Management of Erythematous Oral Lesions

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Overview

Many conditions can cause oral erythema, including localized trauma, infection, contact allergy, cancer, and other causes of inflammatory changes, as well as systemic diseases such as those that produce vesiculoerosive lesions or oral ulceration. For purposes of this discussion, which involves therapy for oral erythematous lesions, the presented conditions are arbitrarily divided into the following categories: local infection, contact allergy, oral cancer, and localized vesiculoerosive and ulcerative disease.[1, 2, 3, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12]

This article focuses on dental management of oral erythema, but, in cases of systemic disease, a more comprehensive medical approach to therapy is necessary. For a complete description of each condition discussed in this article, including etiology, epidemiology, signs and symptoms, and diagnosis, the reader is encouraged to assess the published literature.

The general rationale for dental treatment of oral erythematous lesions is to relieve symptoms, to prevent problems that arise from the disease (eg, secondary infection, tissue morbidity), and to support the patient's general health.[13]

For all the conditions listed below, home care should be an integral component of therapy and should include recommendations for fluid and nutritional support, adequate rest, and over-the-counter (OTC) or prescribed pain control. In cases involving severe disease or worsening symptoms in the face of initial intervention, medical referral and comanagement should be recommended, with patient follow-up by appointment or phone to prevent potential systemic complications or morbidity due to patient noncompliance or other patient reasons for a lack of follow-up.

Local Infection

Localized infection is a common cause of erythematous and ulcerative oral lesions. The most common organisms responsible for oral infection include viruses, fungi and yeast, and bacteria. The following sections discuss the management of the most commonly observed oral infections.[14]

Viral Infection

The most common viral oral infections include primary herpetic gingivostomatitis, recurrent intraoral herpes simplex virus (HSV) infection, recurrent herpes labialis, primary herpes varicella, and herpangina. All are characterized by early vesicle formation, rupture, and ulceration associated with the oral mucosa. These infections might also cause regional lymphadenitis, fever, and malaise.

Viral infections are typically self-limiting, but more serious complications can cause difficulties with recovery (eg, herpes simplex encephalitis, viral meningitis). A secondary form of the condition involves reactivation of latent virus residing in the sensory ganglion of the trigeminal nerve.[15]

Primary HSV-1 (or HSV-2) infection

Treatment of HSV-1 infection should include assurance, information, caution regarding infectivity (eg, avoiding nail biting to reduce herpetic whitlow and/or touching of the lesions and then the eye to prevent corneal infection, oral sexual activity that might transmit the infection), and supportive care.

Instructions for home care can include gargling with cold water or sucking on popsicles. Hot beverages and spicy, salty, or citrus foods should be avoided, as they tend to aggravate pain. The application of a thin paste of baking soda and water can also help to shield lesions.

Several other coating agents and topical anesthetics can help to soothe inflamed tissue. When topical anesthetics are prescribed, the patient should be cautioned regarding potential aspiration secondary to a reduced gag reflex. Topical agents are listed in Table 1.

Table 1. Topical Agents (Open Table in a new window)

Oropharyngeal Anesthetic	Dispensing Instructions	Patient Instructions
Diphenhydramine syrup (Benadryl elixir [OTC]) 12.5 mg/5 mL	4-oz bottle	Rinse mouth with 1 teaspoonful for 2 minutes before each meal and spit out
Diphenhydramine syrup (OTC) 4 oz **with** bismuth subsalicylate (Kaopectate [OTC]) 4 oz to make a 50% mixture of each by volume May substitute magnesium hydroxide/aluminum hydroxide (Maalox [OTC]) or sucralfate suspension for bismuth subsalicylate	8 oz	Rinse mouth with 1 teaspoonful every 2 hours and spit out
Lidocaine/prilocaine (EMLA) 5% cream	30-g tube	Apply EMLA cream to lesions before each meal
Benzocaine 20% gel - 0.2 mL on a cotton swab applied to specific lesions for 60 seconds	30-mL bottle	Apply the gel to the lesions before each meal
Lidocaine 2% gel	30-mL tube	Apply the gel to the lesions before each meal

Additional information can be found in Topical Anesthesia.[16]

