Peeling Gums, Oral Ulcers and Burning Mouth: Diagnosis and Management

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Carol Anne Murdoch-Kinch, DDS, PhD, FRCDS (Edinburgh)
Dr. Walter H. Swartz Professor of Integrated Special Care Dentistry
Associate Dean for Academic Affairs
camurdoc@umich.edu

Key Concepts- “Pearls”

• Differential diagnosis of oral lesions starts with lesion description and a good history
• Aphthous lesions are limited to non-keratinized mucosa- Recurrent Herpes lesions are limited to keratinized mucosa
• Biopsy is required to establish a diagnosis of pemphigoid, pemphigus and erosive lichen planus
• First line treatment for ELP, MMP, and PV is often topical corticosteroids, and oral candidiasis is common complication, especially if xerostomia too
• Healing of oral lesions requires adequate saliva- manage
• Diagnosis of Pemphigoid or Pemphigus- Refer to Dermatology, Ophthalmology
• Erosive lichen planus /lichenoid mucositis and risk for malignancy

Key Concepts

• Oral lesions may be the first or only sign of vesiculobullous diseases, including pemphigus and pemphigoid:
  • “First to show and last to go”
  • Biopsy is required to establish a definitive diagnosis. Proper technique and sampling is critical.
  • Treatment of oral lesions may include topical corticosteroids initially or to treat breakthrough lesions; systemic therapy is almost always needed for disease control
  • Other entities can mimic pemphigus and pemphigoid- if don’t get expected results, consider pemphigus
  • Consult with Oral Medicine or Oral Pathology, Dermatology, Oral Surgery
Oral Manifestations of Systemic Disease

- Oral cavity is part of the gastrointestinal system. GI diseases can extend into oral cavity.
- Diseases that affect skin can affect oral mucosa similar biology.
- Oral mucosa has high turnover; shows effects similar to those seen in other high turnover sites, e.g., bone marrow and blood.
- Oral infections can be exacerbated or triggered when patient's immune system is compromised; oral cavity site of constant immunological and microbiologic challenge.
- Salivary glands are sensitive to inflammatory, infectious disease processes and those affecting neurologic control of salivary function (e.g., medications).

History and Physical Examination

Chief Complaint: When did it start?
- Main signs and symptoms
- Triggering/ameliorating factors
- Biopsy done? Results available?
- Review medical history
  - Chronic illness or complaints?
  - Medication history
  - Treatment for this condition to date? Results?
- Dental history
- Clinical examination
  - Saliva?
    - Oral mucosa – describe abnormalities
      - Red/white, erosions, ulceration, plaques
      - Distribution of lesions, other concerns
      - Severity today?
    - Exposed Skin; unexposed skin by history
    - By history – genital, ocular lesions or symptoms?

Reminders for a better oral examination

- Systematic examination - every patient, every time
- Lighting! Air.
- Use gauze to grasp the tongue and pull it out as far as possible to examine the posterior-lateral surface
- Palpate the tissue between two fingers to assess the texture and consistency of the tissues
- Look for changes in color, contour and surface texture
Diagnostic Approach to Oral Ulcers

• History
  – Solitary episode or recurrent? Acute or chronic?
  – Precipitating factors?
  – Medications?
  – Dental products
  – Review of systems for other disease; other sites affected
    • Other mucosa
    • Skin

• Physical Findings
  – Location
  – Unilateral vs. bilateral
  – Keratinized vs. non-keratinized oral mucosa
  – Blister? Erosions? Ulcers?
  – Size
  – Color
  – Associated signs and symptoms

Persistent or Recurrent Oral Ulceration

• Differential Diagnosis-
  – Review of more common conditions

• Laboratory tests
  – When is a biopsy useful?
  – Blood studies?
  – Other diagnostic tests?

