

# Desquamative Gingivitis: Investigation, Diagnosis and Therapeutic Management in Practice

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Desquamative gingivitis is a fairly common disorder, with a wide range of causes, most commonly lichen planus and mucous membrane pemphigoid. It may be the initial symptom of the underlying disorder, and patients may therefore present to the general dental practitioner or specialist in periodontology. The presence of plaque-induced gingival inflammation may exacerbate the condition, mask histological features of the underlying disorder, and can lead to delays in diagnosis and misdiagnosis. A definitive histological diagnosis should be made to ensure optimal management. Direct and indirect immunofluorescence tests help to achieve a diagnosis. In cases where a hypersensitivity reaction is suspected, skin patch-testing may help identify allergens. Management of oral symptoms includes removal of contributing/ causative factors where possible and medication with topical or systemic immunosuppressants.

**Key words:** desquamative gingivitis, lichen planus, pemphigoid, pemphigus, hypersensitivity, lupus erythematosus, plasma cell gingivitis, dermatitis herpetiformis, linear IgA disease, orofacial granulomatosis

## INTRODUCTION

The term desquamative gingivitis describes the clinical appearance of gingiva that are red, glazed, often oedematous, with loss of stippling, and that have areas of superficial epithelial desquamation and/or ulceration (Fig 1). Vesicles, white striae or flecks may also be seen (Figs 2, 3). Desquamative gingivitis is not a disease entity but a clinical manifestation of several different disorders (Robinson and Wray, 2003; Field and Longman, 2003; Scully, 2004). Desquamative gingivitis may be an isolated finding or may be accompanied by other lesions of the oral mucosa that help to determine the clinical diagnosis. Causes of desquamative gingivitis include:

1. **Dermatoses**, which include:
  - Lichen planus
  - Mucous membrane pemphigoid

- Pemphigus
- Dermatitis herpetiformis
- Linear IgA disease
- Epidermolysis bullosa.

Lichen planus and pemphigoid are the most common causes of desquamative gingivitis. Pemphigus is much less common than lichen planus and pemphigoid, and the other conditions mentioned are rare causes of desquamative gingivitis.

2. **Local hypersensitivity reactions** to various substances such as mouthwashes, dental materials, drugs, cosmetics, chewing gum and cinnamon, a commonly used flavouring (Soames and Southam, 2005). Sodium lauryl sulphate, a common constituent of toothpaste, may be a cause in some patients. Tartar-control toothpastes can also trigger reactions in the oral mucosa (DeLattre, 1999).



Fig 1 Lichen Planus presenting as desquamative gingivitis.



Fig 2 Pemphigus vulgaris.



Fig 3 Vesicles in palate in mucous membrane pemphigoid.



Fig 4 Plasma cell gingivitis.

3. **Other potential causes of gingival ulceration and erythematous patches** – for example, plasma cell gingivitis (Fig 4), systemic lupus erythematosus (SLE), discoid lupus erythematosus (DLE), chronic ulcerative stomatitis and granulomatous disorders, such as orofacial granulomatosis (Fig 5), Crohn's disease and sarcoidosis (Scully, 2004).

The gingival lesions may be the presenting symptom of a more generalised oral or systemic condition, and rigorous investigation is necessary to elucidate a diagnosis. The presence of dental plaque is an important exacerbating factor whatever the underlying cause (Fig 6).

## GENERAL INVESTIGATION AND DIAGNOSIS

A full history and oral examination should be carried out, alongside an extra-oral examination of the clothed patient. Some patients are asymptomatic but many complain of soreness, especially when eating spicy or acidic food, and of bleeding and discomfort with tooth brushing. There may be a history of oral blisters, which may be blood-filled (Fig 7), or extensive oral ulceration (Fig 8). Relevant questions should include a history of ocular, nasal and throat symptoms, skin or genital lesions and details of current medication, as well as changes in medication prior to the onset of symptoms. The family history may reveal relevant inherited conditions – for example, SLE. Oral examina-



Fig 5 Orofacial granulomatosis.



