Diagnosis and Management of Unusual Oral Mucosal Diseases and Disorders in Periodontal Practice
American Academy of Periodontology
Philadelphia Pennsylvania
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Disclosure:

No Conflicts of Interest
Desquamative Gingivitis

- A clinical manifestation of several diseases and disorders featuring gingival erythema, sloughing of gingival epithelial tissues and potentially painful erosive gingival lesions.
- Mostly caused by mucocutaneous diseases with the most common being lichen planus, mucous membrane pemphigoid and pemphigus vulgaris. Other causes include hypersensitivity reactions to various oral hygiene products and dental materials.
- Confirmed diagnosis may require histopathological examination and direct immunofluorescence testing.
Characteristic Features

- Gingival erythema not resulting from plaque
- Desquamation and erosion of gingival epithelium
- Blister formation.
- Other intraoral and/or extraoral lesions
- Possible positive Nikolsky’s sign (epithelial desquamation after application of a shearing force on normal-appearing gingiva.)
Phases of Therapy

Diagnostic phase
Control phase
Consolidation phase
Maintenance phase

Modified from:
Brystryn, 1988
Sciubba, 1996
Diagnostic Phase

- Past history
- Clinical appearance
- Biopsy
  - Histology
  - Direct immunofluorescence
- Indirect immunofluorescence
- Culture/smear
- Ancillary tools
  - Brush biopsy
  - Toulidine Blue
  - Ultraviolet lighting
Tricks of the Trade

“Special skills and knowledge associated with any trade or profession”

McGraw-Hill Dictionary of American Idioms
Biopsy Site Selection

- Choose an area of intact epithelium
- Include perilesional tissue
- Select normal appearing tissue for some immunofluorescence testing
- When possible avoid gingival biopsies
Stab and Roll Technique
<table>
<thead>
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<th>Case</th>
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<td>PV</td>
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<td>19</td>
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<td>IgG, C3 at ICS</td>
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<td>24</td>
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<td>Fib at BMZ</td>
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<td>F</td>
<td>74</td>
<td>nonspecific</td>
<td>Fib at BMZ</td>
<td>OLP</td>
</tr>
</tbody>
</table>
PUNCH BIOPSY
Tissue Punch Biopsy

(c) 2006, Michael A. Kahn, D.D.S.
POST-SURGICAL MANAGEMENT

- Hemostasis
  - Pressure
  - Monsel’s Solution (Ferric Subsulfate)
  - Synthetic collagen
  - Gelfoam
SHIPMENT

- Formaldehyde for Routine Histologic Evaluation
- Ambient Temperature Transport Media (Michelle’s Solution) for DIF
- Obtain from Pathology Lab or Immunology Lab, Usually without Charge
Control Phase

- Intense therapy to suppress disease in days or weeks
- Efficacy versus safety versus patient acceptance
- Avoid patient disenchantment over multiple daily treatment yet minimal results.
- Prevent side effects such as candidiasis.
Control Phase Alternatives

- **Aggressive** therapy with very high potency topical or systemic corticosteroids
- **Moderate** therapy with high potency topical corticosteroids combined with intralesional injections when indicated
- **Mild** therapy with medium or low potency topical corticosteroids and carrier (Kenalog in Orabase, denture adhesives, patches etc.)
High Potency Topical Corticosteroids

- 0.25% Desoximetasone (Topicort)
- 0.20% Fluocinolone (Synalar HP)
- 0.05% Fluocinonide (Lidex)
- 0.50% Triamcinolone Acetonide (Aristocort, Kenalog)

Monitor quantity used and do not exceed 15 grams within two weeks
Highest Potency Topical Corticosteroids

- Betamethasone dipropionate (Diprolene) 0.05% gel, cream, ointment
- Clobetasol (Temovate) 0.05% gel, cream, ointment
- Halobetasol (Ultravate) 0.05% cream, ointment
Disadvantages to Carrier Trays

- Insertion and removal may initiate gingival desquamation
- Risk of increased systemic uptake
- Risk of gingival epithelial thinning
Intralesional Corticosteroids