• Pharmacotherapeutics
  – Choices and how to prescribe
  – Mechanism of action

• Dental Management

Differential Diagnosis of Vesiculobullous/Ulcerative Oral Lesions

• Infections
  – Primary and Recurrent Herpes Simplex
  – Candidiasis

• Inflammatory and Reactive Conditions
  – Aphthous ulcers
  – Lichen planus/lichenoid mucositis
  – Contact allergy stomatitis
  – Adverse effects of dental products

• Autoimmune Diseases
  – Mucous Membrane Pemphigoid
  – Pemphigus vulgaris
Recurrent Oral Ulceration

- Aphthous stomatitis
- Erythema multiforme
- Recurrent Herpes simplex
- Erosive Lichen planus
  - Other lichenoid mucosities
  - GVHD, lichenoid drug reaction, Lupus
- Lichenoid dysplasia
- Mucous membrane pemphigoid
- Pemphigus vulgaris
  - Paraneoplastic pemphigus

Recurrent Aphthous Stomatitis

- “Canker sores”
- 15-20 % world population affected
- Some populations up to 40 % affected
- Ulcers may be present in other sites
- Can occur in association with GI disease, and other systemic conditions

RAS-Associated Systemic Conditions

- Most patients are completely healthy, but associated with
  - Behcet syndrome
  - Crohn’s disease- OFG (persistent linear ulcers)
  - Celiac disease – gluten sensitive enteropathy
  - AIDS patients
  - Cyclic neutropenia – cyclic oral aphthae
  - FPAPA, Sweet’s syndrome, primary immunodeficiencies...
Aphthous ulcers—possible etiologic factors

- Ingestion of certain foods — nuts, chocolate, tomatoes?
- Lysine deficiency?
- Hematinic deficiencies
  - Iron, B12, folic acid
- Drug reactions — NSAIDS, nicorandil, Celicept
- Allergies
- Menstrual period (?), stress and anxiety (?), family history (40% —family hx)
- Viral?
- Local physical trauma
- Smoking protective

Minor Aphthous Ulcers

- Most common type
- Painful, small superficial ulcers on oral non-keratinized mucosa
- Can occur in clusters of 1-5
- Episodic
- Each lesion lasts 10-14 days, episode can last 3-4 weeks
- Round-elliptical, 0.5-1.0 cm in diameter
- Shallow lesions, crateriform borders, whitish-yellow base, intense erythematous halo, tan fibrin covering
- Most often on lips, posterior soft palate, anterior faucets
- Often history of minor trauma if on labial mucosa

Minor Aphthae

- Treatment: Topical steroids to relieve pain and speed healing
  - If severe, systemic steroids
- Palliative products
  - Topical anesthetics — Orabase B, OraGel
  - Barriers — Orabase, Zilactin, Soothe and Seal
- If GI problems, correct them and the oral ulcers improve
- If vitamin deficient, treat
- Chlorhexidine rinses, Tetracycline rinses can lengthen period between episodes
Major Aphthae

- Uncommon
- Large lesions –5-20 mm. One or more at a time
- Mucosa of the lips, and posterior soft palate/anterior fauces
- Deeper than minor lesions
- Last for up to 6 weeks
- Severe pain, affects daily living
- Deep and persistent lesions can be secondarily infected
- Heal with scarring

**Treatment:**
- Combine topical and systemic steroids for short term
- Or intraleisional triamcinolone injection
- +Antimicrobial rinses as adjunct
- +/- Topical anesthetics to allow eating

**Special patients – special treatments**
- AIDS patients– Thalidomide
  - RCT -50% remission, most effective agent
  - Side effects in 75%, neuropathy in 5%
  - Teratogenic; tightly restricted drug
- Tetracycline and Nicotinamide therapy
- Behcet’s Disease- azathioprine, other DMARDs

Herpetiform Aphthous Ulcers

- Rare, often mistaken for Herpes
- Prolonged periods of widely distributed intraoral lesions
- Small, 3-6 mm in diameter
- Shallow, crateriform ulcers, in clusters, up to 100 at once, often coalesce
- Episode lasts weeks-months
- Gland-bearing mucosa, can also involve keratinized surfaces
- Pain
- Female, older?
Behcet Disease

- Uncommon systemic multifactorial condition
- Genetics? – 60-70% HLA-B*51!
- Intraoral ulcers similar to minor aphthae
  - Can have each of the different types
  - Most consistent feature, found in almost 100%
  - Genital ulcers (88% total pts) and erythema nodosum (47.6% of all pts) more prevalent in females
  - Skin, thrombophlebitis, ocular, neurologic, pulmonary and vascular involvement more common in males
  - Colchicine used to treat the systemic manifestations of BD
  - Azathioprine

Diagnostic Criteria for Behcet’s Disease

- Diagnosis of BD cannot be made without the presence of oral aphthae
- RAS plus at least 2 of the following:
  - Recurrent genital ulceration
  - Eye lesions
  - Skin lesions
  - Positive pathergy test