Adverse effects caused by topical anesthetics are rare if these medications are used judiciously. However, systemic effects can result from rapid absorption, hypersensitivity, or some type of idiosyncrasy to the prescribed medication. The most likely effects include CNS excitation or depression, cardiovascular manifestations, and allergic reactions that may be localized or anaphylactoid in nature.[16, 17, 18]

In patients with severe oral involvement that prevents eating, a nutritional supplement should be recommended. Meritene and Ensure Plus are protein, vitamin, and mineral food supplements that can be purchased over the

counter. They are flavored and palatable, and 3 servings should be taken each day with their preparation, per package labeling.[19]

Antiviral medications are not recommended for management of primary herpetic stomatitis because the condition is self-limiting in immunocompetent individuals; in addition, the risk of resistance is a potential problem.[20] However, studies suggest that frequently occurring secondary (ie, recurrent) lesions may be suppressed successfully with administration of valacyclovir 500 mg/day PO over a 4-month period.[21]

The current FDA recommendation is that systemic acyclovir or valacyclovir be used only in the treatment of recurrent HSV-1 stomatitis episodes in the immunocompromised patient. A systematic review of 17 randomized controlled studies suggests that acyclovir is equally efficacious as valacyclovir in treating HSV infections.[22, 23]

Oral pain associated with HSV-1 infection is typically moderate to severe. Acetaminophen 325 mg with codeine may help in reducing its severity. Medication combinations containing aspirin should be avoided in children.

Recurrent lip lesions, precipitated by sun exposure, may be prevented by high-SPF sunscreen application.

Varicella zoster (shingles)

This condition presents in the head region in approximately 20% of infectious cases. Intraoral lesions arise from reactivation of the herpes varicella virus, which resides in the trigeminal nervous system. The effect can be ulceration of the oral mucosa within the distribution of the involved nerve branch of the trigeminal system, sometimes without dermal involvement.

Because individuals older than 60 years are prone to postherpetic neuralgia, prompt referral for medical management is necessary. Subsequent medical intervention is likely to involve antiviral therapy and high-dose corticosteroid prophylaxis. These patients can also be helped by the same topical and analgesic measures described for management of HSV-1 infection (see Table 1).[24]

A herpes zoster vaccine (Zostavax) is approved for adults aged 50 years or older for prevention and was found to significantly reduce the risk of developing zoster when compared with placebo.

Fungal Infection

The predominant fungal organism that causes oral infection is *Candida albicans,* although in the immunocompromised individual, other candidal species (eg, *Candida tropicalis, Candida glabrata, Candida krusei*) have been identified by culture. This yeastlike fungus is opportunistic and proliferates when normal oral homeostasis is altered via the use of antibiotics, corticosteroids, or cytotoxic drugs or as a consequence of conditions such as diabetes, xerostomia, or immunosuppression.

Erythematous candidiasis is characterized by generalized tissue erythema and pain. When present on the tongue, the condition has been termed median rhomboid glossitis or central papillary atrophy. When generalized, it has been termed denture stomatitis or chronic atrophic candidiasis.[25]

Dental treatment of this condition should include instructions for disinfection of any removable oral prostheses with antifungal denture-soaking solutions and the application of antifungal powder or creams on the contacting surfaces of the appliance to prevent potential reinfection. In patients with dry mouth, xylitol chewing gum or candy should be recommended to stimulate flow. Products that improve night (sleep) dryness may also be useful (eg, Xylimelts).

Antifungal medications found to be useful in treating oral candidiasis includes nystatin, imidazoles (eg, clotrimazole, miconazole, ketoconazole), and triazoles (eg, fluconazole). The table below details dosage considerations for a number of these medications.[26, 27, 19]

Oropharyngeal antifungal agents should be taken for 10-14 days.

Table 2. Antifungal Agents Useful in Treating Oral Candidiasis (Open Table in a new window)

