated coeliac disease, a gluten free diet can be beneficial.

2. SKIN INFECTIONS

Infections of the skin are common and can be divided into those caused by bacteria, viruses, fungi and parasites.

Bacterial infections

Furuncle is a deep abscess of a hair follicle due to infection with *Staphylococcus aureus*. Precipitating factors include poor hygiene, stress and diabetes mellitus although many cases develop for no specific reason. Such patients often carry the causative strain of *Staphylococcus* in the nose, axillae and groin.

A **carbuncle** is a larger Staphylococcal abscess which discharges pus through several sinuses.

Impetigo is a superficial skin infection caused by *Staphylococcus aureus*, sometimes with Streptococci in addition. The lesions are golden crusted and can spread quite rapidly. The condition is contagious and as a result can pervade an institution such as a nursery. Sometimes it accompanies infestation with scabies or lice.

Cellulitis is a term used to describe a deeper spreading Streptococcal infection that involves the subcutaneous tissues and can spread quite widely. **Erysipelas** is a form of cellulitis and is a superficial infection due to *Streptococcus pyogenes*. The lesion is a well defined area of tender, red and oedematous skin and is often associated with fever and malaise. Recurrent episodes of cellulitis are not uncommon.⁵

Viral infections

Verrucae (common warts) are common lesions that usually occur on the hands or soles (plantar warts) and are often self-limiting. Lesions can occur around the mouth, usually by auto-inoculation, particularly in thumb-suckers.

Herpes simplex infection is usually acquired from close contact with an infected individual during infancy. The primary infection involves painful vesicles/



Fig. 2 Herpes simplex infection of the lip

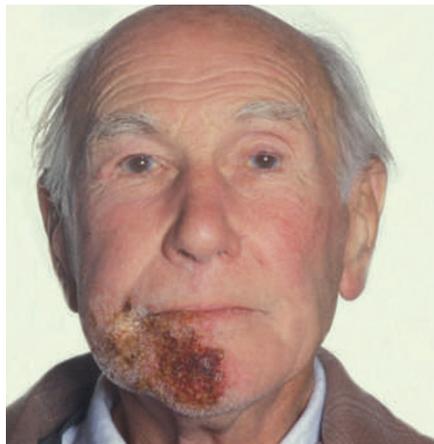


Fig. 3 Shingles – confined to the mandibular division of the trigeminal nerve

ulcers around the oral mucosa and gingivae. The condition is accompanied by fever, malaise and lymphadenopathy. It is usually self-limiting. In a number of cases the primary infection is sub-clinical, although once infected the virus remains for life and gives the potential for the development of secondary (recurrent) lesions.

Recurrent herpes infections may occur throughout life and are most commonly seen around the lips ('cold sores', Fig. 2). Attacks are often precipitated by febrile illness, local trauma, sunburn or menstruation. The lesion usually starts as a patch of localised painful erythema, in which develops a crop of clear vesicles that burst, crust and heal over a period of ten days. Genital herpes follows the same pattern although the primary infection is usually acquired through sexual intercourse.

Herpes zoster infection, like herpes simplex, has a bimodal presentation with the primary condition usually being acquired in childhood as chickenpox (varicella zoster). The virus remains latent in the sensory root ganglia where it can become reactivated later in life causing shingles.

Shingles starts with pain, then erythema and vesicles in the distribution of a sensory nerve root. The preceding pain can be severe and occur up to two days before

the development of the characteristic rash. Although any sensory nerve root distribution can be affected, it is most common on the trunk. The condition may involve any of the three branches of the trigeminal nerve and usually settles within two weeks, although it can leave pain in the affected region for several months afterwards (post-herpetic neuralgia). Lesions affecting the ophthalmic division of the trigeminal nerve may develop corneal damage and should be treated with an antiviral agent promptly to prevent long-term complications. Shingles affecting the mandibular division of the trigeminal nerve is shown in Figure 3.

The **Coxsackie group** of viruses can produce two infections of the oro-facial region; both are highly contagious but otherwise self-limiting. **Herpangina** produces characteristic painful lesions of the soft palate, accompanied by pyrexia and malaise. **Hand, foot and mouth disease** produces characteristic linear vesicles of the hands and feet, with shallow ulcers of the buccal mucosa. It is usually a mild self-limiting illness which often occurs as an epidemic in institutions.

Fungal infections

Numerous fungal infections can affect the skin but most have little effect on the oro-facial region. The most common yeast to affect the peri-oral region is the *Candida* species (usually albicans). This yeast is a common commensal in the mouth and being highly opportunistic, can cause a variety of intra-oral manifestations depending on local conditions such as poor denture hygiene or systemic disease. Spillage from the mouth can affect the adjacent skin, either alone or in combination with other opportunistic organisms such as *Staphylococcus aureus*, and give rise to **angular cheilitis**.

Angular cheilitis occurs as a result of saliva maceration at the corners of the mouth due to drooling or the presence of deep skin folds or ill-fitting dentures. Other factors that potentiate the development of secondary infection at this site are iron deficiency, diabetes mellitus or being immunocompromised. In younger, dentate and otherwise fit individuals the condition is often solely an infection by *Staphylococcus aureus*.