Orofacial Granulomatosis

Cheilitis granulomatosa
22 year old female with Crohn’s disease

Non-caseating granulomas in gingiva
“Strawberry gingivitis”
Orofacial granulomatosis

- Differential diagnosis
  - Systemic
    - Crohn's disease
    - Sarcoidosis
    - Tuberculosis
    - Chronic granulomatous disease
  - Localized
    - Isolated orofacial granulomatosis
    - Melkersson-Rosenthal syndrome
      - Cheilitis granulomatosa and Facial paralysis and Fissured tongue
    - Allergy
    - Chronic oral infection
    - Foreign material

Oral infections that can be associated with erythema/ulceration/plaques

- Herpes simplex – primary and recurrent
- Other viral diseases- CMV, HVZ

- Candidiasis
  - Pseudomembranous – “thrush”
  - Atrophic – denture sore mouth
  - Chronic hyperplastic

Herpes Simplex Virus

- Single strand of DNA
- Lytic to epithelial tissue and latent in neural tissue
- Enters body through break in skin
- Initial primary infection, then latency
- Most primary infections asymptomatic

Activation of latent virus
- Stress, trauma, cold, GI upset, fever, menstruation, sunlight, etc.
- Incubation period 1-26 days
- Prodromal stage – altered sensation
- Vesicular stage
Herpetic Lesions

- Diagnosis based on clinical findings
- Cytologic smear for atypical cases – puncture intact vesicle, express fluid onto slide or remove cells from base and smear onto slide
- Cytopathic effects on cells – inclusion bodies, ballooning degeneration, multinucleation of giant cells, nonspecific
- Other diagnostic tests: culture, fluorescent antibody, serology

Treatment:
- Acyclovir; valacyclovir
- Topical agents –
  - penciclovir “Denavir”
  - “Abreva”
- Palliative rinses, analgesics

Primary Herpetic Gingivostomatitis

- Uncommon clinical presentation
- ~1 percent of primary infections with HSV
- Usually young children
- Multiple small punctate shallow ulcers, keratinizing and non-keratinizing oral mucosa
- Small lesions can coalesce to form large ulcers
- Fever, lymphadenopathy 2-10 days

Recurrent Oral Herpes

- Recurrent herpes labialis and recurrent intraoral herpes
- Can be associated with recent dental tx
- Cluster of small vesicles that rupture
- Labial form will crust over
- Intraoral form is punctate ulcers

Treatment only works before the lesion blisters.
Topical and systemic antivirals must be started at the first sign of a lesion, preferably at the prodromal stage.
Recurrent intraoral varicella zoster

- Can mimic a toothache before lesions appear
- May start as blisters, rapidly rupture to form coalescent shallow ulcers
- Stops abruptly at the midline
- Palate a common intraoral site
- Rare case reports of associated sloughing of necrotic bone containing the teeth
- More common in debilitated, immunocompromised patients

Oral Candidiasis

- Candida albicans is most common organism
  - In special populations non-albicans Candida species and resistant strains are emerging
  - Very young and very old people
  - Immunocompromised patients
  - Dentures
  - Broad spectrum antibiotics
  - Diabetes
  - Oral mucosal lesions that violate the integrity of the mucosal barrier
  - Xerostomia
  - Corticosteroid therapy
  - Smoking

Acute Pseudomembranous Candidiasis
Case

• History of dry mouth, Sjogren's Syndrome, SLE. Prior treatment for oral candidiasis.
• Swab was cultured for sensitivity testing; therapy initiated with fluconazole; sensitivity to fluconazole was confirmed
• Treatment: Fluconazole 100 mg per day for three weeks
• (treatment for 2 weeks after last symptoms, ensure complete cure)
• Returned for follow-up
  – Infection had resolved; traumatic ulcer present on right floor of mouth from patient’s partial denture
• Xerostomia and salivary gland hypofunction was treated with pilocarpine 5 mg TID; sugarless gum; Caphsal artificial saliva; Biotene products
• Prevention of recurrence: Increase salivary flow

Hyperplastic Candidiasis

• White plaque that cannot be wiped off
• This patient was immunocompromised-liver and kidney transplant
• Taking tacrolimus, prednisone
• History of current cigar smoking – lesion was biopsied

