eMedicine Specialties > Dermatology > Diseases of the Oral Mucosa

Oral Lichen Planus

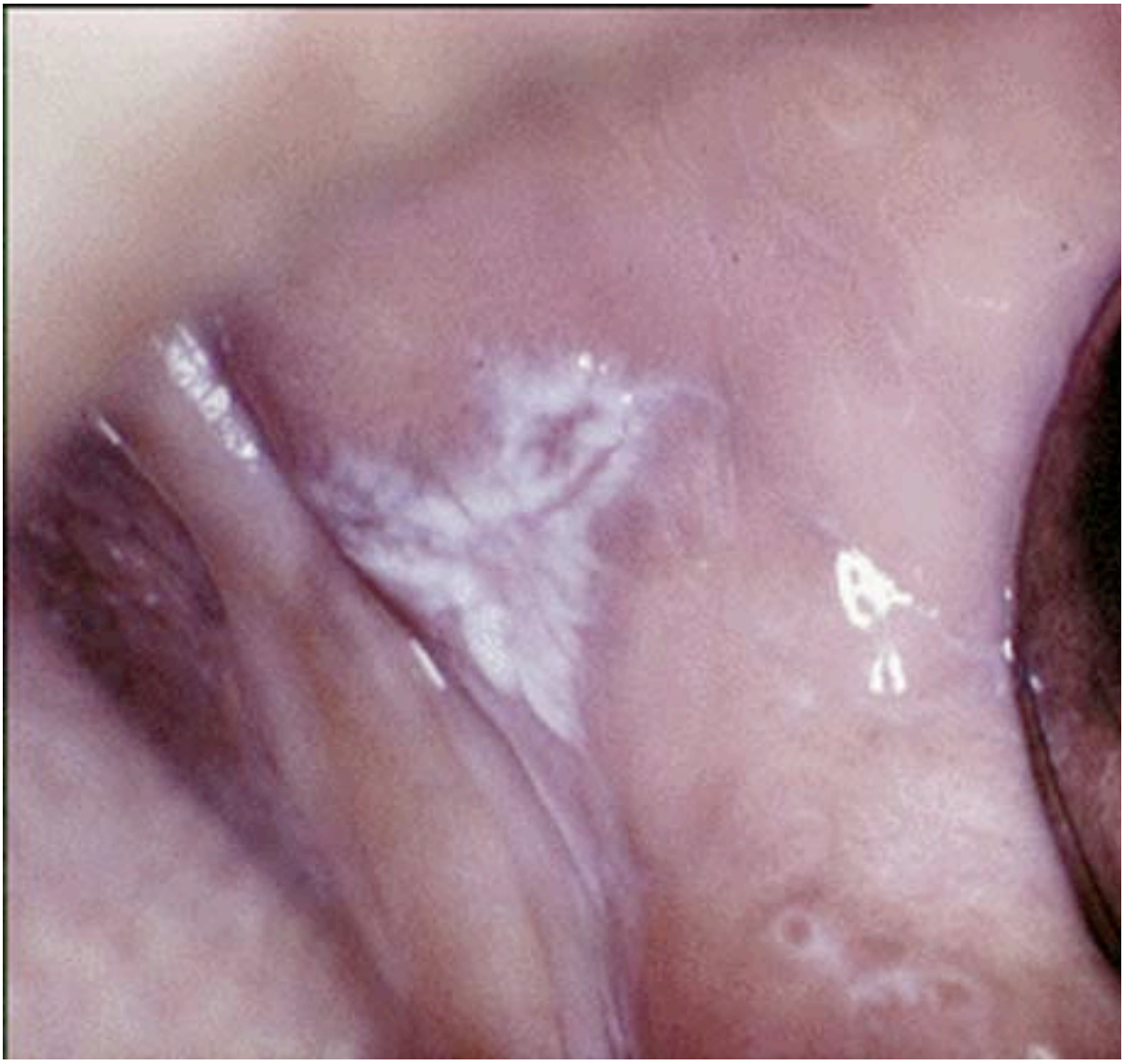
Philip Sugerman, MDSc, PhD, FRACDS, FDSRCS, FFOPRCPA, Clinical Science Manager, Abbott Immunology, Abbott Laboratories
Stephen R Porter, MD, PhD, FDS, RCS, FDS, RCSE, Professor of Oral Medicine, University College London; Academic Head, Director of Research Strategy, Oral Medicine/Special Needs Unit, Division of Maxillofacial Diagnostic, Medical and Surgical Sciences, Eastman Dental Institute for Oral Health Sciences

Updated: Jul 31, 2009

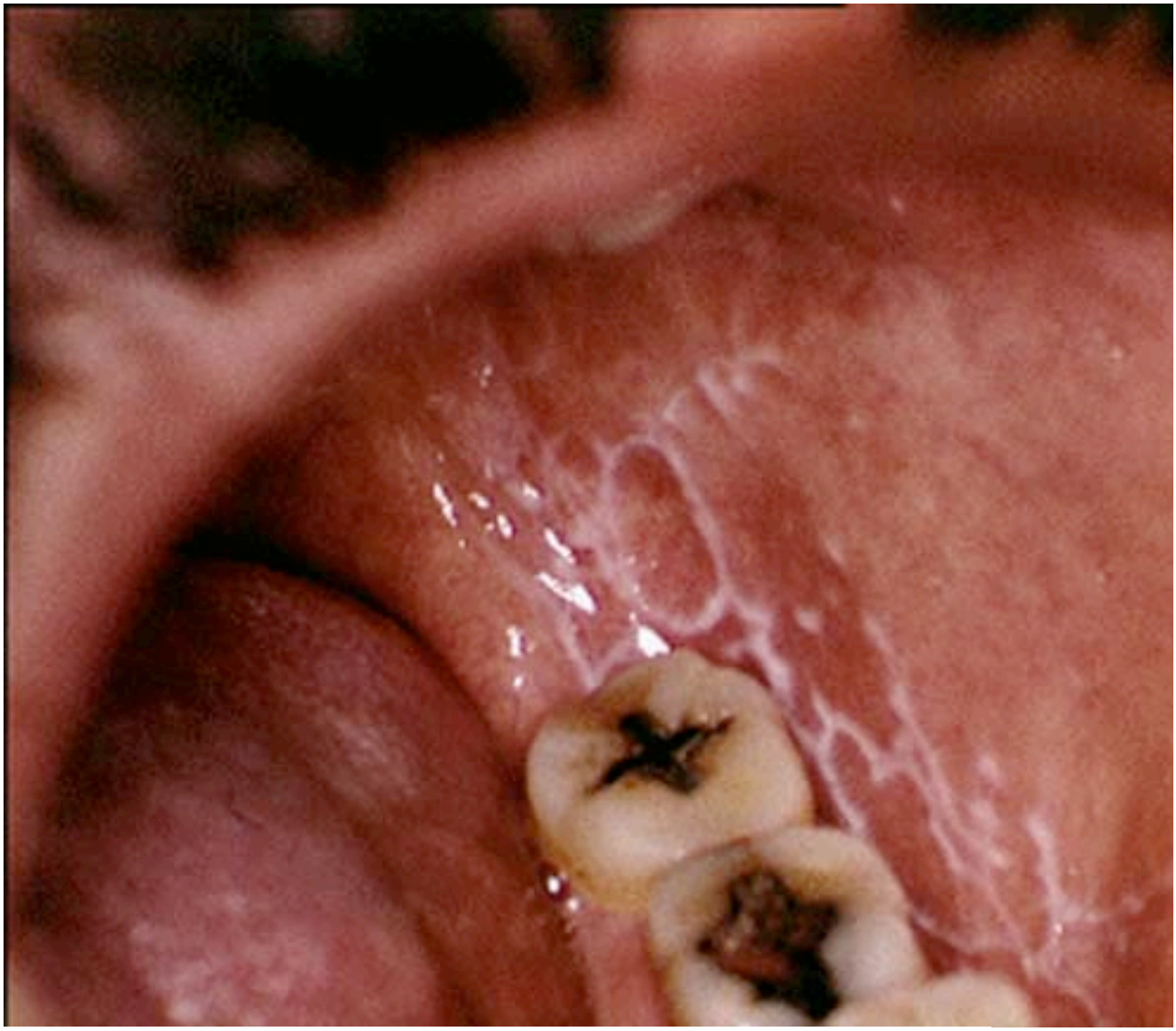
Introduction

Background

Oral lichen planus (OLP) is a chronic inflammatory disease that causes bilateral white striations, papules, or plaques on the buccal mucosa, tongue, and gingivae. Erythema, erosions, and blisters may or may not be present.



Plaquelike oral lichen planus on the buccal mucosa on the left side.