- Deliver high concentration to diseased site with minimal systemic absorption
- Use alone or in combination with other therapy
- Triamcinolone acetonide injectable (Kenalog 10mg/ml or 40 mg/ml)
- Tuberculin syringe (27 gauge)
- Inject 1mg/cm²
- Repeat at 1-2 week intervals if needed up to 4 times
- Primarily use- buccal, labial mucosa, or tongue
Consolidation Phase

- Maintain required type and dose of medications until bulk of lesions have healed
- Weeks not months
- If lesions are slow to heal, choice of therapy or its intensity may be inadequate
Maintenance Phase

- Gradually taper frequency of medication use and/or potency of medication
- Goal is to achieve complete remission or minimize symptoms and to determine lowest dosage necessary to prevent new lesions
- Sustain periodontal health with frequent recall intervals, oral antimicrobials, etc.
- Determine appropriate recall intervals
Department of Periodontics
Stomatology Center
Baylor College of Dentistry
September 12, 2013
Number of Patients: 8038
<table>
<thead>
<tr>
<th>Disease</th>
<th>Patients</th>
<th>Percentage</th>
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</thead>
<tbody>
<tr>
<td>Erosive lichen planus/ lichenoid drug reaction</td>
<td>1045</td>
<td>13.0%</td>
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<tr>
<td>Xerostomia</td>
<td>845</td>
<td>10.5%</td>
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<tr>
<td>Chronic candidiasis</td>
<td>794</td>
<td>9.9%</td>
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<tr>
<td>Aphthae &amp; other ulcerations</td>
<td>521</td>
<td>6.5%</td>
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<tr>
<td>Sjögren’s syndrome</td>
<td>447</td>
<td>5.6%</td>
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<tr>
<td>Allergic reactions</td>
<td>351</td>
<td>4.4%</td>
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<tr>
<td>Burning mouth syndrome</td>
<td>328</td>
<td>4.1%</td>
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<tr>
<td>Mucous membrane pemphigoid</td>
<td>228</td>
<td>2.8%</td>
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<tr>
<td>Hyperkeratosis</td>
<td>184</td>
<td>2.3%</td>
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<tr>
<td>Migratory glossitis</td>
<td>143</td>
<td>1.8%</td>
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<tr>
<td>Oral malignancies</td>
<td>85</td>
<td>1.1%</td>
</tr>
<tr>
<td>Pemphigus vulgaris</td>
<td>60</td>
<td>0.8%</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>5031</strong></td>
<td><strong>62.8%</strong></td>
</tr>
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</table>
Other Disorders Causing Desquamative Gingivitis

- Graft vs. host disease: 33
- Lupus erythematosus: 16
- Lichen planus/Pemphigoides: 15
- Erythema multiforme: 14
- Leukemic/lymphocytic gingivitis: 9
- Chronic ulcerative stomatitis: 9
- Scleroderma: 11
- Psoriasis: 8
- Sarcoidosis: 8
- Gingival histiocytosis X: 4
- Epidermolysis bullosa: 4
- Wegener's granulomatosis: 3
- Pyostomatitis vegetans: 3
- Actinomycosis: 2
- Gingival histoplasmosis: 2
- Ehlers-Danlos syndrome: 2
Pemphigoid Diseases
A group of 7 autoimmune disorders characterized by autoimmunity directed toward structural proteins of the basement membrane junction area.

Schmitt E, Killikens D. Lancet 2013;381:320-332

- Bullous pemphigoid – Bp 180, 230
- Mucous membrane pemphigoid – BP 180, 230, type VII collagen
- Pemphigoid gestationis- Bp 180,230
- Linear IgA disease- LAD 1, Bp 230
- Epidermolysis bullosa acquisita- type VII collagen
- Anti-laminen pemphigoid- Laminen
- Lichen planus pemphigoides- Bp 180, 230
Bullous Pemphigoid
Mucous Membrane Pemphigoid
Mucous Membrane Pemphigoid

- Autoimmune disorder
- Oral &/or other mucous membranes affected
- Mean age of onset = 50
- Females > Males
MMP Clinical Sites (September 12, 2013)

- Gingiva: 89.5%
- Mucosa: 24.4%
- Palate: 10.5%
- Tongue: 7.2%
- Pharynx: 1.1%
**MMP Diagnosis**

- Clinical appearance
- Histopathological examination
- Immunofluorescence
MMP Laboratory Confirmation