Lichen Planus

• A skin disease common in oral cavity
• Cutaneous and oral surfaces 40%
• Cutaneous alone 35%
• Oral mucosa alone 25%
• Etiology unknown
• Langerhans cell?
• Relationship to dysplasia? “Lichenoid dysplasia”
Lesions that look like lichen planus

- Lichenoid drug reaction
- Lichenoid dysplasia (?)
- Graft vs. Host Disease
- BMMP and PV, Linear IgA disease
  - (desquamative gingivitis)
- Pseudomembranous Candidiasis
  - Reticular lichen planus
- Atrophic Candidiasis
  - Erosive/atrophic lichen planus

Lichen Planus – Reticular

- Raised thin white lines that connect in arcuate patterns – lacy "Striae of Wickham"
- Erythematous background
- Usually asymptomatic
- Most common on buccal mucosa, buccal vestibule, tongue and gingiva
- Usually bilateral

Reticular Lichen Planus

Wickham's striae
Lichen Planus – Erosive

- Mixture of erythematous and white pseudomembranous areas
- May have whitish peripheral zone, between affected and normal tissue
- May have sore mouth, esp. spicy foods
- Pain and bleeding on palpation
- Differential Diagnosis:
  - Candidiasis, Pemphigoid, Pemphigus, and Lupus, SCC (?)

Lichen Planus – Bullous form

- Rare form
- Large bullae ranging from 4 mm to 2 cm
- Bullae of brief duration, rupture, loss of epithelium
- Becomes erosive lichen planus
- Most common on posterior buccal mucosa

Erosive and Bullous Lichen Planus
Erosive and Reticular Lichen Planus

Desquamative Gingivitis
Differential Diagnosis:
• Erosive Lichen Planus
• Mucous Membrane Pemphigoid
• Pemphigus Vulgaris
• This patient had erosive lichen planus and candidiasis

Lichenoid Mucositis and Candidiasis occurring together

Biopsy showed lichenoid mucositis with Candidal hyphae
After 2 weeks of clobetasol gel t.i.d and Nystatin swish and spit q.i.d.
Pigmented changes in lichen planus

Lichen Planus – Bullous

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Lichen Planus-Skin

- 35-44% of patients with oral lesions
- Clusters or diffuse areas of raised purplish papules with a white keratotic “cap”
- Usually itchy – Koebner phenomenon
- Flexor surfaces of limbs, upper trunk, genitalia
Lichenoid Drug Reaction

- Increasing prevalence
- Antibiotics, antihypertensives — ACE inhibitors and thiazides, antimalarials, diuretics, gold compounds, NSAIDs, tetracyclines
- Resembles erosive lichen planus
- Posterior buccal mucosa
- Painful, central erythematous area of erosion, radiating striae
- Treatment with topical steroids and removal of offending drug

Lichen Planus

- Treatment:
  - Symptomatic cases only
  - Topical corticosteroids, tacrolimus (?)
  - Resistant cases of erosive lichen planus, may use
    - prednisone;
    - intralesional injections of steroids; or
    - systemic immunomodulators (e.g. mofetil mycophenolate-Celcept®)
Sloughing of the epithelium

Most often a reaction to dental products such as:
- tartar fighters in toothpaste
- whitening agents
- Listerine
- cinnamon
Can be caused by habits – cheek biting, chewing

Lichenoid Dysplasia

• A series of case reports of squamous cell carcinoma arising in previously diagnosed oral LP
• Retrospective review showed that most of these were lesions exhibiting epithelial dysplasia and a lichenoid inflammatory pattern
• Nevertheless, if there are features of dysplasia in cases that resemble LP, these patients must be followed closely with re-biopsy to detect malignant transformation
• Tobacco NOT typically involved
• Erosive and atrophic forms most often associated with this

Initial Presenting Features of Pemphigus and Pemphigoid:
Recurrent and/or Persistent Oral Ulceration
DIAGNOSTIC DELAYS

Diagnostic pathway for pemphigus/pemphigoid patients:
- 5 HCPs and 10 months for correct diagnosis
- 10% see more than 10 HCPs
- 23% of patients see dentist first
- 46% see dentist at some point

Data Source: In October 2011, KJT Group was commissioned by the International Pemphigus & Pemphigoid Foundation to conduct an awareness and diagnostic pathways survey.