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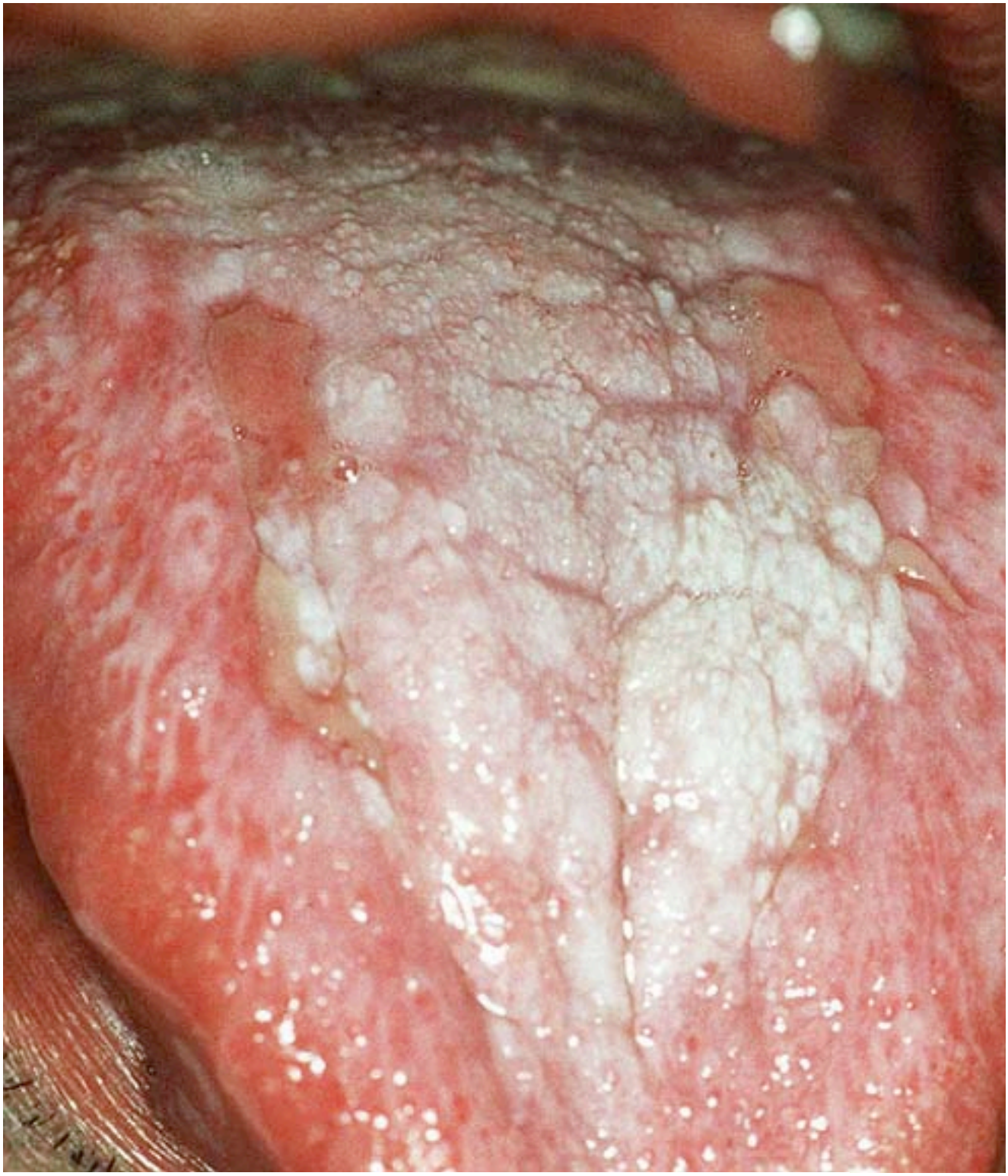

Ulcerative oral lichen planus on the dorsum of the tongue.

Pathophysiology

Current data suggest that oral lichen planus is a T-cell–mediated autoimmune disease in which autocytotoxic $CD8^+$ T cells trigger apoptosis of oral epithelial cells.[1,2]

The dense sub-epithelial mononuclear infiltrate in oral lichen planus is composed of T cells and macrophages, and there are increased numbers of intra-epithelial T cells. Most T cells in the epithelium and adjacent to the damaged basal keratinocytes are activated $CD8^+$ lymphocytes. Therefore, early in the formation of oral lichen planus lesions, $CD8^+$ T cells may recognize an antigen associated with the major histocompatibility complex (MHC) class I on keratinocytes. After antigen recognition and activation, $CD8^+$ cytotoxic T cells may trigger keratinocyte apoptosis. Activated $CD8^+$ T cells (and possibly keratinocytes) may release cytokines that attract additional lymphocytes into the developing lesion.[2]

Oral lichen planus lesions contain increased levels of the cytokine tumor necrosis factor (TNF)–alpha.[3,4] Basal keratinocytes and T cells in the subepithelial infiltrate express TNF in situ.[5,6] Keratinocytes and lymphocytes in cutaneous lichen planus express elevated levels of the p55 TNF receptor, TNF-RI.[7] T cells in oral lichen planus contain mRNA for TNF and secrete TNF in vitro.[8] Serum and salivary TNF levels are elevated in oral lichen planus patients.[9,10,11,12] TNF polymorphisms have been identified in patients with oral lichen planus, and they may contribute to the development of additional cutaneous lesions.[13] Oral lichen planus has been treated successfully with thalidomide,[14,15], while thalidomide is known to suppress TNF production.[16,17] Together, these data implicate TNF in the pathogenesis of oral lichen planus.

The lichen planus antigen is unknown, although it may be a self-peptide (or altered self-peptide), in which case lichen planus would be a true autoimmune disease. The role of autoimmunity in the pathogenesis is supported by many autoimmune features of oral lichen planus, including its chronicity, onset in adults, predilection for females, association with other autoimmune diseases, occasional tissue-type associations, depressed immune suppressor activity in patients with oral lichen planus, and the presence of autocytotoxic T-cell clones in lichen planus lesions. The expression or unmasking of the lichen planus antigen may be induced by drugs (lichenoid drug reaction), contact allergens in dental restorative materials alvato da Windows Internet Explorer 8> Subject: Oral Lichen Planus: [Print] - eMedicine Dermatology Date: Fri, 4 Sep 2009 01:44:20 +0200 MIME-Version: 1.0 Content-Type: multipart/related; type="text/html"; boundary="----=_NextPart_000_00BD_01CA2D01.38EEC5F0" X-MimeOLE: Produced By Microsoft MimeOLE V6.00.2900.5579 This is a multi-part message in MIME format. ------=_NextPart_000_00BD_01CA2D01.38EEC5F0 Content-Type: text/html; charset="Windows-1252" Content-Transfer-Encoding: quoted-printable Content-Location: http://emedicine.medscape.com/article/1078327-print

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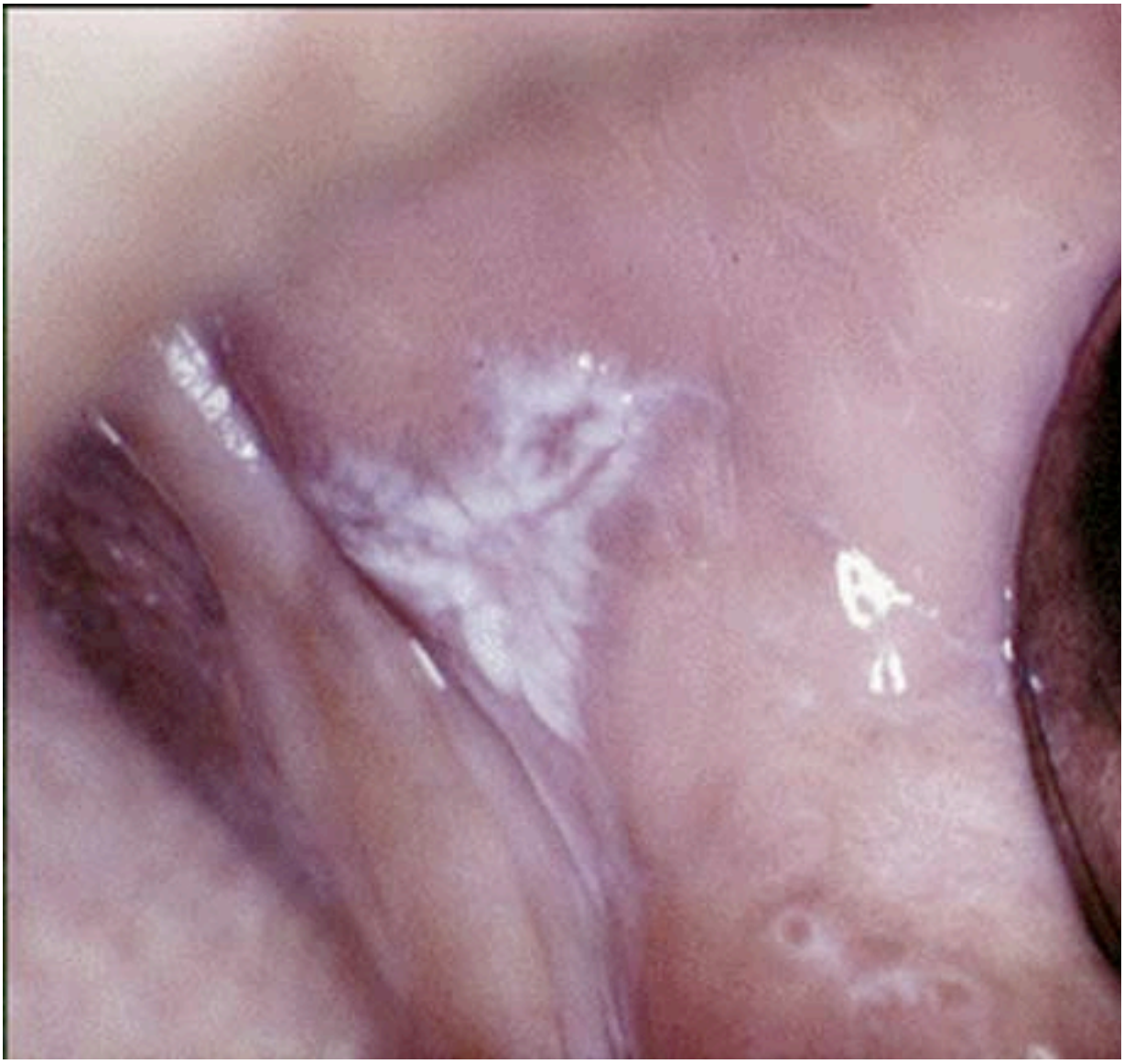