In treating angular cheilitis it is important to assess for all possible contributing factors

and to treat any accompanying intra-oral infection with an appropriate antifungal agent or the condition will recur.

3. DISORDERS OF HAIR

Hirsutism refers to growth of coarse hair in the 'male' pattern (especially in the beard area) occurring in a female. It is usually only a cosmetic defect but it can sometimes be a sign of over-production of androgen due to a tumour or hyperplasia of the ovary (polycystic ovaries) or adrenal gland. Affected individuals often have greasy skin and irregular periods.

Alopecia ('baldness') commonly happens in men with a family history of baldness and normal androgen levels. It rarely happens in women before the menopause and if it does occur in a young woman, it usually indicates an overproduction of androgens. Generally hair loss is more common with increasing age in both sexes.

Diffuse alopecia can occur in hypothyroidism, hypopituitarism, iron deficiency and (transiently) in pyrexial illness or childbirth. Some drugs, particularly cytotoxics, can also cause temporary hair loss. **Alopecia areata** is thought to be an autoimmune disorder resulting in patchy hair loss. Most cases recover spontaneously, but some progress to total hair loss, including the eyelashes and body hair (alopecia universalis).

4. DISORDERS OF PIGMENTATION

Malignant melanoma is considered in paper 3.¹

Hyperpigmentation

The most common pigment in the skin is melanin produced by dendritic cells in the basal layer – melanocytes. All races have a similar number of melanocytes but those races with a darker skin have more active melanocytes. In general, melanin is protective against ultraviolet light and production of melanin occurs in direct response to exposure (sun tan). However, there are a number of conditions associated with an increase in pigmentation.

In adrenocortical deficiency as a result of destruction of the adrenal glands by either autoimmune (**Addison's disease**) or metastatic disease, overproduction of pituitary ACTH stimulates melanocytes to produce melanin. As a result the patient becomes pigmented and due to low or

absent cortisol, has a poor tolerance to stress (such as in the dental surgery) and can develop steroid crisis (severe hypotension and collapse) without adequate steroid prophylaxis.

Certain drugs can result in increased pigmentation (eg busulphan) and a patchy hyperpigmentation can develop around the eyes and cheeks in pregnancy (melasma) or from the contraceptive pill.

Localised areas of hyperpigmentation can occur in old age (lentigenes) and peri-orally in **Peutz-Jeghers' syndrome**, an hereditary condition associated with intestinal polyps.

Hypopigmentation

Loss of pigment can be generalised, as in **albinism** (a congenital defect in melanin production), or localised such as in **vitiligo**. Vitiligo is probably an autoimmune disorder that destroys melanocytes. Although largely cosmetic, loss of pigment increases the risk of sun damage to the skin and affected individuals need to limit their exposure and use appropriate sun block.

5. MISCELLANEOUS CONDITIONS – GENODERMATOSES

There is a genetic background in many skin disorders, but several are recognised as primarily genetic.

Ectodermal dysplasia is a rare, sex-linked recessive disorder characterised by sweat glands that fail to form (hypohidrosis) and scant hair (hypotrichosis) with absence of eyebrows and eyelashes. The importance of this condition in dentistry is that it is associated with hypodontia and abnormalities of tooth form.⁶

The term **epidermolysis bullosa** encompasses a group of rare bullous diseases affecting the skin and mucous membranes with various forms of inheritance. Vesicles and bullae form in response to mild or insignificant trauma and may lead to disabling scarring and deformity.

Neurofibromatosis type 1 (von Recklinghausen's disease) is an autosomal dominant condition characterised by multiple tumours of the nerve sheath (neurofibromas), in which sarcomatous change may develop, and patches of pigmented skin (café-au-lait spots).

Multiple basal cell naevi syndrome⁷ (Gorlin-Goltz syndrome) is an autosomal dominant condition consisting of multiple

basal cell carcinomas, odontogenic keratocysts and anomalies of the vertebrae, ribs and skull deformities, including calcification of the falx cerebri.

Tuberous sclerosis is an autosomal dominant trait characterised by epilepsy, learning disability and skin lesions in a butterfly pattern across the bridge of the nose, forehead and chin.

DENTAL MANAGEMENT OF PATIENTS WITH SKIN DISORDERS

Dental implications of various skin disorders likely to be seen in dental practice include direct involvement of the oral mucosa by a mucocutaneous disorder. In some circumstances, for example pemphigus, the oral lesions may precede the full blown condition and provide early diagnosis.

Some asymptomatic conditions in their early phase, such as basal cell carcinomas, commonly involve the facial skin and the dentist is in a good position to make the diagnosis and promote early referral. Some dermatological problems such as epidermolysis bullosa or systemic sclerosis may present specific problems in maintaining adequate oral hygiene and patients with these conditions require regular assistance. In such cases the wearing of dentures can prove extremely difficult and every effort to maintain the dentition should be taken.