DIAGNOSTIC DELAYS

Of patients who saw a dentist:
- 46% reported they were not knowledgeable about their pemphigus/pemphigoid symptoms
- 40% reported being referred to another HCP
- 13% received a diagnosis

Data Source: In October 2011, KJT Group was commissioned by the International Pemphigus & Pemphigoid Foundation to conduct an awareness and diagnostic pathways survey.

CLINICAL PRESENTATION

Think of PV/MMP when there is a combination of:
- Multiple oral lesions
- Ulcerations preceded by bullae
- Chronic lesions
- Primary lesions
- Lesions may also occur outside of the mouth
- A lesion can follow minor trauma: Nikolsky sign
PEMPHIGUS VULGARIS (PV) & MUCOUS MEMBRANE PEMPHIGOID (MMP)

Rare, autoimmune, blistering diseases

PEMPHIGUS VULGARIS (PV)

- Most common form of pemphigus
- Leads to intraepithelial, mucocutaneous blistering
- Predominantly manifests orally
- Autoantibody profile

Pemphigus Vulgaris

http://www.emedmd.com/content/vesiculobullous-disease
http://www.emedmd.com/content/vesiculobullous-disease
Pemphigus Vulgaris

- Desquamating condition of oral mucosa and skin
  - Oral lesions “the first to show and last to go”
- Auto-antibodies to proteins of the desmosomes leads to “Acantholysis”
  - Loss of adhesion between cells in zone above basal layer: “Suprabasilar bullae formation”
- Can be life-threatening if not treated!

- Intracellular protein in desmosomes - Desmoplakin
- Extracellular proteins - Cadherins
  - Desmoglein 1 and 3 is a cadherin – the target antigen
- Detect autoantibodies in circulation, fluctuate with disease process
  - Indirect immunofluorescence
- Ethnic predisposition – genetics?

Pemphigus Vulgaris

- 50-60 year-old peak prevalence
- More common in Mediterranean and Ashkenazi Jew descent
- More common with certain MHC genotypes
- Drugs, malignancy- similar presentation
- Primarily skin of torso involved, in 50% with skin lesions, oral lesions preceded them

- Other mucous membranes –nasal, esophagus, vagina, cervix can also be involved
- Bullae common on skin, rare in mouth
- Introral lesions –soft palate, gingiva, buccal mucosa
- Usually bullous stage undetected, presents as eroded, erythema, pain
- Skin – brief blisters, collapses, red crust

What causes Pemphigus?

- Unknown etiology, genetic predisposition
  - Certain MHC class II molecules, alleles of HLA DR4
  - Often seen in patients with other autoimmune diseases such as myasthenia gravis
- Older age is associated ( peak 50-60)
- Rarely caused by medications
  - ACE inhibitors
  - Penicillamine
  - Some antibiotics
  - NSAIDs
  - Rifampin (for TB)

NIH Genetic and Rare Diseases Information Center
Oral Pemphigus Vulgaris

• Treatment:
  – Prolonged high dose of systemic steroids 150-360 mg daily for 6-10 weeks
  – Steroid-sparing regimens combine with other immunosuppressant drugs
    • Azathioprine
    • Cytoxan
    • Combination protocols
    • Rituximab

Case Study

• 32 year old female with 9 month history of painful oral lesions
• Review of Systems:
  – No known allergies
  – No skin lesions
  – Anal fissures, under care of gastroenterologist; no current diagnosis (Crohn’s disease has been ruled out)
  – Weight loss ~20 lbs over past 6 months; cannot eat solid food (causes bloody sores; severe pain)
  – No medications

MUCOUS MEMBRANE PEMPHIGOID (MMP)

• Mouth and eyes most often affected
• Also known as Cicatricial Pemphigoid (CP)
• Disease onset usually between 40 and 70 yrs
Symblepharon – Mucous Membrane Pemphigoid

Mucous Membrane Pemphigoid

• Vesiculobullous condition of mucous membranes
• Autoimmune reaction at the basement membrane
• Commonly affects the gingiva
  – “Desquamative gingivitis”
• “Cicatricial pemphigoid”
• At least twice as common as pemphigus
• Older adults
• Females 2:1 Males

Mucous Membrane Pemphigoid

• Antibodies to BP-1 antigen, found in hemidesmosomes
  – BP-1 antigen/IgG antibody complex precipitates C3 to produce disease.
  – Linear deposits along basement membrane as shown by direct immunofluorescence
    • Presence of IgA and IgG may indicate more severe disease
• Differential Diagnosis:
  – Pemphigus vulgaris and Erosive Lichen Planus
Mucous Membrane Pemphigoid