Antifungals	Brand Name	Dosage		Potential Complications/Issues
		Dispensing Instructions	Patient Instructions	
Nystatin oral	Mycostatin,	240 mL	1 tsp tid - rinse for 2	The bottle should be shaken well before

suspension 500,000 U/tsp	Nilstat, Nystex		minutes and swallow	use. Nystatin suspension contains sugar, so good oral hygiene is important. It can also be used as a disinfectant for acrylic prostheses. Complications: allergy and GI effects
Nystatin ointment		15-g tube	Apply thin coat to denture and affected area after each meal	
Nystatin topical powder		15 g	Apply to dentures/prostheses after each meal and after cleaning the appliance	
Ketoconazole cream 2%	Nizoral	15-g tube	Apply to the affected area once daily at bedtime	Absorption reduced in the presence of antacid medications
Clotrimazole vaginal cream 1% (OTC)*	Gyne-Lotrimin, Mycelex-G	One tube	Apply to denture and to involved oral mucosa qid	Efficacy demonstrated from case studies; oral use somewhat controversial; sugar content minimal
Miconazole nitrate vaginal cream 2% (OTC)*	Monistat Vaginal Cream	One tube	Apply to denture and to involved oral mucosa qid	Efficacy demonstrated from case studies; oral use somewhat controversial; sugar content minimal
Clotrimazole troches 10 mg	Mycelex	70 troches	Dissolve one troche in the mouth 5 times a day. Do not chew	Sugar content high; may not be tolerated in patients with dry mouth; use increases coverage over time
Nystatin Pastilles – 200,000 U	Mycostatin Pastilles	70 pastilles	Dissolve one pastille in the mouth 5 times a day. Do not chew	Not systemically absorbed; pregnant or breastfeeding patients should consult their physician prior to use
*Antifungal vaginal creams are less likely to cause irritation to mucosal membranes.				

Systemic antifungal agents can be prescribed when topical agents are ineffective or impractical. They are well tolerated but should be used with caution in patients with impaired liver function. Best practices include pretreatment liver function testing and monthly reassessment if ketoconazole or itraconazole is prescribed over a prolonged period. Consultation with the patient's physician is recommended prior to treatment of chronic disease.[28, 29]

Table 3. Systemic Antifungal Agents (Open Table in a new window)

Generic Drug	Brand Name	Dosage		Potential Complications/Issues
		Dispensing Instructions	Patient Instructions	
Miconazole buccal tablet 50 mg	Oravig	15 tabs	Apply 1 buccal tab to gum region once daily	Do not use if patient has milk protein allergy; do not chew, crush, or swallow; may cause nausea or diarrhea
Ketoconazole	Nizoral	14 tabs	Take one	Should not be taken with buffering medications or

tablets 200 mg			tablet daily with a meal or orange juice	stomach acid blockers; the FDA does not recommend this drug as initial treatment for oral candidiasis; strong CYP3A4 inhibitor (check for potential interactions with concurrent systemic drugs) terfenadine has been reported
Fluconazole tablets 100 mg	Diflucan	15 tabs	Two tablets initially then one tablet daily	Excellent for long-term management (immunocompromised patients); possible resistance; interactions with phenytoin, warfarin, and sulfonylureas
Itraconazole tablets 100 mg	Sporanox	28 tabs	Take one tablet bid with a meal or orange juice	Should not be taken with buffering medications or stomach acid blockers
Amphotericin B oral suspension 100 mg/mL	Fungizone	48 mL	1 mL (tsp) qid; swish for 3-4 minutes with swallow	Risk of kidney toxicity

Bacterial Infection

Most serious oral bacterial infections should be managed by medical infectious disease personnel. Bacterial infections common to the oral cavity include streptococcal tonsillitis and pharyngitis, group A beta-hemolytic streptococci (Scarlet fever), diphtheria, primary syphilis, tuberculosis, and cancrum oris (noma). The best management a dentist can provide in these cases is a prompt diagnosis and referral.

The most common oral disease caused by bacteria is periodontal disease. The National Institute of Dental and Craniofacial Research and the CDC offer some useful treatment guidelines on their Web sites.[30, 31] The classic dental management of periodontal disease has included removal of local factors (eg, plaque, calculus), diet and behavior modification, and surgical intervention.

Antibiotic prophylaxis has been studied as an adjunct to nonsurgical debridement. The research to date suggests that systemic amoxicillin and metronidazole are effective in reducing the signs and symptoms of periodontal disease.[32] However, long-term use is discouraged because of potential adverse effects and the development of resistance.

Several strategies have been proposed to reduce the risk of resistance, including prescribing two drugs with synergistic or complementary effects, using high-dose antibiotics over a brief period, combining antibiotic with debridement, and using antibiotic in a therapeutic versus prophylactic strategy. A number of additional new drugs and strategies are currently being studied that may further improve dental treatment of periodontal disease.