Fig 6 Gingival lichen planus and chronic periodontal disease presenting as dual pathology.



Fig 7 Blood blisters in mucous membrane pemphigoid.



Fig 8 Ulceration of buccal mucosa in pemphigus vulgaris.

tion may reveal patchy lesions (Fig 9), with buccal and labial gingiva more commonly affected than lingual and palatal gingiva, or there may be generalised gingival involvement. The presence of white plaques, white striae, papules, vesicles and ulcers at other oral sites assist greatly in establishing the clinical diagnosis. A positive Nikolsky sign, where a blister forms or spreads, or the surface epithelium "floats away" when lateral pressure is applied to the mucosa, may indicate vesiculobullous disorders (Fig 10).

Definitive diagnosis often requires biopsy for histopathological examination and, where an autoimmune vesiculobullous disorder such as pemphigoid is suspected, for direct immunofluorescence (DIF) to identify the presence of autoanti-

bodies to epidermal antigens. Gingival biopsies are often difficult to interpret histologically and of limited/no value, because of the presence of generalised inflammatory changes associated with plaque-induced inflammation, which obscures key histological features of more specific, non-plaque related inflammation. For this reason, an alternative site should be biopsied if possible. For suspected vesiculobullous disorders, biopsies may be taken from clinically uninvolved or perilesional tissue for DIF and histology. Great care must be taken to prevent loss of the epithelium during the biopsy procedure. Punch biopsies may be more successful in achieving this. DIF confirms the site of antibody and complement deposition at the basement membrane zone in conditions



Fig 9 Gingival ulceration in pemphigus vulgaris.



Fig 10 Ruptured blister in pemphigoid.

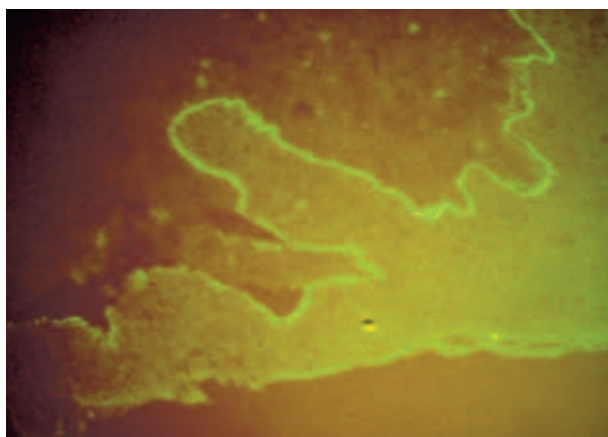


Fig 11 Direct immunofluorescence in pemphigoid, showing basement membrane bound IgG antibodies.

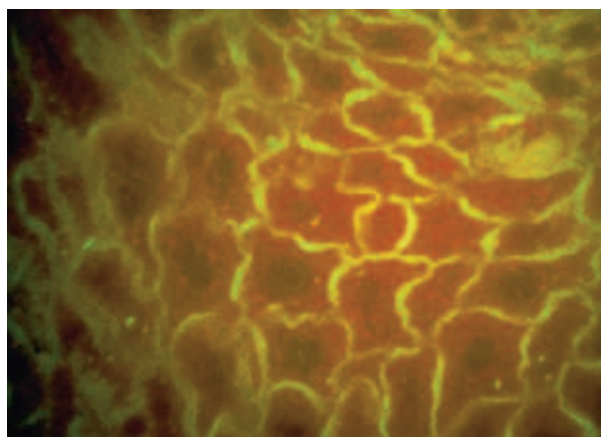


Fig 12 Direct immunofluorescence in pemphigus, showing antibodies to intercellular adhesion molecules.