A number of patients with dermatological conditions will be taking or have taken systemic steroids and may require steroid cover before any surgical intervention, such as extractions, to prevent steroid crisis. This is an area of controversy and some evidence suggests that the routine use of prophylactic steroids is unnecessary.⁸ Many more patients will be using topical steroid medication, which could theoretically lead to adrenal suppression. However this appears not to be a problem and steroid cover for surgical dental procedures in this group is usually not required.

Many dermatological conditions are visible and cause considerable distress to those affected. Treatment by an understanding and knowledgeable practitioner can be of enormous reassurance to a sometimes emotionally vulnerable person.

From a dental perspective, patients affected with systemic sclerosis may be compromised by difficulty in accessing

the oral cavity due to the tightness of the circumoral skin. This can result in difficulty in maintaining adequate oral hygiene, a problem that can be exacerbated if the hands are affected to a degree where holding an oral hygiene aid such as a toothbrush becomes difficult.

Some skin conditions such as systemic lupus erythematosus are associated with a bleeding tendency caused by thrombocytopenia and clotting defects (see below).

Considerations for treatment under local analgesia with or without sedation and general anaesthesia

As mentioned above, Addison's disease is associated with hyperpigmentation and the lack of production of endogenous corticosteroids may lead to adrenal crisis. The use of prophylactic steroids is not universally advised for treatments on most patients receiving endogenous steroids (see below). The exception is the patient with Addison's disease, where steroid cover is still recommended.

Some of the systemic conditions such as systemic lupus erythematosus are associated with prolonged bleeding as a result of both thrombocytopenia and a coagulation deficit as mentioned above. A careful history is required to see if the patient has any haemorrhagic problem and pre-surgical screening for platelet numbers and clotting studies may be required.

In cases of C1 esterase deficiency, supplementation before dental treatment may be provided to prevent the development of angio-oedema.

Dentists and their assistants may become sensitised to rubber gloves, medicaments or chemicals such as acrylic monomer resins producing a type IV (delayed) hypersensitivity reaction. Such hypersensitivity usually causes hand eczema, but aerosols can lead to facial eczema. Patch testing the skin (usually on the back) to a range of possible sensitizers for 48 hours is the usual way of identifying the cause. Treatment, like that for irritant eczema, is avoidance of the cause or the use of a barrier (eg hypo-allergenic gloves). It should be remembered with hypersensitivity reactions, however, that subsequent contact will lead to an exacerbated response and should be avoided at all costs. Acute

flare-ups can be treated by a topical steroid cream or ointment.

IMPACT OF DRUGS

A number of different drugs are used in the management of skin disorders and an understanding of the impact of these on dental treatment is merited.

Corticosteroids

As mentioned above, the use of supplementary steroids is no longer considered essential for most patients taking these drugs. Monitoring of the blood pressure is recommended during treatment and if the diastolic pressure drops by more than 25% then an intravenous injection of 100–200 mg hydrocortisone is required.

Patients taking long-term steroid therapy may be more susceptible to infections such as *Candida* and any acute infection should be treated without delay.

The use of non steroidal anti-inflammatory drugs is not recommended in patients taking corticosteroids on a long-term basis as such a combination can lead to gastrointestinal ulceration.

Antimicrobial drugs

Long-term tetracycline use, if it coincides with dental development, can lead to staining of the teeth. Tetracycline may also be a cause of lichenoid lesions intra-orally. This drug can reduce the efficacy of other antibacterials such as penicillin. Tetracycline is commonly used in the treatment of acne vulgaris.

Immunosuppressant drugs

A number of immunosuppressant drugs such as ciclosporin, tacrolimus and methotrexate are used in the management of skin disorders. Patients on immunosuppressant therapy are more at risk of oral and peri-oral malignancies and any suspicious lesions should be biopsied on an urgent basis. Ciclosporin can produce gingival overgrowth.⁹ Drugs that dentists prescribe can interact with immunosuppressants, for example non-steroidal anti-inflammatory drugs increase the toxicity of ciclosporin, methotrexate and tacrolimus and antifungal agents such as miconazole and ketoconazole reduce metabolism of ciclosporin and tacrolimus. Immunosuppressants may reduce

platelet numbers leading to post-extraction bleeding; a reduction in white cell count may also increase the likelihood of post-operative infection. Full blood counts will inform the clinician if such sequelae are likely.

Dapsone

Dapsone can produce Stevens-Johnson syndrome leading to oral ulceration and crusting of the lips. This drug can reduce the red and white cell count leading to poor post-surgical healing.

Retinoids

Patients receiving retinoids may complain of dry lips.

CONCLUSION

With the similarities between skin and oral mucosa, it is hardly surprising that some dermatological conditions may have an oral component that occasionally may even precede other manifestations. Many patients may not appreciate this connection which can only be ascertained by careful history taking and where appropriate, examination.

In addition, many serious skin conditions such as malignant neoplasia frequently occur on the face, enabling the dental practitioner to facilitate early diagnosis and referral. It is an area where close co-operation between different professionals is beneficial.

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