- 155 patients
  - DIF 90.6%
  - Histopathology 78.7%

- 11 patients diagnosed by H&E alone
- 5 patients diagnosed by DIF alone
Ocular Pemphigoid

- After diagnosis of oral MMP refer for ophthalmology evaluation
### Treatment

<table>
<thead>
<tr>
<th>Steroids similar to oral lichen planus</th>
<th>Azathioprine</th>
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</thead>
<tbody>
<tr>
<td>Steroid carrier trays</td>
<td>Mycophenolate mofetil (CellCept)</td>
</tr>
<tr>
<td>Plaque control</td>
<td>Cyclophosphamide</td>
</tr>
<tr>
<td>Low dose doxycycline?</td>
<td>Itravenous immunoglobulin (IVIG)</td>
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<tr>
<td>Systemic:</td>
<td>Rituximab</td>
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<tr>
<td>Dapsone</td>
<td></td>
</tr>
<tr>
<td>Tetracycline/Nicotinamide</td>
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Periodontal Status in Patients with Gingival MMP

- Markedly significant increase in plaque and gingival indices.
- Significant increases in class 1 molar furcation involvement and gingival recession
- Periodontal index not significantly increased

Tricamo, Melissa et al
Periodontal status in patients with mucous membrane pemphigoid: a 5 year follow-up

- 10 of the same MMP and age, sex and smoking matched control patients compared 5 years later.
- MMP patients had higher gingival index and lingual gingival recession
- Both groups exhibited significant increases in attachment loss but no difference between groups
- Conclusion: MMP patients appear at no greater risk of increased progression of periodontal disease.

# MMP Results of Treatment 102 Patients

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<th>Treatment</th>
<th>Remission:</th>
<th>Complete</th>
<th>Partial</th>
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<td>15</td>
<td>44</td>
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<tr>
<td>Topical+short term systemic</td>
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<td>12</td>
<td>10</td>
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<tr>
<td>Topical+long term systemic</td>
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<td>4</td>
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<tr>
<td>Topical+Dapsone</td>
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<td>3</td>
<td>2</td>
</tr>
<tr>
<td>Topical+antibiotics</td>
<td></td>
<td>4</td>
<td>2</td>
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<tr>
<td><strong>Total</strong></td>
<td></td>
<td><strong>41</strong></td>
<td><strong>61</strong></td>
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Therapy Issues

- It is not known whether asymptomatic lesions should be treated
- Therapeutic endpoints required to prevent progression have not been established
Pemphigus

One of a group of chronic relapsing autoimmune diseases that cause blisters and erosions of the skin and mucous membranes.
Types of Pemphigus

- **Vulgaris** - Generalized blisters and erosions.
- **Vegetans** - Bullae replaced by verrucous, hypertrophic vegetative masses.
- **Erythematous** - Erythematous pustular lesions limited to face and trunk. Mainly on nose, periorbital skin and ear.
- **Foliaceus** - Generalized scaling dermatitis with bullae.
Other forms of Pemphigus

- **Paraneoplastic** - Painful mucosal erosions often resembling erythema multiforme. Eventually will affect skin. Associated with presence of a neoplasm.

- **Benign familial** (Hailey-Hailey Disease) - Rare hereditary condition causing recurrent eruptions of vesicles and bullae mainly on neck, axillae and groin. Unrelated to pemphigus vulgaris.
Pemphigus Vulgaris
Pemphigus Vulgaris
*(BCD) (September 13, 2012)*

- Females 69.0% average age 48.1 years
- Males 31.0% average age 44.9 years
- Combined average age 47.1 years
Skin Lesions

- Bullae
- Erosions
- Can lead to fluid loss and electrolyte imbalance
- Septicemia
Oral Sites

- Mucosa: 60.4%
- Gingiva: 43.4%
- Tongue: 35.9%
- Palate: 26.4%
- Lips: 26.4%

- Mucosa only: 11.3%
- Gingiva only: 7.6%
- Tongue only: 5.7%
Pemphigus Vulgaris Treatment

- Topical corticosteroids- rare
  (Endo et al *J Periodontol* 2005;76:154-160)
- Topical carrier trays for gingival lesions
  (Endo et al *J Periodontol* 2005, 2007)
- Intraleisional steroid injections
- Short and long term systemic corticosteroids
Preferred Topical Corticosteroid