characterised by subepidermal bulla formation, such as pemphigoid, linear IgA disease and epidermolysis bullosa acquisita (Fig 11), and at the periphery of cells in the stratum spinosum in pemphigus, characterized by intra-epithelial bulla formation, where the target antigens are mainly desmogleins and desmocollins, desmosomal adhesion molecules of the cadherin family (Fig 12) (Scully and Challacombe, 2002). Circulating autoantibodies may be demonstrated serologically by indirect immunofluorescence in the autoimmune blistering conditions and are positive in about 75% of patients with mucous membrane pemphigoid and about 90% of patients with pemphigus (Field and Longman, 2003). However, it should be noted that circulating au-

toantibodies, especially antibodies to intercellular cement (desmosomal adhesion molecules), are sometimes detected in middle-aged and elderly people with no evidence of disease. Where an allergic aetiology is suspected, patch-testing for delayed hypersensitivity reactions may be helpful, especially when the suspected allergens are dental materials (Axtell, 2001).

## MANAGEMENT OF SYMPTOMS

Treatment of desquamative gingivitis consists of:

1. Removal of the underlying cause where possible - for example, by avoidance of known or suspected allergens and irritants.

2. Improvement in oral hygiene. Whilst this may not treat the primary underlying cause, it does reduce generalised plaque-induced inflammation, thereby rendering the true clinical pathology more clearly visible. In addition, symptoms frequently improve with the reduced inflammatory infiltrate and obviate the need for further medication. Institution of rigorous oral hygiene can be problematic due to the gingival soreness and requires atraumatic brushing using soft bristled brushes.
3. Treatment of the underlying disease (see below).
4. Local or systemic immunosuppressive treatment (see below).

#### Local and Systemic Immunosuppressive Therapy

Most symptomatic cases of desquamative gingivitis can be managed using topical corticosteroids. A wide variety of agents are available. For localised patches, a steroid inhaler such as beclometasone dipropionate, 50–100 micrograms/inhalation, or a nasal spray such as fluticasone propionate, 50 micrograms/spray, directed onto the lesions up to four times daily, or triamcinolone 0.1% in an adhesive dental paste, may be used. Generalised lesions may be treated with mouthrinses made by adding soluble prednisolone tablets (5–10mg), betamethasone tablets (0.5–1mg) or fluticasone (1 nasule) to 15ml water. The mouth is rinsed two or three times daily for at least two minutes and the solution spat out.

Where lesions are localised to the free and attached gingivae, or for more severe lesions, the use of corticosteroid creams such as fluocinolone acetonide 0.0025% or 0.00625%, applied in a vinyl occlusal splint (mouthguard with full sulcus coverage and spaced to allow for cream application) provides targeted therapy. Pain relief may be provided by use of benzydamine hydrochloride 0.15% mouthrinse. Where there is clinical or histological evidence of candidal superinfection, appropriate antifungal treatment is prescribed. Lesions unresponsive to topical corticosteroids may be helped by tacrolimus, used topically, in an adhesive dental paste or as an ointment. The adhesive preparation is not commercially available and must be made on an individual named-patient basis, and has the disadvantage of a short shelf life of about one month. The ointment is available commercially on prescription, but some patients find it less effective, as it does not adhere well to

the oral mucosa. Patients using tacrolimus must be monitored regularly for serum tacrolimus levels to ensure therapeutic amounts are not absorbed, to avoid immunosuppression and many other potentially serious side effects. Possible long-term effects of oral topical use of tacrolimus are still unknown. Ciclosporin used as a mouthwash may also be helpful when topical steroids have failed.

Systemic treatment may be prescribed for severe cases, especially when extra-oral sites are involved, and regimes vary depending on the underlying condition. Multidisciplinary hospital teams that may include specialists in oral medicine, periodontology, dermatology, ophthalmology, otolaryngology or gastroenterology usually manage such cases. Corticosteroids are the most frequently prescribed immunosuppressant drugs, but azathioprine, mycophenolate mofetil, dapsone, cyclophosphamide, minocycline and nicotinamide are other agents sometimes used singly or in combination, often with corticosteroids. Osteoporosis prophylaxis may be necessary when systemic corticosteroids are employed and appropriate haematological monitoring should be carried out.