These new discoveries include the lipid mediators of inflammation (called lipoxins) and eicosapentaenoic acid– and docosahexaenoic acid–derived chemical mediators (called resolvins and protectins). It has been suggested that these new inflammatory modulators are poised to initiate a paradigm shift in the pharmacological management of periodontal diseases.[33]

Another condition involving oral erythema is pyogenic granuloma. Dental treatment of this condition and its cousin, peripheral giant cell granuloma, both common exophytic erythematous lesions that are nonneoplastic, is surgical. They are believed to arise from local irritation or trauma. The often large gingival lesions must be excised down to periosteum to effect cure. Both tumors can recur (for pyogenic granuloma, this is especially true if they are removed during pregnancy), and re-excision may be necessary.[34]

Another bacterial infection that a dentist may be called upon to co-manage is necrotizing stomatitis associated with HIV infection. The lesions associated with this condition typically respond quickly to topical and systemic glucocorticosteroid therapy coupled with systemic antibiotics.[35]

Contact Allergy

The treatment of an allergic contact stomatitis (stomatitis venenata) should be initiated with removal of the

offending allergen. This might include removal of a dental restorative metal, implant, or amalgam. Topical anesthetics such as dyclonine HCL and a corticosteroid such as fluocinonide gel or dexamethasone elixir coupled with an antihistamine are helpful for chronic inflammation associated with allergy. Foods such as nuts, mango, or spices such as cinnamon should be eliminated from the diet if they are suspected as the cause of an allergic stomatitis.[36]

If a drug is identified as a cause of an erythematosus-like or pemphigus-like drug reaction involving the oral mucosa, the patient should be cautioned regarding continued use. Unless there is a chance of an anaphylactic reaction from continued drug use, the patient should not be advised to immediately discontinue an offending drug until medical consultation.

Geographic tongue (erythema migrans) is considered in this section with contact allergy, even though the etiopathogenesis is unknown, because there is some (albeit limited) evidence that the condition might represent a hypersensitivity reaction to an unknown environmental factor. Lesions that are not painful do not need treatment. In general, the management of symptomatic geographic tongue is based on empirical evidence rather than randomized controlled trials. In patients with severe symptoms, pain management can be problematic. Topical corticosteroids such as fluocinonide gel applied 4 times per day may reduce symptoms.

A recent case study suggests that tacrolimus ointment may also be effective treatment.[37] The results of this case are potentially significant because, in a recent systematic review of studies assessing the efficacy of tacrolimus ointment in the treatment of atopic dermatitis, it was found that the drug was as effective as corticosteroid in reducing symptoms.[38] Antihistamine rinses have also been suggested as treatment.[39] Another recent case study suggests that refractory cases may be responsive to cyclosporine (cyclosporin microemulsion pre-concentrate, 3 mg/kg/day for initial intervention with a reduction to 1.5 mg/kg/day for maintenance).[40]

Aphthous Stomatitis

Three forms of aphthous stomatitis characterized by oral ulceration with bordering erythema have been described: minor aphthae, major aphthae, and herpetiform ulcers. Once systemic disease as a cause of ulceration has been ruled out (eg, anemia; diabetes mellitus; periodic fever, aphthous stomatitis, pharyngitis, and adenitis syndrome [PFAPA); inflammatory bowel disease; immunosuppressive disease), medication management of aphthous stomatitis remains largely empirically based and includes topical or systemic corticosteroids and/or immunosuppressant drugs.[41]

Since aphthous stomatitis can also be caused by trauma, any potential dental source of irritation should be corrected. Other precipitating factors such as stress and food allergy should be considered and, if determined to be causative, altered by stress-relieving strategies or dietary restriction.[42]

A number of topical treatment strategies for suppressing developed lesions have been studied and found to be effective in reducing lesion duration and pain. However, they do not alter the frequency of recurrences or maintain remission. Application of a dissolving gum-based patch containing glycyrrhiza complex herbal extract has been found to be effective in reducing lesion duration and pain.[43] A paste containing *Myrtus communis* (Myrtle) also demonstrated an effect on lesion size and pain severity in patients with aphthous lesions.[44] In addition, in a randomized, double-blind, placebo-controlled trial, a mouthwash containing *Rosa damascene* extract also demonstrated efficacy in the treatment of recurrent aphthous stomatitis.[45]