- Clobetasol gel 0.05%
- Dispense 30 gm or 45 gm
- Pre-dry area of application with gauze, when possible
- Apply to affected areas 2-3 times daily
- One application should be at bedtime
Intralesional Corticosteroid

- Kenalog 10 (triamcinolone acetonide 10 mg/ml.
- How supplied: 5mg vial
- Shake well before use
- Apply topical anesthetic to lesion
- Use 1 ml tuberculin syringe to deposit 0.1ml/cm3 into lesion intradermally or subcutaneously
- Repeat weekly for 3 weeks if needed
Systemic Corticosteroid

- Prednisone: take 30 or 40 mg/daily in single dose for one week or until medical appointment can be scheduled.
- If continued treatment is necessary, decrease dosage by 10 mg/day at weekly intervals until consumed.
- Refer to dermatologist or internist for long term therapy.
Medical Alternative Treatments

- Aziathioprine
- Dapsone
- Mycofenolate mofetil
- IV immune globulin
- Retuximab (monoclonal antibody)
- Plasmaphoresis
- Others
Paraneoplastic Pemphigus

- First described by Anhalt in 1990, now more than 200 cases reported in lit.
- Most tumors are of hematological origin (non-Hodgkin lymphoma, leukemia, Castleman’s disease etc.)
- Castelman’s disease is most frequent association in children and adolescents
- Almost all have oral involvement and may be first symptom
- PP tends to be less responsive to conventional treatment
- DIF shows intraepithelial and BMZ IgG and C3 presence
- IIF on rat bladder is diagnostic
Paraneoplastic Pemphigus
14 year old Hispanic female with Castleman’s Disease
Castleman’s Disease

- A benign or premalignant lymphoproliferative disease with hyalinization of vessels and/or plasma cell infiltration.
- May occur in any part of the body

- The chest, neck abdomen, and pelvis are common sites

- Treatment:
  - Resection
  - Systemic corticosteroids, cyclosporine, retixumab, others
Castleman’s Disease Associated with PNP

- Literature Review
  - 28 total patients (8-68 years of age)
  - 11 females, 17 males
  - All patients had painful oral stomatitis (28)
  - Patients had respiratory involvement (26), death from respiratory failure (22), lichenoid skin lesions (19)
  - All cases developed oral lesions first which led to diagnosis of neoplasm (Castleman’s disease)

Differential Diagnosis

- Erythema Multiforme (EM)
- Pemphigoid
- Pemphigus
Pathology Report

- Lymphocytes and plasma cells
- Isolated eosinophils
- **Diagnosis:**
  - Chronic mucositis
  - Non-specific but favors EM
Direct Immunofluorescence (DIF)

- Non-specific
- Positive granular $C_3$ at basement membrane
- Weak staining cytoid bodies (IgM, $C_3$)

**Diagnosis:**
- Non-specific but favors EM
Treatment

- Patient placed on 30 mg of prednisone daily (single dose)
- Repeat Testing:
  - Biopsy for H&E and Direct Immunofluorescence
  - Serum for Indirect Immunofluorescence
Direct Immunofluorescence

- Weak staining cytoid bodies
- Few necrotic keratinocytes
- Weak staining of C₃ and IgG
- Trace intracellular staining in lower squamous mucosa

**Diagnosis:**
- Consistent with pemphigus (Consider paraneoplastic due to Castleman’s Disease)
Indirect Immunofluorescence (IIF)

- Serum tested against antibodies:
  - Anti-pemphigus antibodies  1:80
    - Reference range  1:10
  - Anti-pemphigoid antibodies  1:10
    - Reference range  1:10
- Diagnosis: Consistent with pemphigus vulgaris
Indirect Immunofluorescence (Rat Bladder)

- Blood serum samples:
  - Sent to Johns Hopkins, Division of Dermatology
- IIF
  - Anti-pemphigus antibody 1:320
    - Reference range 1:10
- Diagnosis:
  - Paraneoplastic pemphigus (PNP)
Oral Hypersensitivity Reactions
Types of Allergic Reactions (BCD)(9/12)

- Lichenoid Drug 59
- Dental Restorative Materials 51
- Cinnamon/Toothpaste 50
- Erythema Multiforme 14
- Foods and others 11
Contact Stomatitis versus Contact Dermatitis