- Lesions first appear on attached and free gingiva, irregular patches of erythema, loss of stippling
- Minor trauma results in blood-filled blisters, sloughing of epithelium
- Rub on tissue, blister forms in 1-2 minutes:
  - Positive Nikolsky sign
- Eventually progress to involve buccal mucosa, palate, FOM, pharynx, esophagus
- Eye lesions can lead to blindness
  - Erythema, ulceration, adhesive tissue bands- "symblepharon"
  - Up to 25% with oral lesions develop eye lesions
  - Scarring – entropion, dry eyes
- Other mucosal sites may be involved

Mucous Membrane Pemphigoid
“Desquamative gingivitis”

Desquamative Gingivitis

- This patient had biopsy-proven mucous membrane pemphigoid
- After 2-weeks of topical clobetasol, applied 4 times per day
Mucous Membrane Pemphigoid

Treatment

- Low risk patients
  - Disease only in oral mucosa or combined with skin
  - Topical corticosteroid of mid to high potency (2-3 times per day)
  - Custom tray for gingival lesions is an option
  - Tetracycline 1-2 gram/day and Nicotinamide 2-3 gram/day can be used as an alternative regimen
  - If not satisfactory, change to dapsone 50-200 mg/day
    - Alternative, prednisone 20-40 mg/day in am, with or without low dose of azathioprine 50 mg/day
    - If not satisfactory, consider going to high risk regimen

Mucous Membrane Pemphigoid: Treatment

- High Risk Patients — ocular, nasopharyngeal, esophageal, laryngeal and/or genital mucosa
- Milder disease
  - Initial treatment with dapsone (50-200 mg/day) for 2-3 days
  - If not satisfactory, prednisone 0.5-0.75 mg/kg/day and cyclophosphamide 0.5-1 mg/kg/day
- Severe disease
  - Prednisone and cyclophosphamide, managed by team of physicians expert in this
  - Mycophenolate mofetil (Cellcept)
  - Other medications as alternatives

Mucous Membrane Pemphigoid

- Diagnosis: Biopsy
  - Routine histopathology — lesional tissue, AND
  - Direct immunofluorescence — nonlesional tissue
  - Splitting occurs at level of basement membrane, because antigen is located in there
BIOPSY TECHNIQUES

Here are some guidelines:

- Do not sample the bed of an ulcer
- Must contain intact epithelium
- Should be taken from perilesional (within 1 cm) or normal appearing tissue
- Avoid separation of the epithelium from underlying connective tissue

BIOPSY TECHNIQUES

- Two specimens must be taken for:
  - Routine hematoxylin and eosin (H&E) stain (storing specimen in 10% formalin); **AND**
  - Direct immunofluorescence testing in Michel’s transport medium (Order in advance)
    - Send to pathology laboratory as quickly as possible (Identify lab in advance)

Immunofluorescence Studies

- Fluorescein labeled anti-human IgG
- Patient serum (w autoAb) + Patient biopsy (auto Ab in tissue) + Control Tissue

+ DIRECT IF
+ INDIRECT IF
DENTAL MANAGEMENT CONSIDERATIONS IN PEMPHIGUS and PEMPHIGOID

- Immunosuppressants; increased risk of infections
- More frequent appointments
- Be gentle during maintenance appointments; avoid harsh abrasives
- Use simple hand scaling instruments
- Provide a list of rinses not containing irritating ingredients

REFERRALS

- Dentist or dental specialist experienced in performing biopsies of vesiculobullous lesions
- Oral medicine; oral and maxillofacial pathology
- Dermatologist
- Ophthalmologist
- Rheumatologist
- Other specialties

TREATMENT

Treatment of blistering diseases consists of three phases:
- Control
- Consolidation
- Maintenance

Relapse may occur at any time, resulting in renewed disease control effort.
TREATMENT

Common Therapies:
• Topical steroids
• Systemic Corticosteroids
• Immunosuppressants
• Biologics
• IVIG