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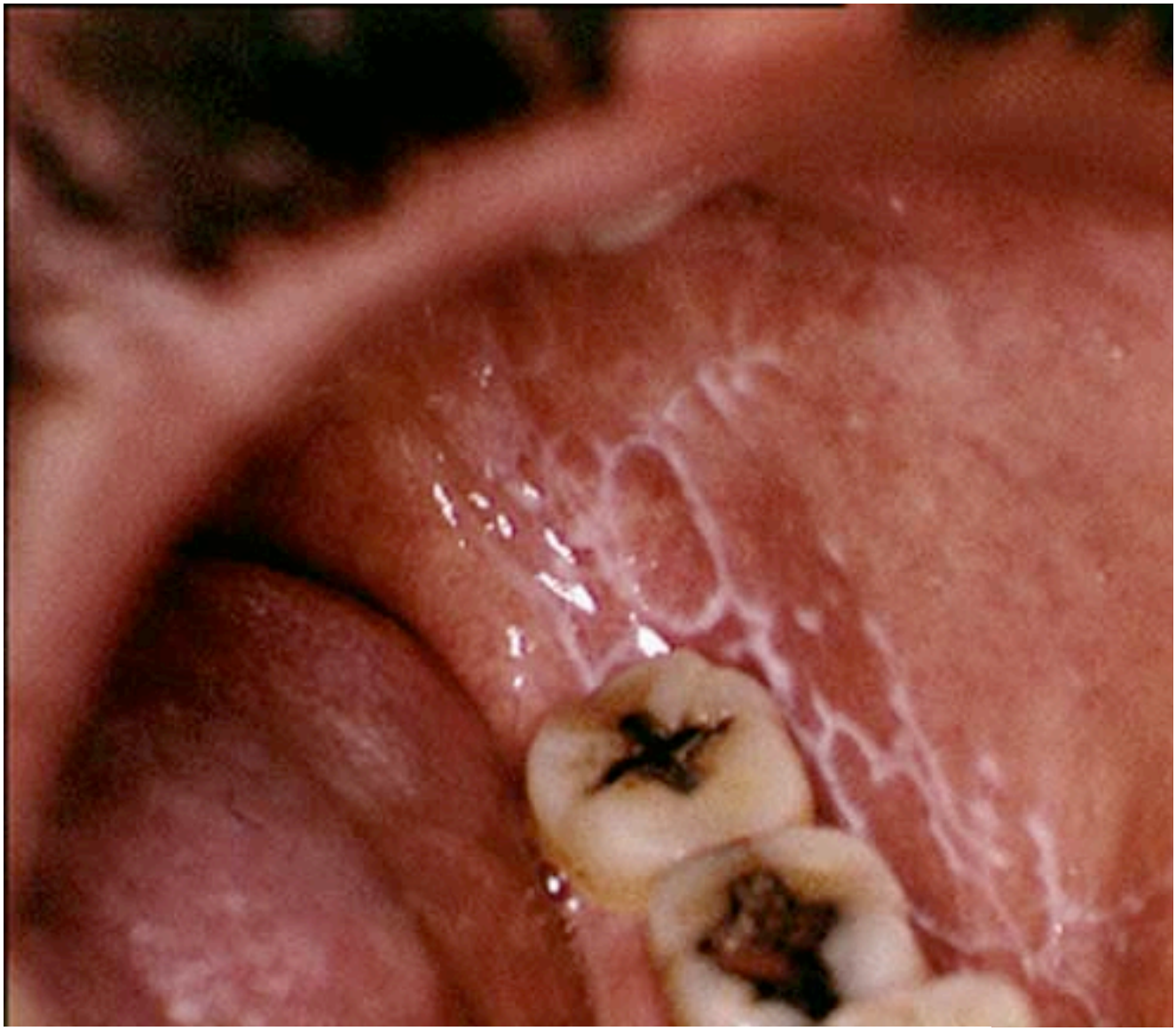

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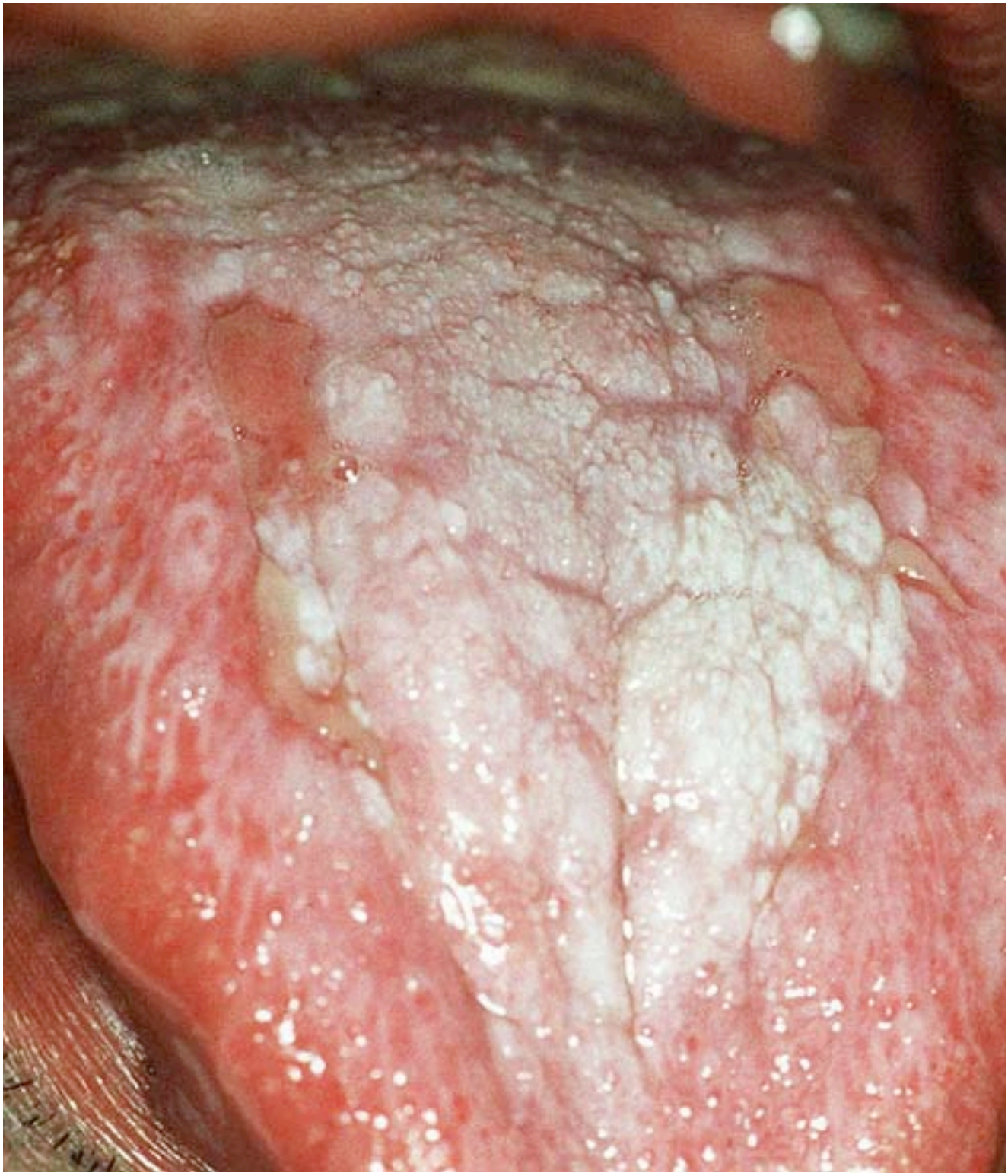

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The lichen planus antigen is unknown, although it may be a self-peptide (or altered self-peptide), in which case lichen planus would be a true autoimmune disease. The role of autoimmunity in the pathogenesis is supported by many autoimmune features of oral lichen planus, including its chronicity, onset in adults, predilection for females, association with other autoimmune diseases, occasional tissue-type associations, depressed immune suppressor activity in patients with oral lichen planus, and the presence of autocytotoxic T-cell clones in lichen planus lesions. The expression or unmasking of the lichen planus antigen may be induced by drugs (lichenoid drug reaction), contact allergens in dental restorative materials or toothpastes (contact hypersensitivity reaction), mechanical trauma (Koebner phenomenon), viral infection, or other unidentified agents.[18,19,20]

Frequency

United States

The prevalence of oral lichen planus in the United States is unknown.

International

Oral lichen planus affects approximately 1-2% of the general adult population, although the prevalence of the disease is unknown in many areas.[21] Oral lichen planus is a common noninfectious oral mucosal disorder among adult patients who attend oral pathology and oral medicine clinics.

Mortality/Morbidity

- Oral squamous cell carcinoma (SCC) developed in fewer than 5% of patients with oral lichen planus who did not use tobacco (see Complications).[22,23,24] Also see Cancers of the Oral Muscosa.
- Patients with atrophic (erythematous) or erosive (ulcerative) disease commonly have significant local morbidity.

Race

Oral lichen planus affects all racial groups.

Sex

The female-to-male ratio for oral lichen planus is 1.4:1.

Age

Oral lichen planus predominantly occurs in adults older than 40 years, although younger adults and children can be affected.

Clinical

History

The clinical history of oral lichen planus and oral lichenoid lesions varies. Complete history taking and physical examination by a dermatologist may be required in patients with extra-oral symptoms or signs associated with oral lichen planus.[25]

Lichen planus may arise in patients with other immunologically mediated disorders, including alopecia areata, dermatomyositis, lichen sclerosis et atrophicus, morphea, myasthenia gravis, primary biliary cirrhosis, ulcerative colitis, and vitiligo.