#### MORE COMMON SPECIFIC CONDITIONS UNDERLYING DESQUAMATIVE GINGIVITIS

##### Lichen Planus

Desquamative gingivitis is the sole presentation in about 10% of patients with oral lichen planus (Scully et al, 1998). Most patients with oral lichen planus have lesions at other sites on the oral mucosa and may exhibit one or more of the other variants of lichen planus- reticular, papular, plaque-like, atrophic, erosive and bullous. Rarely, lichen sclerosis et atrophicus presents with oral lesions. Lichen planus may also affect the skin, genital mucosa, nails and, less commonly, the oesophagus, and lesions at extra-oral sites may occur at different times from oral lesions. Many variants of cutaneous lichen planus have been described but the lesions most commonly consist of violaceous papules, sometimes with white striae, mainly on the flexor surfaces of the forearms, on the legs and back (Figs 13, 14). The lesions may be intensely pruritic.

Genital lichen planus may appear reticular, papular or as atrophic and erosive lesions that may cause symptoms of pruritus and burning. Nail lesions present as longitudinal striations, splitting



Fig 13 Cutaneous lichen planus.

and grooving and, in severe cases, may lead to destruction of the nail. A variant of lichen planus, involving the oral mucosa and the mucosa of the vulva and vagina, is known as the vulvovaginal-gingival syndrome (Eisen, 1994).

The aetiology of lichen planus is not fully understood but it is thought that cell-mediated immune responses to an external antigen, or to internal antigenic changes in the epithelial cells are involved (Soames and Southam, 2005). Most cases are thought to be idiopathic. Lichen planus has been associated with a variety of systemic disorders, including diabetes mellitus and chronic liver disease (Scully et al, 1998), and an association with Hepatitis C has been found in some populations, mainly Japanese and Mediterranean, but routine screening for hepatitis C and other liver abnormalities does not appear to be warranted (Eisen 2002), and it is likely that many cases of lichen planus represent lichenoid reactions to medication prescribed for systemic diseases. It is known that a wide variety of drugs, including antidiabetic, antirheumatic, antihypertensive and antimalarial drugs, can cause lichenoid reactions (Scully, 2004). Oral lichen planus has a small ma-



Fig 14 Lichen planus of the nails.

lignant potential, with studies reporting transformation rates of 0.5-2.5% over 5 years (Soames and Southam, 2005; Van der Meij et al, 1999). The risk is now thought to be of the order of less than 1%, occurring predominantly in non-reticular lichen planus (Scully, 2004). The presence of dysplasia increases the risk of malignant transformation (Epstein et al, 2003). Long-term follow-up of cases is therefore essential.

### Pemphigoid

Mucous membrane pemphigoid (MMP) is a heterogeneous group of autoimmune, chronic inflammatory, subepithelial blistering diseases, predominantly of mucous membranes, with lesions that can affect the oral, ocular, genital, nasopharyngeal, oesophageal, and laryngeal mucosa and the skin (Chan et al, 2002). Other names have been used for these conditions, including cicatricial pemphigoid, benign pemphigoid and oral pemphigoid. The disorders are characterised by linear deposition of IgG, IgA or C3 along the epithelial basement membrane zone, and a number of target antigens have been identified (Field and Longman, 2003). The major sequelae of these disorders are scarring and the associated loss of function, except in some patients whose disease is confined to the oral mucosa. Life-threatening airway obstruction and sight-threatening ocular scarring (Fig 15) can occur. Patients should be referred routinely to an ophthalmologist for assessment, and symptoms that suggest involvement of other mucosa such as the larynx or genitalia, or the presence of skin lesions, also warrant immediate referral to the appropriate specialist.



Fig 15 Symblepharon due to pemphigoid.