Few drugs have been found to reduce the frequency and severity of reoccurring aphthous stomatitis. However, two studies assessing this potential show promise. The potential efficacy of drugs used in the treatment of gastritis and peptic ulcers on aphthous stomatitis lesions associated with Behçet disease was assessed, with promising results. In one study, irsogladine (investigational PDE-4 inhibitor) was prescribed at 2-4 mg/day was found to be effective in reducing ulcer count and preventing recurrence.[46]

In a second study (randomized, double-blind, placebo-controlled), rebamipide (investigational guinolinone derivative) was delivered at 300 mg/day to 35 patients with Behçet disease. It was found that rebamipide was well tolerated, reduced the aphthous lesion count, and improved pain. There were no specific adverse drug reactions.[47]

Recurrent aphthous stomatitis has been associated with reduced dietary intake of vitamin B-12 and folate.[48] However vitamin B-12 as a cause of aphthous stomatitis remains controversial. Nonetheless, vitamin B-12 supplementation has also been found to reduce recurrence of aphthous lesions, even in the absence of clinical

deficiency.[49, 50]

Immunomodulating medications such as the tetracyclines, amlexanox (Aphthasol), and sirolimus, when applied topically, have an anti-inflammatory action that appears to reduce the severity of aphthous ulceration.[51] Application of a tetracycline may also reduce secondary infection, which can complicate healing and increase pain.

The following list of topical steroids can be mixed with equal parts of Orabase to increase the time that the medication is held against the mucosa. It is also useful to lightly dry the mucosa prior to application. Table 4 lists these topics steroids in order of strength.

Table 4. Topical Steroids Used to Treat Aphthous Stomatitis (in Order of Strength) (Open Table in a new window)

Topical Steroid	Brand Name	Dosage	Patient Instructions
Triamcinolone acetonide	Kenalog in Orabase	0.1%	Apply small amount sparingly after each meal and at bedtime
Fluocinonide	Lidex gel Lidex ointment	0.05% 0.05%	Apply small amount sparingly after each meal and at bedtime
Clobetasol propionate	Temovate gel Temovate ointment	0.05% 0.05%	Apply small amount sparingly after each meal and at bedtime for 3 days
Dexamethasone	Decadron elixir	0.5 mg/5 mL	Rinse with 1 tsp (5 mL) for 3-4 minutes qid and spit out For severe cases, 320 mL is prescribed with 15 mL qid and swallow for 3 days; 5 mL qid and swallow for 3 days; 5 mL qid for 3 days (with instructions to swallow every other day); then 5 mL qid with spitting out until mouth is comfortable
Methylprednisolone	Medrol Dosepak	4 mg/tablet	Follow instructions on pack for initial dosage and then gradually taper dose

With use of steroids the patient should be monitored carefully for candidiasis, with appropriate antifungal therapy instituted if a yeast infection is identified.

Recurrent debilitating aphthous stomatitis may need to be managed with prednisone delivered systemically at higher doses than supplied by a Medrol Dosepak. This option should be considered only by experienced clinicians in cooperation with the patient's physician. Azathioprine (Imuran) is a prednisone-sparing agent that can be prescribed concomitantly with steroids, but, if this course of therapy is considered, a baseline CBC count and liver enzyme panel should be acquired prior to initiation of treatment. In addition, additional preventive management for candidiasis should be considered during use of the above medications.

Aphthous stomatitis occurring with HIV has also been medically managed with thalidomide when topical steroids are ineffective.[52, 52, 53, 54] Oral colchicine has also been combined with oral dapsone and oral thalidomide as therapy for HIV-associated aphthous stomatitis.

Oral Cancer

Oral surgical management of squamous cell carcinoma is determined by the clinical stage of the disease. Small lesions identified by biopsy as squamous cell carcinoma that are without nodal involvement can be surgically excised by an oral or maxillofacial surgeon using a wide-margin technique. The treatment of large lesions or lesions with nodal involvement is more complicated. Patients with extensive involvement therefore need to be referred so that they can receive comprehensive management by an oncologist, ENT surgeon, and oral (maxillofacial) surgeon, as intervention can include surgery, radiation, and/or chemotherapy, and there may be need for oral reconstruction.