- In many patients, the onset of oral lichen planus is insidious, and patients are unaware of their oral condition. In such instances, the referring medical or dental practitioner identifies the clinical changes in the oral mucosa.
- Some patients report a roughness of the lining of the mouth, sensitivity of the oral mucosa to hot or spicy foods or oral hygiene products, painful oral mucosa, sore gums, red or white patches on the oral mucosa, red gums, or oral ulcerations.
- Approximately two thirds of patients with oral lichen planus report oral discomfort, especially in association with atrophic and erosive lesions.
    - Erythematous and erosive lesions are often sensitive or painful.
    - Symptoms vary from mucosal sensitivity to continuous debilitating pain.
- Oral mucosal lichenoid lesions may occur after the administration of systemic drugs such as nonsteroidal anti-inflammatory drugs (NSAIDs), sulfonylureas, antimalarials, beta-blockers, and some angiotensin-converting enzyme (ACE) inhibitors. The period between the commencement of the drug therapy and the clinical appearance of oral lichen planus–like disease varies.
- In rare cases, oral mucosal lichenoid lesions occur after a dental restoration is performed or after the patient starts using a denture; the lag period varies. Patients with an associated allergy to metals or components of the appliance should be evaluated by means of patch testing.[26]
- Up to 44% of patients with oral lichen planus develop coincident skin lesions. Conversely, more that 70% of patients with cutaneous lichen planus develop coincident oral lichen planus.
- The genitals are involved in as many as 25% of women with oral lichen planus, compared with only 2-4% of men with oral lichen planus.
    - The features are similar to those of the oral lesions.
    - Patients do not often complain of pain or pruritus, although on questioning, they may admit to such symptoms.
- In patients with oral lichen planus, scalp involvement (lichen planopilaris) is rare.
- Nail involvement in patients with oral lichen planus is uncommon.
- In a small group of patients, lichen planus may involve the esophagus.

Physical

Pertinent physical findings in oral lichen planus are limited to the oral mucosa. Some patients present with coincident lesions on the skin, scalp, nails, genital mucosa, esophageal mucosa, larynx, and conjunctivae. Complete history taking and physical examination by a dermatologist may be required in patients with extra-oral symptoms or signs associated with oral lichen planus.[25]

Patients with reticular lesions are often asymptomatic, whereas those with atrophic (erythematous) or erosive (ulcerative) disease commonly have significant local morbidity. The oral pain is variable and exacerbated by trauma and foods, particularly those that are hot, spicy, or acidic.

- Oral mucosal lesions are variable and present as white striations (Wickham striae), white papules, white plaques, erythema (mucosal atrophy), erosions (shallow ulcers), or blisters.

    - The lesions predominantly affect the buccal mucosa, tongue, and gingivae, although other oral sites are occasionally involved.
    - The lesions are usually bilateral.
    - The lesions may appear as a mixture of clinical subtypes. For example, white streaks and gray streaks may form a linear or reticular pattern on an erythematous background. Alternatively, a central area of shallow ulceration (erosion) may have a yellowish surface (fibrinous exudate) surrounded by an area of erythema.
    - In most patients, telltale white striations or papules are evident on the buccal mucosa or on the lateral margin of the tongue, either alone or in combination with other lesions.
    - Gingival lesions commonly appear with a fiery red erythema that affects the entire width of the attached gingiva, a condition previously called desquamative gingivitis.
    - In patients predisposed to pigmentation, oral lichen planus lesions may be associated with patchy brown melanin deposits in the oral mucosa (inflammatory melanosis).
- Oral lichen planus lesions usually persist for many years with periods of exacerbation and quiescence.
    - During periods of exacerbation, the area of erythema or erosion increases, with increased pain and sensitivity.
    - During periods of quiescence, the area of erythema or erosion decreases, with decreased pain and sensitivity. Patients are often unaware of quiescent oral lichen planus, which may manifest as faint white striations, papules, or plaques.
    - Exacerbations of oral lichen planus have been linked to periods of psychological stress and anxiety.
- Lichenoid drug reactions have the same clinical features as those of idiopathic oral lichen planus.
    - Lichenoid disease may be unilateral and associated with circulating epithelial antinuclear antibodies, but few data support this possibility.
    - Rarely, lichenoid reactions of the oral mucosa occur on the oral mucosa in contact with (or close to) an amalgam or composite resin dental restoration, or a denture component.
    - Mechanical trauma (the Koebner phenomenon) may exacerbate lichenoid lesions, especially when it affects the midline of the buccal mucosa or the lateral margin of the tongue.
- Up to 44% of patients with oral lichen planus develop coincident skin lesions. These typically appear as pruritic, flat-topped, violaceous papules and plaques that predominantly affect the flexor aspects of the wrists or ankles, the extensor aspects of the lower legs, the skin of the lower central part of the back, and the natal cleft.
- The genitals are involved in as many as 25% of women with oral lichen planus, compared with only 2-4% of men with oral lichen planus. The features are similar to those of oral lesions.
- Nail involvement causes pitting, subungual hyperkeratosis, longitudinal melanonychia, onychorrhexis (longitudinal ridging and grooving), onychoschizia (distal splitting), and onycholysis (separation of the nail plate from the nail bed). Permanent damage to the nail matrix results in the formation of a pterygium (raised central ridge) and permanent nail loss (anonychia).
- Scalp involvement (lichen planopilaris) causes follicular and perifollicular violaceous scaly pruritic papules, follicular plugging, bottlebrush hair formation (multiple hair shafts emerging from a single follicular orifice), and atrophic scarring with permanent patchy hair loss.
- Rarely, laryngeal, esophageal, and conjunctival involvement occur.

Causes

Current data suggest that oral lichen planus is a T-cell–mediated autoimmune disease in which autocytotoxic $CD8^+$ T cells trigger the apoptosis of oral epithelial cells. However, the precise cause of oral lichen planus is unknown.

Reported associations between oral lichen planus and systemic diseases may be coincidental, because (1) oral lichen planus is relatively common, (2) oral lichen planus occurs predominantly in older adults, and (3) many drugs used in the treatment of systemic diseases trigger the development of oral lichenoid lesions as an adverse effect.

In many patients, a cause for the oral lichenoid lesions cannot be identified; in these patients, the disease is called idiopathic oral lichen planus.

- Oral lichenoid drug reactions may be triggered by systemic drugs including NSAIDs, beta-blockers, sulfonylureas, some ACE inhibitors, and some antimalarials. In patients with oral lichenoid lesions, be alert for any systemic drug as a cause.

- Oral lichenoid contact-sensitivity reactions may be triggered by contact allergens including dental amalgam composite resin, and toothpaste flavorings, especially cinnamates. Skin patch testing may help in identifying contact allergens (see Other Tests). If an allergy is detected, lesions may heal when the offending material is removed.
- Oral lichenoid lesions may be triggered by mechanical trauma (Koebner phenomenon) due to calculus deposits, sharp teeth, rough surfaces of dental restorations or prostheses, cheek or tongue biting, and oral surgical procedures. Scale any teeth associated with oral lichen planus lesions to remove calculus deposits and reduce sharp edges. Dental restorations and prostheses that are associated with oral lichen planus lesions should be mirror-polished.
- Some studies have revealed viral infections in oral lichen planus, including those due to human papillomavirus (HPV-6, 11, 16, or 18) and human herpesvirus 6. A causal role for viral infection in oral lichen planus has not been identified.
- Some studies show an increased incidence of *C albicans* infection in oral lichen planus. A causal role for *C albicans* infection in oral lichen planus has not been identified.
- Some study findings suggest an association between oral lichen planus and chronic hepatic diseases such as hepatitis C virus (HCV) infection, autoimmune chronic active hepatitis, and primary biliary cirrhosis.[27,28]
    - This association probably reflects the geographic distribution of HCV disease and lichenoid reactions to various drug therapies (eg, interferon alpha for HCV disease, penicillamine for primary biliary cirrhosis).
    - Oral lichen planus is associated with HCV infection and liver disease in parts of Japan and southern Europe. An association between oral lichen planus and HCV infection has not been detected in British, French, German, Scandinavian, or American patients.
- Oral lichenoid lesions may arise in people who habitually chew betel quid. A causal role for betel quid in oral lichen planus has not been identified.
- Oral lichenoid lesions are part of the spectrum of chronic graft-versus-host disease that occurs after allogeneic hemopoietic stem cell transplantation.
- No consistent association with human leukocyte antigen (HLA) is reported in oral lichen planus. This finding suggests that the patient's genetic background does not play a critical role in oral lichen planus pathogenesis.
- Exacerbations of oral lichen planus have been linked to periods of psychological stress and anxiety.
- Little evidence supports a connection between diabetes mellitus and oral lichen planus. The oral lichenoid lesion in Grinspan syndrome (triad of oral lichen planus, diabetes mellitus, and hypertension) is probably an adverse effect of the drug therapy for diabetes mellitus and hypertension.

Differential Diagnoses

Dermatitis Herpetiformis

Graft Versus Host Disease

Linear IgA Dermatosis

Oral Manifestations of Autoimmune Blistering Diseases

Pemphigus Vulgaris

Squamous Cell Carcinoma

Other Problems to Be Considered

Lichenoid drug reaction

Lichenoid contact sensitivity reaction

Reactive keratosis

Mucous membrane pemphigoid

Oral Crohn disease

Anemic states

Epithelial dysplasia

Hepatitis C infection

Chronic hepatic disease

Workup

Laboratory Studies

- The history, typical oral lesions, and skin involvement are usually sufficient to diagnose oral lichen planus (OLP), though laboratory studies and biopsy may be required (see Procedures).
- Direct immunofluorescence testing can help in distinguishing erosive or the rare bullous oral lichen planus from pemphigus vulgaris, benign mucous membrane pemphigoid, dermatitis herpetiformis, and linear immunoglobulin A (IgA) disease. However, oral lichen planus has no specific features at direct or indirect immunofluorescence testing.
- Some studies show an increased incidence of *C albicans* infection in patients with oral lichen planus.
    - Periodic acid-Schiff (PAS) staining of biopsy specimens and candidal cultures or smears may be performed. However, these tests may be of limited clinical value because oral *C albicans* is present in more than 70% of the population.
    - The presence of *C albicans* and the oral load of this organism do not aid either the diagnosis or the treatment of oral lichen planus.