Adjunctive Therapy for Patient with Oral Erosive and Ulcerative Conditions

• Topical Anesthetic/palliative mouthrinses
  — If history of candidiasis while using steroids or other risk factors, consider adding Nystatin to the mouthrinse
• Diet counseling
• Antifungal treatment of active Candidiasis
• Bland dental products-
  — Biotene or other dry mouth toothpaste, Child’s toothpaste
  — Biotene or other dry mouth mouthrinse, other non-alcohol containing rinses
• Assess and manage salivary hypofunction to aid healing and comfort

Treating Xerostomia

• Salivary substitutes
  • Oral Balance® gel, Stoppers 4 Dry Mouth®, Orage® mouth moisturizer, Omni BreathTech (Omni Oral Pharmaceuticals), Caphasol®, Xerostom®
  • Increased H2O intake
• Humidifier in the bedroom
• Ice chips or water spritz
• Avoid alcohol products
• Avoid caffeine?
• Glycerin or lanolin on lips “Lanollele” or “Lansinoh”
  — Go to website on breastfeeding for more information about these products

Carol Anne Murdoch‐Kinch, DDS, PhD
Stimulate Flow
— Pilocarpine (Salagen)
• (not if B-blocker, glaucoma, BPH)
— Cevimeline (Evoxac)
— Gustatory stimulants—Salix, Numoisy
lozenges, Xylimelts
— Sugarless hard candy, sugar-free gum

Sialogogue Prescriptions
• Rx: Pilocarpine (Salagen) tablets, 5 mg
  Sig: Take 1 tablet TID
  May increase up to 15-30 mg/ day, no more
  than 10 mg at any dose; 12 weeks of continuous
  therapy may be needed to determine efficacy.

  Rx: Cevimeline (Evoxac) capsules, 30 mg
  Sig: Take 1 tablet TID

Sugar-free Chewing Gum
• Biotene chewing gum—Laclede
• Trident for Kids with Recaldent
• Orbit sugarfree gum – Wrigley’s
• Xylifresh gum
• www.xylitolstore.com
• Prevent caries
  – Home fluoride
  – Oral hygiene instruction
  – Diet counseling
  – Caries control
  – Treatment plan for ease of access

High Caries Risk-Daily Topical Fluorides

• Best
  – 1.1% Neutral sodium or stannous fluoride gel in vinyl custom fluoride carriers
  – Use for 10 minutes once daily, at bedtime
  – Thera-Flour-N gel drops; Prevident gel

• Next best
  – 5000 ppm NaF dentifrice, use instead of regular toothpaste once daily
    • Eg. Prevident 5000, OmniiCare,

Adjuncts

• Chlorhexidine gluconate 0.4% mouthrinse
  – Use twice daily
  – Suppresses the bacteria associated with dental caries and periodontal disease
  – Antifungal effect may help prevent oral Candidiasis
  – Alcohol-free preferred
Oral Burning Complaints

**Differential Diagnosis by Site/Origin of Pain**
- Local Causes of Oral Burning
- Systemic Causes of Oral Burning
- Other- Idiopathic Burning Mouth Syndrome

**Differential Diagnosis by Pathogenesis of Pain**
- Inflammatory/Somatic
  - Oral candidiasis
  - Oral ulcerations, e.g. oral mucositis
  - Salivary gland hypofunction/irritants
- Neuropathic
  - Vitamin B12 deficiency
  - Post-traumatic nerve injury (chorda tympani)
  - Burning mouth syndrome-Stomatodynia
- Centrally-mediated pain
- Multifactorial

Oral Mucosal Burning: Differential Diagnosis

- Dry mouth
- Oral mucosal disease
- Oral infection – Candidiasis
- Diabetes
- Adverse effect of dental products/medications
- Contact allergy
- Nutritional deficiency
  - Iron, B vitamins
- Neuropathy
- Idiopathic burning mouth syndrome-Stomatodynia
- Anxiety, depression

Differential Diagnosis Oral Burning

- Rule out local and systemic disease
  - CBC/differential
  - Iron, ferritin, B12, folate
  - Fasting blood glucose
  - Thyroid profile TSH, T3, T4
  - Sometimes:
    - B1, B2, B6
    - Estrogen, FSH
    - RF, ANAs
    - Allergy testing
Local Causes of Oral Burning

• Candidiasis
• Xerostomia
• Epithelial atrophy/erosion/ulceration
  — Lichen planus
  — Geographic tongue
  — Other pathology
• Allergy
  • Adverse Reaction to dental products
    — Sloughing associated with pyrophosphates in tartar-control toothpastes
    — Strong flavoring agents
    — Cinnamon stomatitis
• Oral Habits
  — Rubbing the tongue against the teeth, chewing the lip