### Pemphigus

Pemphigus is a group of autoimmune, potentially life-threatening, mucocutaneous diseases characterized by intraepithelial blistering. Pemphigus affects mainly middle-aged and elderly patients and is more common in certain ethnic groups, such as Ashkenazi Jews and people of Mediterranean origin (Scully and Challacombe, 2002). There are four main varieties: pemphigus vulgaris, vegetans, foliaceus and erythematosus, with vulgaris accounting for about 70% of cases (Field and Longman, 2003). Most cases are thought to be idiopathic, but pemphigus may also be drug-induced, and an uncommon variant, paraneoplastic pemphigus, is associated with malignant disease such as leukaemia and lymphoma (Soames and Southam, 2005). Oral involvement is most commonly due to pemphigus vulgaris and may be the presenting or only symptom. As well as the oral mucosa and skin (Fig 16), pemphigus can affect the mucosa of the nose, conjunctiva, genitals, oesophagus, pharynx and larynx (Scully and Challacombe, 2002).

Before the advent of corticosteroids, pemphigus vulgaris was frequently fatal, mainly due to systemic infection or dehydration. It remains a serious disease although, with current treatment, including systemic immunosuppression, mortality has been reduced to about 10% (Scully, 2005). Multidisciplinary management is usually required.

### Hypersensitivity Reactions

Skin patch-testing may help identify substances suspected of causing hypersensitivity reactions in the oral mucosa, especially reactions to dental materials and to flavourings and preservatives in food



Fig 16 Skin lesions of pemphigus vulgaris.

and oral hygiene products, but the value of such tests has been questioned. Potential irritants such as antiseptic mouthwashes and tartar control toothpastes or toothpastes containing the detergent sodium lauryl sulphate, should be avoided. Known food irritants should also be avoided. Mention should be made here of plasma cell gingivitis, first described in the 1960's, when the cause was thought to be an allergic reaction to chewing gum. Other authors have described clinically and histologically identical cases, which have been thought to be due to food allergies, and cases in whom there was no evidence of allergies (Reed et al, 1993; Palmer and Eveson, 1981; Sollecito and Greenberg, 1992). Some cases respond well to systemic steroids.

Serological testing for specific IgE antibody to some common allergens is available but is not applicable for most of the substances likely to be involved in oral hypersensitivity. Raised total serum IgE indicates a genetic predisposition to atopy and is not helpful for determining the likely allergen in suspected oral hypersensitivity.

A large number of medications are thought to induce lichenoid reactions in the oral mucosa (Scully and Cawson, 1998), and it may be difficult to determine the causative agent in patients taking many different drugs. It may be necessary to withdraw the suspect medication for several weeks to allow resolution of the oral lesions. Improvement of oral hygiene is essential and may require intensive hygiene therapy and follow-up hygiene appointments at least every three months. Chlorhexidine 0.2% mouthrinses may aid oral hygiene when adequate cleaning is difficult due to pain.

## SLE and DLE

SLE and DLE are the main clinical variants of lupus erythematosus, a group of autoimmune connective tissue disorders, which present mainly in adulthood. Women are much more commonly affected than men. In SLE, there may be widespread involvement of many systems of the body, but the clinical presentation and course are variable and can range from a mild, chronic illness to a severe, rapidly fatal condition. A range of oral lesions may occur, most commonly superficial erosions and erythematous patches that look similar to lichen planus. SLE may also be triggered by a wide range of drugs (Birnbbaum and Dunne, 2002). DLE is a much more limited form of the disorder and presents as a skin disease, without generalised systemic involvement. The face is the area most commonly affected. The lip is the most common oral site. Malignant change has been reported in DLE (Field and Longman, 2003), and therefore, patients should be followed-up with care.

## SUMMARY

Desquamative gingivitis is a relatively common condition that, in many patients, causes chronic discomfort and gingival bleeding. Symptoms and clinical presentations are variable. Diagnosis of the underlying condition is necessary for optimum management, and multidisciplinary treatment teams may be required. Removal of exacerbating factors, especially dental plaque, is an important part of treatment. Many patients can be managed successfully with topical corticosteroid preparations, but more severe cases require other topical or systemic immunosuppression. Careful follow-up is an important part of management.

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