Other Tests

- Skin patch testing may be helpful in identifying a contact allergy in some patients with oral lichen planus.[26]
    - The current recommendation is to use a standard series; a dental prosthesis series; and a metal salt series that includes gold, mercury, and palladium salts as well as other salts of metals used in dental restorations.
    - Late readings, or those obtained at 10 and 17 days after the application of the skin patch, may be required.
    - The most common allergy is related to mercury contained in amalgam restorations. Compared with patients with lesions in other locations, patients with lesions near the amalgam restoration have a higher rate of positive patch test results to mercury. When the amalgam restorations are removed, patients with a positive result have a higher remission rates (47-100% depending on the study) than that of patients without this positive result.
- Although the assessment of hepatic function in the treatment of otherwise healthy southern European and Japanese patients with oral lichen planus may be warranted, similar screening in British and American patients appears to be of limited benefit. Formal studies are still ongoing. Consider hepatic biochemical testing only when patients have proven oral lichen planus and suspected liver disease.

Procedures

- Biopsy may be required to exclude malignancy or to differentiate between oral lichen planus and other white or chronic ulcerative oral lesions, including reactive keratoses, chronic hyperplastic candidosis, epithelial dysplasia, discoid lupus erythematosus, gastrointestinal disease (including oral Crohn disease), and anemic states.

Histologic Findings

Histopathologic examination of lesional tissue is the most relevant investigation in cases of oral lichen planus.

Consistent findings include a bandlike subepithelial mononuclear infiltrate consisting of T cells and histiocytes, increased numbers of intraepithelial T cells, and degenerating basal keratinocytes that form colloid (Civatte, hyaline, cytoid) bodies, which appear as homogenous eosinophilic globules. Variable findings include parakeratosis, acanthosis, and sawtooth rete pegs.

Degeneration of the basal keratinocytes and disruption of the anchoring elements of the epithelial basement membrane and basal keratinocytes (eg, hemidesmosomes, filaments, fibrils) weakens the epithelial-connective tissue interface. As a result, histologic clefts (ie, Max-Joseph spaces) may form, and blisters on the oral mucosa (bullous lichen planus) may be seen at clinical examination. B cells and plasma cells are uncommon findings.

Immunoglobulin or complement deposits are not a consistent feature of oral lichen planus. In some instances, fibrinogen and fibrin are deposited in a linear pattern in the basement membrane zone. Colloid bodies contain fibrin, immunoglobulin M (IgM), C3, C4, and keratin. Laminin and fibronectin staining may be absent in areas of heavy fibrin deposition and colloid body formation. This finding suggests basement membrane damage in these areas.

In oral lichen planus, electron microscopy is used principally as a research tool. The ultrastructure of the colloid bodies suggests that they are apoptotic keratinocytes, and recent studies using the end-labeling method revealed DNA fragmentation in these cells. Electron microscopy shows breaks, branches, and duplications of the epithelial basement membrane in oral lichen planus.

Treatment

Medical Care

Medical treatment of oral lichen planus (OLP) is essential for the management of painful, erythematous, erosive, or bullous lesions. The principal aims of current oral lichen planus therapy are the resolution of painful symptoms, the resolution of oral mucosal lesions, the reduction of the risk of oral cancer, and the maintenance of good oral hygiene. In patients with recurrent painful disease, another goal is the prolongation of their symptom-free intervals.[29,30,31]

The main concerns with the current therapies are the local and systemic adverse effects and lesion recurrence after treatment is withdrawn. No treatment of oral lichen planus is curative.

- Eliminate local exacerbating factors.
    - Treat any sharp teeth or broken restorations or prostheses that are likely to cause physical trauma to areas of erythema or erosion by using conventional dental means. Scale the teeth to remove calculous deposits and reduce sharp edges.
    - If the patient has an isolated plaquelike or erosive oral lichen planus lesion on the buccal or labial mucosa adjacent to a dental restoration, and if an allergy is detected by means of skin patch testing, the lesion may heal if the offending material is removed or replaced. (However, most lichenoid lesions adjacent to dental restorations are asymptomatic.)
- If systemic drug therapy (eg, treatment with NSAIDs, antimalarials, or beta-blockers) is suspected as the cause of oral lichenoid lesions, changing to another drug may be worthwhile. This change must be undertaken only by the patient's attending physician. However, the switch rarely resolves the erosions, and almost never resolves the white patches of oral lichen planus.
- Inform all patients with oral lichen planus about their slightly increased risk of oral SCC (the most common of all oral malignancies).
    - As with all patients, advise those with oral lichen planus that this risk may be reduced by eliminating tobacco and alcohol consumption and by consuming a diet rich in fresh fruits and vegetables, among other measures (see Complications).
    - Erosive and atrophic lesions can be converted into reticular lesions by using topical steroids. Therefore, the elimination of mucosal erythema and ulceration, with a residual asymptomatic reticular or papular lesions, may be considered an end point of current oral lichen planus therapy. With respect to plaque lesions, the effect of treatment on the risk of oral cancer is unclear.

Consultations

A specialist in oral pathology or a dermatologist typically makes the primary diagnosis of oral lichen planus.

- Opinions may be sought from the following specialists if patients have relevant signs or symptoms:
    - Dermatologist - For the diagnosis, treatment, and review of skin, nail, genital, and scalp lesions
    - Otolaryngologist - For the diagnosis, treatment, and review of laryngeal and esophageal lesions
    - Ophthalmologist - For the diagnosis, treatment, and review of conjunctival lesions
    - Gynecologist - For the diagnosis, treatment, and review of vulval and vaginal lesions
- Because exacerbations of oral lichen planus have been linked to periods of stress and anxiety, a psychological assessment might or might not be beneficial in some patients with oral lichen planus. However, objective data to support this link is limited.

Diet

- Patients with oral lichen planus have a slightly increased risk of oral SCC, although the precise risk of oral cancer in patients with oral lichen planus is unknown. Advise patients with oral lichen planus that a diet rich in fresh fruit and vegetables may help reduce the risk of oral SCC.

Activity

- Advise patients with oral lichen planus to do the following:
    - Eliminate smoking and alcohol consumption.
    - Eat a nutritious diet, including fresh fruit and vegetables, because this may help reduce the risk of oral cancer.
    - Pay attention when symptoms are exacerbated or when lesions change.
    - Be aware of the need for regular re-examination and repeat lesion biopsy, especially if clinical changes in the lesion occur.
- Although oral lichen planus does not increase the risk of dental caries or gingival disease, painful oral lichen planus lesions (particularly those on the gums) can limit the patient's ability to maintain good oral hygiene. Therefore, advise all patients with oral lichen planus of the appropriate methods of oral hygiene and to see their dentists often.

Medication

Topical corticosteroids are the mainstay of medical treatment of oral lichen planus, although rarely, corticosteroids may be administered intralesionally or systemically. Some topical corticosteroid therapies may predispose the patient to oral pseudomembranous candidosis. However, this condition is rarely if ever symptomatic, and it generally does not complicate healing of the erosions related to oral lichen planus. Topical antimycotics (eg, nystatin, amphotericin) may be prescribed either empirically if concern about candidal infection exists or when an infection is present.Erosive oral lichen planus that is recalcitrant to topical corticosteroids may respond to topical tacrolimus. Other potential therapies for recalcitrant oral lichen planus include hydroxychloroquine, azathioprine, mycophenolate, dapsone, systemic corticosteroids, and topical and systemic retinoids.

Corticosteroids

These agents are used to treat painful, erythematous, or erosive oral lichen planus lesions.

Betamethasone (Celestone, Soluspan)

Decreases inflammation by suppressing migration of polymorphonuclear leukocytes and reversing increased capillary permeability. Affects the production of lymphokines and has an inhibitory effect on the Langerhans cells.

Dosing

Adult

0.5-mg tab dissolved in 10-15 mL water, used as a mouth rinse for 1 min tid/qid until erythema or erosion resolves

Pediatric

Not established

Interactions

Coadministration with estrogens may decrease clearance; when used with digoxin, digitalis toxicity secondary to hypokalemia may increase; phenobarbital, phenytoin, and rifampin may increase the metabolism of glucocorticoids (consider increasing maintenance dose); monitor for hypokalemia with coadministration of diuretics; coadministration with ritonavir may significantly increase serum concentrations of prednisone; concomitant therapy with montelukast may result in severe peripheral edema; clarithromycin may increase risk of psychotic symptoms
Postmarketing surveillance reports indicate that risk of tendon rupture may be increased in patients receiving concomitant fluoroquinolones and corticosteroids, especially elderly patients; administration of asparaginase concurrently with or before prednisone therapy may result in increased toxicity

Contraindications

Documented hypersensitivity; viral, fungal, tubercular skin, or connective tissue infections; peptic ulcer disease; hepatic dysfunction

Precautions

Pregnancy

C - Fetal risk revealed in studies in animals but not established or not studied in humans; may use if benefits outweigh risk to fetus

Precautions

May cause or worsen perioral dermatitis, rosacea, acne, striae, telangiectasis, and cutaneous atrophy; may cause adverse systemic effects if used over large areas, denuded areas, on occlusive dressings, or during prolonged treatment; caution in hypertension and diabetes mellitus; increases risk of multiple complications, including severe infections; monitor adrenal insufficiency when tapering (abrupt discontinuation of glucocorticoids can cause adrenal crisis); hyperglycemia, edema, osteonecrosis, myopathy, peptic ulcer disease, hypokalemia, osteoporosis, euphoria, psychosis, myasthenia gravis, growth suppression, and infections are possible complications of glucocorticoid use
May unmask hypertension or diabetes or exacerbate peptic ulcer disease and tuberculosis; long-term sequelae associated with long-term steroid use include osteoporosis, cataracts, and pituitary-hypothalamic axis suppression; with high doses, patients may develop a steroid psychosis and are at increased risk of infections, particularly when oral steroids are used in conjunction with other immunosuppressants; frequently monitor patient's blood sugar level, blood pressure, and weight; monitor for Cushing syndrome

Fluocinolone (Synalar, Synalar-HP, Fluonid)

Medium potency. Use 0.01% or 0.025% cream, gel, or ointment with or without Orabase. Inhibits cell proliferation, is immunosuppressive, antiproliferative, and anti-inflammatory.