Allergic Contact Stomatitis

• Patch testing-relevant allergic reactions to metals, fragrances and preservatives

Systemic Causes of Oral Burning Complaint

• Diabetes mellitus
• B vitamin deficiency
  — Folate
  — B12
  — Pernicious anemia
• Iron deficiency anemia
• Autoimmune disease
  — Sjogren’s syndrome
  — Fibromyalgia
• Neurologic Disease
  — Neuropathy
• Anxiety/Depression
  — Somatization
Idiopathic or Primary Burning Mouth Syndrome (BMS)

- Burning, “scalded” sore feeling
- No obvious etiology
- Aliases
  - Glossodynia
  - Glossopyrosis
  - Burning tongue
  - Oral dyesthesia
  - Stomatodynia
- Burning or itching is idiopathic
- Oral mucosa appears normal
- Local and systemic factors must be ruled out

Idiopathic Burning Syndrome

- 90% affected are post-menopausal females
- Burning tongue; lips and palate may also be involved
- May also complain of dry mouth
- May also complain of a bad taste or impaired taste –dysgeusia or hypogeusia
- Symptoms worsen as the day progresses

 burning pain is common finding in post-traumatic nerve injuries

- Subclinical neuropathy in 50% of BMS patients
- BMS may co-exist with other oral conditions such as fissured or geographic tongue, oral ulcerations, or inflammation... common pathway?
Taste Dysfunction and BMS

- Pain intensity of BMS correlates with density of fungiform papillae on dorsal tongue
- Increased number of fungiform papillae is seen in "supertasters"
  - More women are supertasters
  - Taste buds are surrounded by pain fibers
  - Supertaster may also be super-perceiver of oral pain

Patients with BMS often have concomitant taste dysfunction
- Unilateral or bilateral bitter taste
  - Dyseusia
- Reduced taste function
  - Hypogeusia
  - Ageusia

Burning Mouth Syndrome

- Underlying mechanism?
  - Structural and functional deficits in the nervous system
  - Circadian rhythm dysfunction
    - Pain perception, mood, sleep
    - Regulation of hypothalamic-pituitary-adrenal axis
    - Altered in patients with BMS
Burning Mouth Syndrome

Taste alteration – Bitter taste

- Dental disease
  - Caries, periodontal disease, active purulent drainage, new dental restorations
- Dental products
  - e.g. Chlorhexidine – associated
- Medications
- Sinus disease
- Damage to chorda tympani
  - Recurrent ear infections, middle ear surgery, neoplastic process
- Can cause taste phantoms, typically described as bitter – from region innervated by glossopharyngeal nerve
- CNS lesions
- Idiopathic burning mouth syndrome
- Idiopathic dysgeusia
- Psychological/psychiatric – e.g. fear of oral cancer

Treatment of Idiopathic Burning Mouth Syndrome

- Topical anesthetics
  - Magic Mouthwash containing 2% viscous lidocaine, Maalox, Benadryl suspension
- Tricyclic antidepressants in low doses
  - Amitriptyline; Nortriptyline
- Anticonvulsants
  - Gabapentin; Pre-gabalin
- Cymbalta?
- Clonazepam
  - Up to 1 mg, dissolving wafer, three times per day
- Cognitive therapy
Taste Disorders

• Taste and smell intricately linked
  – Vanilla and chocolate ice cream taste the same—it’s a smell disorder
  – Loss of taste (ageusia or hypogeusia) associated with damage to the nose, sinus disease, loss of taste, radiation therapy

• Dysgeusia—bad taste, altered taste
  – Medications—e.g. chlorhexidine, clarithromycin
  – Oral causes—candidiasis, periodontal disease, abscess, dry mouth
  – Damage to chorda tympani—recurrent ear infections, middle ear surgery
  – Sinus disease, tonsil pathology, postnasal drip
  – GERD
  – Cancer

Dysgeusia

• Can have serious impact on quality of life
• Oral source of dysgeusia
  – Can be masked by eating, candies, mints etc.
• Rule out an oral source
• Refer to Physician for further evaluation
  – ENT to rule out nasal/sinus throat disease
  – Refer to gastroenterology to rule out GERD, stomach disease
  – Lung disease

References