- Allergic/irritant stomatitis requires longer period of contact
- Saliva dilutes or removes sensitizers and may exert a buffer or neutralizing effect
- Mucosal vascularity may induce rapid dispersion and absorption
Contact Hypersensitivity Reactions
327 Patients (September 13, 2012)

- Female 285 (87.2%)
- Male 42 (12.8%)

Average age
- Female 48.8 years
- Male 46.8 years
- Combined 48.4 years
Signs of Dentifrice Allergy

- Generalized or localized gingivitis
- Mucositis/glossitis
- Cheilitis
- Lip edema
- Perioral dermatitis
## Dentifrices

<table>
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<th>Ingredients</th>
<th>Sensitization</th>
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<tr>
<td>Flavoring (cinnamic aldehyde)</td>
<td>Common</td>
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<tr>
<td>Coloring agents</td>
<td>Rare</td>
</tr>
<tr>
<td>Abrasives</td>
<td>Rare</td>
</tr>
<tr>
<td>Soaps or detergents</td>
<td>Rare</td>
</tr>
<tr>
<td>Preservatives</td>
<td>Common</td>
</tr>
</tbody>
</table>
Flavoring Agents

- Cinnamon oil
- Cinnamic aldehyde
- Menthol (also in peppermint)
- Mint/spearmint
- L-carvone
- Anethole

- Essential oils (eucalyptus oil)
- Eugenol
- Peppermint
- Wintergreen (methyl salicylate)
- Clove oil
Toothpaste Hypersensitivity

- Sensitivity to tarter control and other toothpaste usually involves the flavoring agents, especially cinnamic aldehyde.
- Adverse reactions, although uncommon, should be considered in the differential diagnosis of oral or gingival edema, erythema or ulceration.
- Oral biopsy and patch testing are important in confirming such reactions and the etiologic agent involved.
<table>
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<tr>
<th>Metal</th>
<th>Alternative Metal</th>
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<tbody>
<tr>
<td>Nickel</td>
<td>Palladium/Platinum</td>
</tr>
<tr>
<td></td>
<td>(Cross reactive with nickel)</td>
</tr>
<tr>
<td>Mercury</td>
<td>Titanium (Rare)</td>
</tr>
<tr>
<td>Gold</td>
<td>Silver</td>
</tr>
<tr>
<td>Chromium</td>
<td>Copper</td>
</tr>
<tr>
<td>Cobalt</td>
<td>Beryllium</td>
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</table>
Nickel Allergy

- Nickel is found in bobby pins, needles, pins, metal lipstick holders, watch backs, earring studs, stainless steel (orthodontic bands and wires), metallic dental restorative material.
- Approximately 6% of Americans are allergic to nickel.
- 10% of women are allergic.
Dental Amalgam (Mercury)
Titanium Hypersensitivity

- Titanium is readily dispersed into adjacent tissues and serum.
- The material is extremely biocompatible but occasional hypersensitivity has been reported.
- Effectiveness of patch testing has not been fully validated.
Allergy to Non-Metallic Restorations

Allergic reactions may be more common than previously recognized.

Reactions are most often to residual methyl methacrylate monomer or its degenerative products:
- Formaldehyde
- Benzoyl peroxide
- Debutyl phthalate
Allergy to Non-Metallic Dental Restorations (cont.)

- Some reactions are due to irritant effect rather than allergy.
- Auto-polymerizing acrylic resins release more residual chemicals and are more likely to precipitate adverse reactions.
- Typical allergic reactions include surface erythema and lichenoid changes.
Resins, Epoxy and Acrylates

- Found in:
  - Dental composites
  - Pit and fissure sealants
  - Orthodontic adhesives
  - Glazes

- Root canal sealants
- Bonding agents
- Veneers
- Temporary crowns
The Role of Metallic Dental Restorations in the Etiology of Mucosal and Periodontal Diseases
Patients Evaluated

- Lichen planus 178
- Burning mouth 125
- Allergic stomatitis 54
- Hyperkeratosis 37
- Restoration related gingivitis/periodontitis 44

Total patients 438
Diseases Associated with Metals Allergy

- Gingivitis/periodontitis 9
- Lichenoid reactions 5
- Allergic stomatitis 3
- Burning mouth 1

Total 18 (4.1%)
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