Head and neck radiotherapy and chemotherapy can directly impact the oral mucosa and components within saliva, as well as salivary flow leading to oral mucositis. Oral mucositis can also follow chemotherapeutic intervention for non-oral cancer. The conditions that may develop from treatment of oral and nonoral cancer include cheilitis, gingivitis, herpetic gingivostomatitis, oral mucositis, oral candidiasis, periodontitis, and mucosal ulceration.[55]

Recent evidence suggests that the incidence of oral mucositis varies depending on the type of chemotherapeutic agent used and the type of cancer treated.[56] The authors of this prospective questionnaire study assessed 227 patients receiving chemotherapy for head and neck cancer, esophageal cancer, colorectal cancer, breast cancer, and malignant lymphomas. They found that the incidence of oral mucositis was highest with breast cancer (76.5%), followed by head and neck cancer (67.7%), colorectal cancer (63%), esophageal cancer (57.8%), and malignant lymphoma (42.9%).

High-risk regimens for oral mucositis include docetaxel/cisplatin/fluorouracil (TPF), fluorouracil/irinotecan/leucovorin (FOLFIRI), cyclophosphamide/doxorubicin/fluorouracil (CAF), cyclophosphamide/doxorubicin (AC), and fluorouracil/leucovorin/oxaliplatin (FOLFOX). Evidence also shows that radiotherapy and chemotherapy act independently in causing acute mucosal toxicity. Results of a recent study suggest that cCHT increases the risk of mucosal grade 3 toxicity approximately 4 times over radiation therapy as a single intervention.[57]

The focus of dental intervention for patients receiving antineoplastic agents and radiotherapy includes symptomatic support, including providing pain relief, reducing potential postintervention periodontal disease and caries, and treating opportunistic infections associated with these therapies.[58]

With respect to the treatment of oral mucositis, recent evidence suggests that benzydamine hydrochloride (Tantum) 0.15% taken as a 15-mL rinse for 30 seconds qid may be more effective than chlorhexidine and povidone iodine in preventing the development of severe mucositis.[59]

These findings are in contrast to a previous systematic review of the research literature published in a 2007 Cochrane report.[60] In this report, the medications found to be effective in reducing oral mucositis prior to 2007 included allopurinol, granulocyte macrophage-colony stimulating factor, immunoglobulin, and human placental extract. Allopurinol appeared to eradicate mucositis.

The authors found that the research evidence for the use of benzydamine HCL, sucralfate, tetrachlorodecaoxide, chlorhexidine, and the “magic” mouth rinse (lidocaine solution, diphenhydramine hydrochloride, and aluminum hydroxide suspension) did not support their use as adjuvant treatments. They further concluded that the evidence for the above “effective medications” (eg, allopurinol) was weak and unreliable, and there was no evidence that patient controlled analgesia was any better than a continuous infusion as a method of pain control.

A Cochrane review published prior to the above article notes that amifostine (Ethyol) provided minimal benefit in preventing moderate and severe mucositis, antibiotic pastes or pastilles showed a moderate benefit, hydrolytic enzymes appeared to reduce moderate and severe mucositis, and ice chips prevented mucositis. Other interventions with potential effect (based on only one study at the time) included benzydamine, calcium phosphate, honey, oral care protocols, povidone, and zinc sulphate.[61]

Nonetheless, in general, a multifocal multipharmaceutical approach is necessary in managing oral mucositis and the oral pain, dry mouth, and the opportunistic infections[62] that are often associated with chemotherapy and radiation treatment.

The most commonly mentioned topical measures effective in reducing oral pain include 2% viscous lidocaine HCL (Xylocaine), dyclonine (discontinued in the United States), and diphenhydramine elixir (Benadryl, Benylin). Mouth rinses that are reported to reduce oral discomfort include alkaline saline (salt/bicarbonate), Biotene, and sucralfate (Carafate) suspension. Chlorhexidine gluconate mouthwash (Peridex, PerioGard) 0.12% can help reduce gingivitis.

In patients with dry mouth, a salivary substitute or stimulant should be included to provide the needed protein binding to make it effective. Artificial salivas include Sage Moist Plus, Moi-Stir, Salivary, and Xero-Lube. Oral moisturizers include Laclede Oral Balance gel and Sage Mouth Moisturizer.