Dosing

Adult

Apply thin layer to surface of erythema or erosions tid/qid until they resolve

Pediatric

Not established

Interactions

Coadministration with estrogens may decrease clearance; when used with digoxin, digitalis toxicity secondary to hypokalemia may increase; phenobarbital, phenytoin, and rifampin may increase the metabolism of glucocorticoids (consider increasing maintenance dose); monitor for hypokalemia with coadministration of diuretics; coadministration with ritonavir may significantly increase serum concentrations of prednisone; concomitant therapy with montelukast may result in severe peripheral edema; clarithromycin may increase risk of psychotic symptoms
Postmarketing surveillance reports indicate that risk of tendon rupture may be increased in patients receiving concomitant fluoroquinolones and corticosteroids, especially elderly patients; administration of asparaginase concurrently with or before prednisone therapy may result in increased toxicity

Contraindications

Documented hypersensitivity; viral, fungal, tubercular skin, or connective tissue infections; peptic ulcer disease; hepatic dysfunction

Precautions

Pregnancy

C - Fetal risk revealed in studies in animals but not established or not studied in humans; may use if benefits outweigh risk to fetus

Precautions

Caution in hypertension and diabetes mellitus; may cause adverse systemic effects if used over large areas, denuded areas, on occlusive dressings, or during prolonged treatment
May unmask hypertension or diabetes or exacerbate peptic ulcer disease and tuberculosis; long-term sequelae associated with long-term steroid use include osteoporosis, cataracts, and pituitary-hypothalamic axis suppression; with high doses, patients may develop a steroid psychosis and are at increased risk of infections, particularly when oral steroids are used in conjunction with other immunosuppressants; frequently monitor patient's blood sugar level, blood pressure, and weight; monitor for Cushing syndrome

Clobetasol (Cormax, Olux, Temovate)

High potency. Use 0.05% ointment, gel, or cream with or without Orabase. Class I superpotent topical steroid. Suppresses mitosis and increases synthesis of proteins that decrease inflammation and cause vasoconstriction. Ointment is recommended for intraoral use. Most pharmacists mix 15 g of clobetasol with 15 g of Orabase; this mixture should be indicated on the prescription.

Dosing

Adult

Apply thin layer to surface of erythema or erosions tid/qid until they resolve

Pediatric

Not established

Interactions

Coadministration with estrogens may decrease clearance; when used with digoxin, digitalis toxicity secondary to hypokalemia may increase; phenobarbital, phenytoin, and rifampin may increase the metabolism of glucocorticoids (consider increasing maintenance dose); monitor for hypokalemia with coadministration of diuretics; coadministration with ritonavir may significantly increase serum concentrations of prednisone; concomitant therapy with montelukast may result in severe peripheral edema; clarithromycin may increase risk of psychotic symptoms
Postmarketing surveillance reports indicate that risk of tendon rupture may be increased in patients receiving concomitant fluoroquinolones and corticosteroids, especially elderly patients; administration of asparaginase concurrently with or before prednisone therapy may result in increased toxicity

Contraindications

Documented hypersensitivity; viral, fungal, tubercular skin, or connective tissue infections; peptic ulcer disease; hepatic dysfunction

Precautions

Pregnancy

C - Fetal risk revealed in studies in animals but not established or not studied in humans; may use if benefits outweigh risk to fetus

Precautions

Caution in hypertension and diabetes mellitus; prolonged use, application over large surface areas, application of potent steroids, and use of occlusive dressings may increase systemic absorption of corticosteroids
May unmask hypertension or diabetes or exacerbate peptic ulcer disease and tuberculosis; long-term sequelae associated with long-term steroid use include osteoporosis, cataracts, and pituitary-hypothalamic axis suppression; with high doses, patients may develop a steroid psychosis and are at increased risk of infections, particularly when oral steroids are used in conjunction with other immunosuppressants; frequently monitor patient's blood sugar level, blood pressure, and weight; monitor for Cushing syndrome

Beclomethasone (Beclovent, Vanceril)

Corticosteroid inhalant typically used to treat asthma. Use MDI with 50 mcg per puff. Direct inhaler to sites of greatest erythema or erosion.

Dosing

Adult

MDI: Up to 8 puffs/d

Pediatric

Not established

Interactions

Coadministration with estrogens may decrease clearance; when used with digoxin, digitalis toxicity secondary to hypokalemia may increase; phenobarbital, phenytoin, and rifampin may increase the metabolism of glucocorticoids (consider increasing maintenance dose); monitor for hypokalemia with coadministration of diuretics; coadministration with ritonavir may significantly increase serum concentrations of prednisone; concomitant therapy with montelukast may result in severe peripheral edema; clarithromycin may increase risk of psychotic symptoms

Postmarketing surveillance reports indicate that risk of tendon rupture may be increased in patients receiving concomitant fluoroquinolones and corticosteroids, especially elderly patients; administration of asparaginase concurrently with or before prednisone therapy may result in increased toxicity

Contraindications

Documented hypersensitivity; bronchospasm; status asthmaticus; other acute episodes of asthma; bacterial, viral, or fungal infection; viral, fungal, tubercular skin, or connective tissue infections; peptic ulcer disease; hepatic dysfunction

Precautions

Pregnancy

C - Fetal risk revealed in studies in animals but not established or not studied in humans; may use if benefits outweigh risk to fetus

Precautions

May cause adverse systemic effects with prolonged treatment or if used over large areas, denuded areas, or with occlusive dressings
May unmask hypertension or diabetes or exacerbate peptic ulcer disease and tuberculosis; long-term sequelae associated with long-term steroid use include osteoporosis, cataracts, and pituitary-hypothalamic axis suppression; with high doses, patients may develop a steroid psychosis and are at increased risk of infections, particularly when oral steroids are used in conjunction with other immunosuppressants; frequently monitor patient's blood sugar level, blood pressure, and weight; monitor for Cushing syndrome

Triamcinolone (Amcort, Aristocort, Aristospan)

Medium potency. Use 0.1% triamcinolone acetonide in 1% carboxy cellulose for dental paste. Alternately, use 0.1% cream in Orabase or alone as a cream, ointment, or suspension for intralesional administration.

Dosing

Adult

Topical: Apply to sites of painful erythema or erosion as often qid
Injection: 5 mg/mL intralesional injection q3-4wk until resolution

Pediatric

Not established

Interactions

Coadministration with estrogens may decrease clearance; when used with digoxin, digitalis toxicity secondary to hypokalemia may increase; phenobarbital, phenytoin, and rifampin may increase the metabolism of glucocorticoids (consider increasing maintenance dose); monitor for hypokalemia with coadministration of diuretics; coadministration with ritonavir may significantly increase serum concentrations of prednisone; concomitant therapy with montelukast may result in severe peripheral edema; clarithromycin may increase risk of psychotic symptoms
Postmarketing surveillance reports indicate that risk of tendon rupture may be increased in patients receiving concomitant fluoroquinolones and

corticosteroids, especially elderly patients; administration of asparaginase concurrently with or before prednisone therapy may result in increased toxicity

Contraindications

Documented hypersensitivity; bacterial, viral, and fungal skin infections; do not use in decreased skin circulation

Precautions

Pregnancy

C - Fetal risk revealed in studies in animals but not established or not studied in humans; may use if benefits outweigh risk to fetus

Precautions

Prolonged use, application over large areas, and use of potent steroids and occlusive dressings may result in systemic absorption, which can lead to Cushing syndrome, reversible HPA-axis suppression, hyperglycemia, or glycosuria
May unmask hypertension or diabetes or exacerbate peptic ulcer disease and tuberculosis; long-term sequelae associated with long-term steroid use include osteoporosis, cataracts, and pituitary-hypothalamic axis suppression; with high doses, patients may develop a steroid psychosis and are at increased risk of infections, particularly when oral steroids are used in conjunction with other immunosuppressants; frequently monitor patient's blood sugar level, blood pressure, and weight; monitor for Cushing syndrome

Prednisolone (Delta-Cortef, Prednisol TBA injection)

Systemic therapy. Decreases inflammation by suppressing migration of polymorphonuclear leukocytes and by reducing capillary permeability.