Fluorides should be applied for caries control. These products include neutral NaF gel (Thera-Flur-N) 1%, which can be applied one drop per tooth, or via a custom tray and stannous fluoride gel (0.4%), which should be applied in the same manner. Biotene toothpaste (OTC), placed on a soft brush that can be made softer by placing it under hot water can also help with plaque control. Antifungal medications help reduce potential candidiasis.[63]

Localized Vesicular-Bullous Disease

Benign mucous membrane pemphigoid (BMMP) is an autoimmune disease that cleaves the epithelium. This results in the formation of bullae, which then rupture, leaving a raw erythematous surface. The condition can affect the eye, so immediate ophthalmology referral is important once the disease is confirmed by biopsy.[64, 65]

Management of oral lesions includes topical or systemic steroids and/or azathioprine coupled with analgesics and, in some cases, concomitant antifungal medication (see Fungal Infection). Since these lesions have significant potential for morbidity, management should be left to oral medicine specialists, ophthalmologists, dermatologists, and/or rheumatologists.[66]

Lichen Planus

The cause of oral lichen planus (OLP) is unknown, but the most recent evidence points to an autoimmune etiology with a genetic predisposition. There is also evidence for the causative role of a host-microbial interaction in some cases.[67] The condition involves T-cell–mediated inflammation of the tongue, palate, buccal mucosa, and gingiva.[68] There can also be dermal involvement.

The rational for treatment of erosive OLP includes suppression of oral lesions, pain control, and prevention of secondary fungal infection. Research data regarding efficacy suggests that one management strategy may be no different from another in treating the disease. In a recent Cochrane review,[69] 28 randomized controlled clinical trials of a number of therapies for the symptomatic treatment of OLP, which compared treatment with placebo or no intervention, were assessed for treatment efficacy.

Although steroids are considered a first-line treatment for OLP, the authors note that no randomized controlled trials have compared this medication strategy with placebo. Of the evidence for pimecrolimus, an immunomodulating agent used in the treatment of atopic dermatitis (eczema), 3 trials suggest that pimecrolimus is no better than placebo in reducing pain associated with OLP. Two trials assessing aloe vera suggest that it may reduce pain compared to placebo. In addition, two small trials suggest that cyclosporine may reduce pain and the clinical signs of OLP. Five trials comparing steroids with calcineurin inhibitors (eg, pimecrolimus, tacrolimus) suggest no difference between the two in reducing pain. And in 6 trials assessing steroid therapies, there was limited evidence that one steroid worked better than another.

The authors of this systematic review conclude that there is insufficient evidence to support the effectiveness of any specific treatment as being superior to another in the management of OLP.

The use of a specific topical steroid preparation is based on lesion size. For isolated lesions, fluocinonide (Lidex) gel or ointment can be applied after each meal and at bedtime. If clobetasol (Temovate) is used, it should be prescribed in the same manner but for only 3-4 days to prevent potential adrenal suppression. If OLP lesions are extensive, dexamethasone (Decadron) elixir may be more effective in lesion coverage. One teaspoonful (5 mL) should be prescribed as a rinse for 3-4 minutes after each meal with the drug spit out. The patient should be monitored for yeast infection (candidiasis/candidosis; see Fungal Infection) and treated accordingly if infection emerges during steroid use.[70]

In a small study, local ultraviolet B phototherapy was found to be effective in treating OLP, suggesting a

nonpharmacological approach to the management of the disease. A larger randomized controlled trial is needed, however, before this approach can be recommended for intervention.[71]

One of the more challenging problems in treating OLP is that the condition can be refractory to topical steroids. Systemic therapy may be necessary to fully control the disease. As noted by F Lozada-Nur and Miranda (1997),[72] although no one single standard protocol has been proven effective in treating chronic OLP, the most effective therapy is topical high-potency corticosteroids coupled with systemic steroid (prednisone).

Topical cyclosporine has shown some promise,[73] while the use of topical and systemic retinoids (eg, tretinoin and etretinate) does not appear to be particularly useful.[74] Lozada-Nur suggests alternate-day treatment protocols, low doses, and adjunctive therapy if the condition is to be treated long-term.

Pain medications can include acetaminophen preparations, including codeine (in severe cases) and/or other narcotics taken short-term.

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