Dosing

Adult

0.5-2 mg/kg/d PO/IV/IM; slowly taper as condition improves; single morning dose safer for long-term use; discontinue if no response within 3 wk

Pediatric

Administer as in adults

Interactions

Coadministration with estrogens may decrease clearance; when used with digoxin, digitalis toxicity secondary to hypokalemia may increase; phenobarbital, phenytoin, and rifampin may increase the metabolism of glucocorticoids (consider increasing maintenance dose); monitor for hypokalemia with coadministration of diuretics; coadministration with ritonavir may significantly increase serum concentrations of prednisone; concomitant therapy with prednisone and montelukast may result in severe peripheral edema; clarithromycin may increase risk of psychotic symptoms

Contraindications

Documented hypersensitivity; viral, fungal, tubercular skin, or connective-tissue infections; peptic ulcer disease; hepatic dysfunction

Precautions

Pregnancy

C - Fetal risk revealed in studies in animals but not established or not studied in humans; may use if benefits outweigh risk to fetus

Precautions

May unmask hypertension or diabetes or exacerbate peptic ulcer disease and tuberculosis; long-term sequelae associated with long-term steroid use include osteoporosis, cataracts, and pituitary-hypothalamic axis suppression; with high doses, patients may develop a steroid psychosis and are at increased risk of infections, particularly when oral steroids are used in conjunction with other immunosuppressants; frequently monitor patient's blood sugar level, blood pressure, and weight; monitor for Cushing syndrome

Immunosuppressants

These agents are used for painful, erythematous, or erosive oral lichen planus that is recalcitrant to topical corticosteroids.

Azathioprine (Imuran)

Antagonizes purine metabolism. Inhibits synthesis of DNA, RNA, and proteins. May decrease proliferation of immune cells, resulting in lower autoimmune activity.

Dosing

Adult

1 mg/kg/d PO for 6-8 wk; increase by 0.5 mg/kg q4wk until response or dose reaches 2.5 mg/kg if serum thiopurine methyl transferase (TPMT) level >19 U, 1.5 mg/kg/d if TPMT level 13.7-19 U, or 0.5 mg/kg/d if TPMT level 5-13.6 U

Pediatric

Initial: 2-5 mg/kg/d PO/IV
Maintenance: 1-2 mg/kg/d PO/IV

Interactions

Toxicity increases with allopurinol; concurrent use with ACE inhibitors may induce severe leukopenia; may increase levels of methotrexate metabolites and decrease effects of anticoagulants, neuromuscular blockers, and cyclosporine; coadministration with mycophenolate may increase toxicity; alfalfa, black Cohosh, and echinacea may reduce immunosuppressive drug effectiveness

Contraindications

Documented hypersensitivity; deficiency of thiopurine methyltransferase (can result in severe myelosuppression and leukopenia); history of treatment with alkylating agents

Precautions

Pregnancy

D - Fetal risk shown in humans; use only if benefits outweigh risk to fetus

Precautions

Increases risk of neoplasia; caution with liver disease and renal impairment; hematologic toxicities may occur; hepatotoxicity and pancreatitis reported

Follow-up

Further Outpatient Care

- Re-examine patients with oral lichen planus (OLP) every month during active treatment, and monitor lesions for reduction in mucosal erythema and ulceration and alleviation of symptoms.
    - Continue active treatment and try alternative therapies until erythema, ulceration, and symptoms are controlled.
    - Follow up with patients with oral lichen planus at least every 6 months.
- Advise patients with oral lichen planus to pay attention to when symptoms are exacerbated or when lesions change. Such changes generally indicate a phase of increased erythematous or erosive disease.
- In view of the potential association of oral lichen planus with oral SCC, an appropriate specialist should follow up with the patients every 6-12 months. In addition, advise patients to regularly examine their mouths and seek the help of a specialist if persistent red or ulcerative oral mucosal lesions develop.
- Candidal cultures or smears may be obtained periodically.
    - Infections can be controlled with topical antimycotic preparations.
    - These tests may be of limited clinical value because oral *C albicans* is present in at least 70% of all healthy persons.

Deterrence/Prevention

- Patients with oral lichen planus may have a slightly increased risk of oral cancer, although the precise risk is unknown.
- The risk of oral cancer in patients with oral lichen planus may be reduced by means of the following:
    - Elimination of smoking and alcohol consumption
    - Effective treatment of atrophic, erosive, and plaque oral lichen planus lesions
    - Consumption of a nutritious diet including fresh fruit and vegetables
    - Elimination of *C albicans* superinfection
    - Clinical examination with any exacerbation of symptoms or change in lesion presentation
    - Regular clinical examination and repeat biopsy as required. Oral brush biopsy can be used to limit the number of scalpel biopsies (see Oral Brush Biopsy with Computer-Assisted Analysis). The frequency of brush biopsy for oral lichen planus patient follow-up has not been established. However, if the clinical features of the lesions change, scalpel biopsy should be repeated.

Complications

- Oral lichen planus and its treatment may predispose people to oral *C albicans* superinfection.
- Patients with oral lichen planus may have a slightly increased risk of oral cancer, which they may be able to reduce (see Deterrence/Prevention).
- Oral SCC in patients with oral lichen planus is a feared complication and a controversial issue.
    - In retrospective studies, fewer than 5% of patients with oral lichen planus who were not using tobacco products developed oral SCC.
    - Atrophic, erosive, and plaque lesions may be at greater risk of malignant change, although SCC may arise in the unaffected oral mucosa as well.

    - The most important risk factors of oral SCC remain the concomitant use of alcohol and tobacco products. Any additive effect of oral lichen planus is difficult to detect in patients who use both.
- Proposed reasons for the increased risk of oral SCC in patients with oral lichen planus include the following:
    - Compared with healthy mucosa, the oral mucosa affected by oral lichen planus may be more sensitive to *C albicans* and to the exogenous mutagens found in tobacco, alcohol, and betel quid.
    - In patients with oral lichen planus, the chronic inflammatory response and the simultaneous healing response of epithelial wounds may increase the likelihood of cancer-forming gene mutations.
- Guidelines fromthe National Collaborating Centre for Primary Care, Referral guidelines for suspected cancer in adults and children,[32] may be of interest.

Prognosis

- Oral lichen planus is a chronic inflammatory disease.
    - The lesions of cutaneous lichen planus typically resolve within 1-2 years, whereas the lesions of oral lichen planus are long lasting and persist for 20 years or longer.
    - Resolution of the white striations, plaques, or papules is rare.
    - Symptomatic oral lichen planus (ie, atrophic or erosive disease) characteristically waxes and wanes, although the associated white patches do not resolve.
- Current immunosuppressive therapies usually control oral mucosal erythema, ulceration, and symptoms in patients with oral lichen planus with minimal adverse effects. However, a range of therapies may need to be tried.
- Advise patients that oral lichen planus lesions may persist for many years with periods of exacerbation and quiescence.
- Follow up patients with oral lichen planus at least every 6 months for clinical examination and repeat biopsy as required, although patients should be advised to seek medical care whenever the symptoms are exacerbated or the presentation of the lesions change.
- In the context of appropriate medical care, the prognosis for most patients with oral lichen planus is excellent.

Patient Education

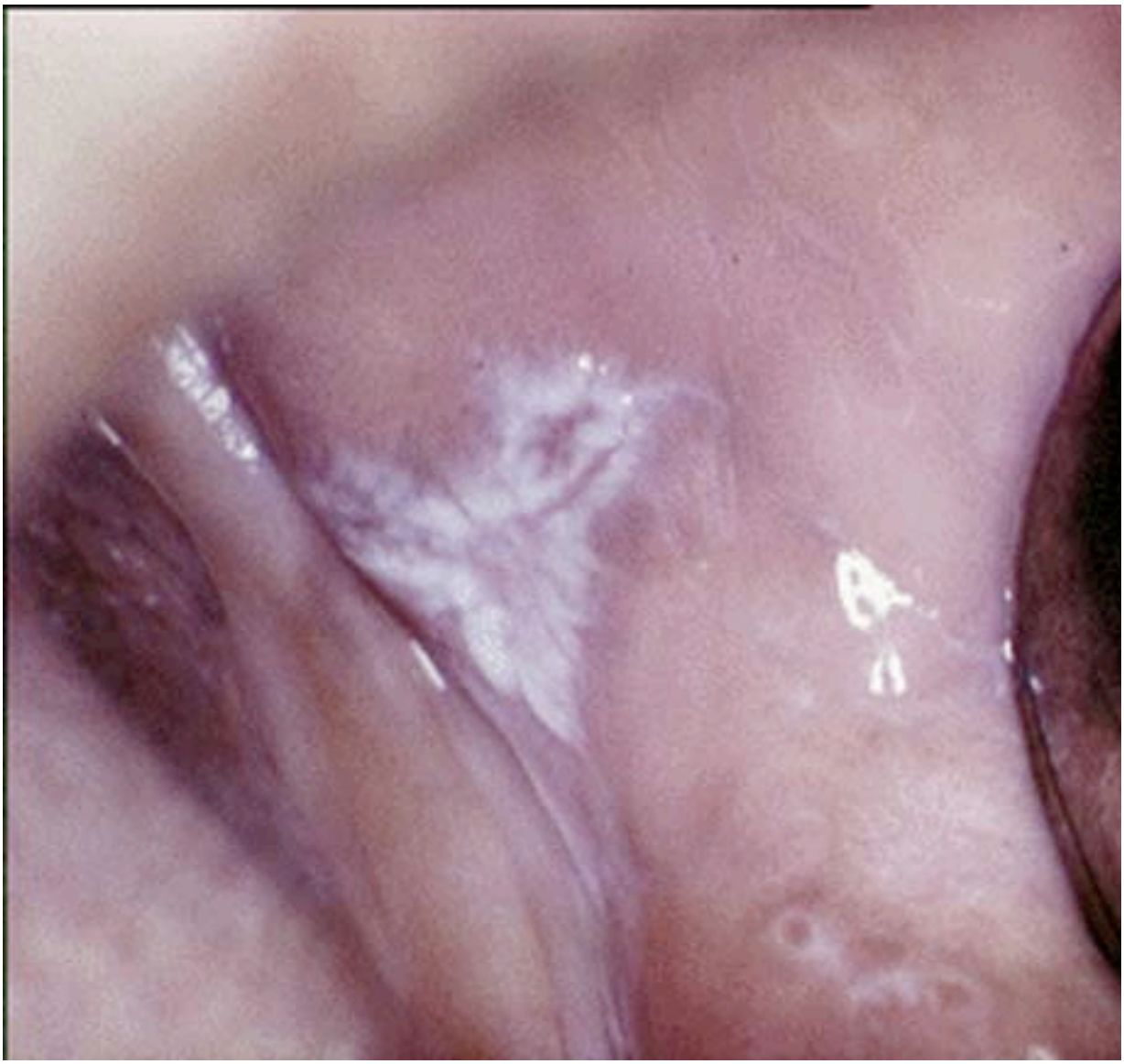
- Patient education is important. Many patients with oral lichen planus are concerned about the possibilities of its malignancy and contagiousness. Many patients are frustrated by the lack of available patient education concerning oral lichen planus.[33]
- Inform patients with oral lichen planus of the following:
    - The chronicity of oral lichen planus and the expected periods of exacerbation and quiescence
    - The aims of treatment, specifically the elimination of mucosal erythema, ulceration, pain, and sensitivity
    - The lack of large randomized controlled therapeutic clinical trials
    - The possibility that several treatments may need to be tried
    - The potentially increased risk of oral cancer
    - The possibility of reducing the risk of oral cancer (see Complications)
- Information about oral lichen planus is currently available online. For instance, an oral lichen planus chat room is available at the homepage of the International Lichen Planus Support Group Web.
- For excellent patient education resources, visit eMedicine's Cancer and Tumors Center. Also, see eMedicine's patient education article Cancer of the Mouth and Throat.

Miscellaneous

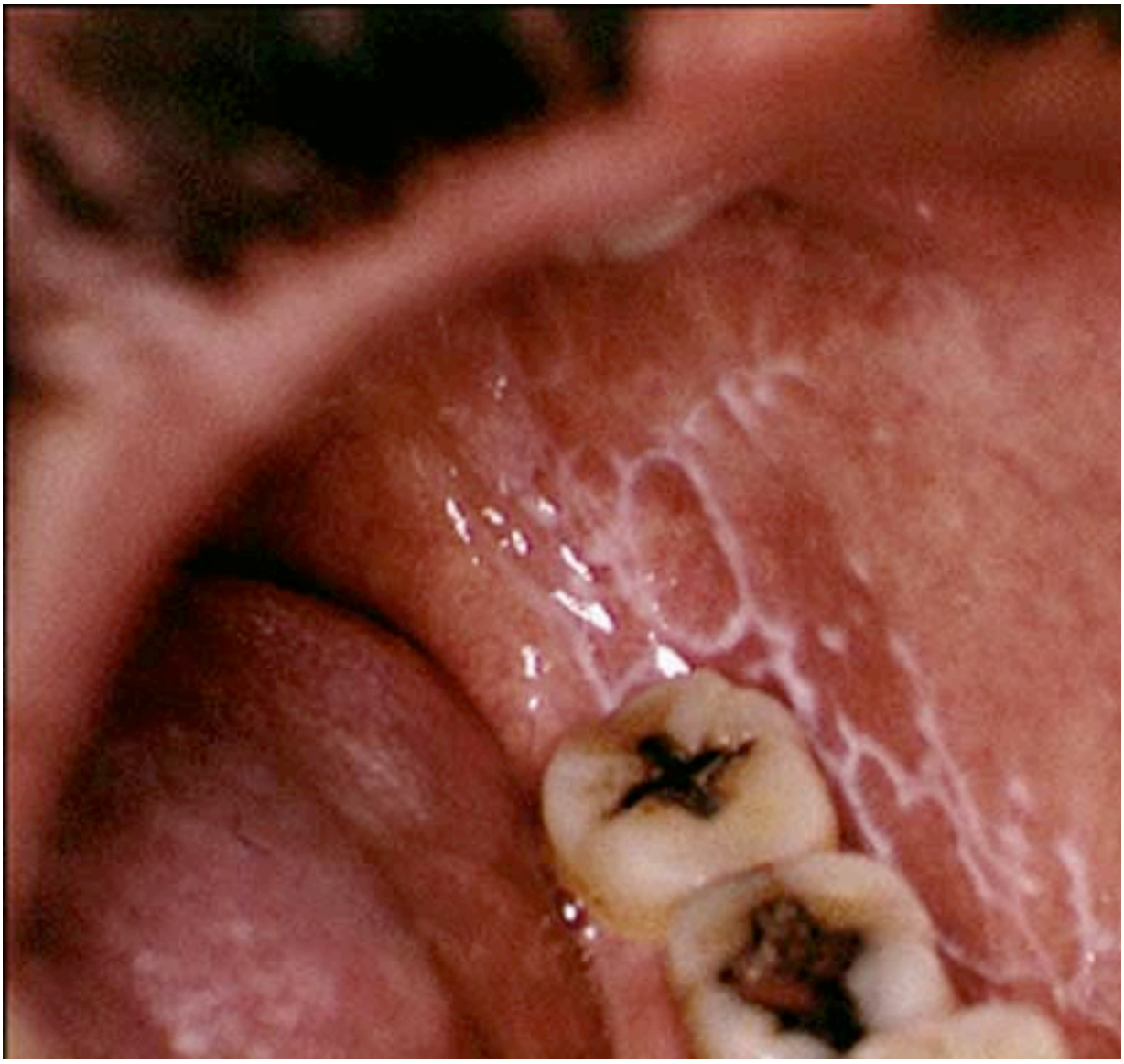
Medicolegal Pitfalls

- Be alert for the use of any systemic drug in patients with oral lichenoid lesions, because it may be a cause.
- Patients with oral lichen planus may have a slightly increased risk of oral cancer, although the precise risk of oral cancer in patients with oral lichen planus is unknown. Any risk of oral cancer in patients with oral lichen planus may be reduced (see Patient Education).

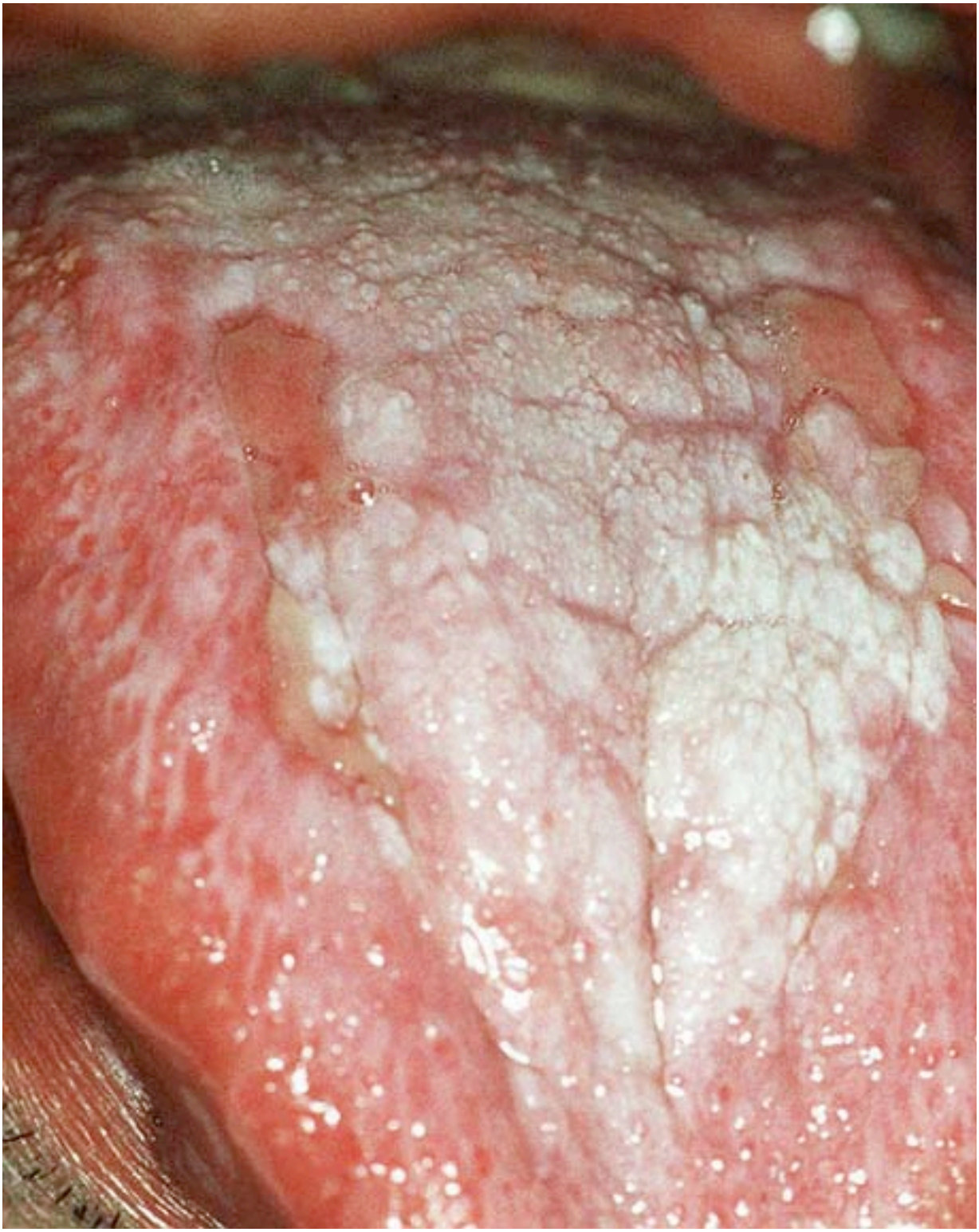
Multimedia



Media file 1: Plaquelike oral lichen planus on the buccal mucosa on the left side.



Media file 2: Reticular oral lichen planus on the buccal mucosa on the left side.



Media file 3: Ulcerative oral lichen planus on the dorsum of the tongue.

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