Ten Tongue Troubles

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Disclosure Statement

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This presentation involves discussion of off-label use of drugs.
Oral Dermatology

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Masticatory mucosa

- Anterior hard palate
- Attached gingiva
- Specialized mucosa

Lining mucosa

- Ventral mucosa of the tongue
- Buccal mucosa
- Alveolar mucosa
- Floor of mouth

Nasal cavity
Maxillary sinus
Vestibule
Mucogingival junction
Linea alba
Ten Tongue Troubles

**Function**
Speech, expression, gustation, mastication & deglutition

**Anatomy**
Salivary glands present on most of tongue
Lingual tonsils on posterior dorsum & lateral tongue
Taste buds are fungiform, circumvallate & foliate papillae
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Development
Anterior 2/3 – from 1\textsuperscript{st} branchial arch – supplied by VII nerve
Posterior 1/3 – from 2\textsuperscript{nd} and 3\textsuperscript{rd} branchial arches – supplied by IX nerve

Anatomy
Filiform papillae over most of dorsum
Fungiform papillae irregularly scattered over dorsum
Circumvallate papillae near terminal sulcus
Dorsum of Tongue

- Root
- Body (corpus)
- Apex

Anatomical structures labeled:
- Epiglottis
- Median glossoepiglottic fold
- Lateral glossoepiglottic fold
- Vallecula
- Palatopharyngeal arch and muscle
- Palatine tonsil
- Lingual tonsil (lingual follicles)
- Palatoglossal arch and muscle
- Foramen cecum
- Sulcus terminalis
- Circumvallate papillae
- Foliate papillae
- Filiform papillae
- Fungiform papilla
- Median sulcus
Simplified Features
Main Papillae of Tongue

- Filiform papilla
- Cornified layer
- Fungiform papilla
- Corial papillae
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Diseases of the Tongue

Ten Tongue Troubles

- Furred tongue
- Black hairy tongue
- Smooth tongue
- Fissured tongue
- Median rhomboid glossitis
- Geographic tongue
- Sublingual varices
- Oral hairy leukoplakia
- Herpetic geometric glossitis
- Macroglossia
Ten Tongue Troubles

Furred Tongue

• Hyperkeratosis of filiform papillae
• Noted with fever, smoking, mouth breathing
• Lessened by diet high in fiber and roughage
• Treatment by brushing tongue with dentifrice
Ten Tongue Troubles
Furred Tongue

• Incidence of 0.5-11.3%
• Male predominance
• More common in older persons
• Length of papillae may be 10-20X normal
Furred Tongue
Fur on the Tongue
Filiform Papillary Hypertrophy

**Increases**
- Smokers
- Fasting
- Poorly fitting or absent dentures
- Dentures not used for eating
- Soft processed food diets

**Decreases**
- Vegetarians
- High-fiber diets
- Broad spectrum antibiotics
- Habitual toothbrushing of tongue
Brushing Away Bad Breath

Most important to brush

Also important, but less so

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Furred Tongue

• Brush with simple dentifrice (5-15 strokes)
• Increase roughage in diet
• Correct mouth breathing
• Stop smoking
Ten Tongue Troubles
Black Hairy Tongue

- Hyperkeratosis of filiform papillae
- Increased pigment due to bacteria
- Related to antibiotic therapy, smoking
Black, Pseudohairy, and Fissured Tongue
(PeptoBismol®)
Ten Tongue Troubles

Black Hairy Tongue

• Brush with simple dentifrice (5-15 strokes)
• Increase roughage in diet
• Correct mouth breathing
• Stop smoking
• Brush with 1-2% H₂O₂ solution
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Smooth Tongue

• Atrophy of filiform papillae

• Related to nutritional deficiencies, malabsorption states, Riley-Day dysautonnia syndrome
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Smooth Tongue

- Bland, soft diet
- Establish systemic cause or causes
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Fissured Tongue

- Surface thrown into deep fissures and folds
- Developmental defect
- Related to Down syndrome, Melkersson-Rosenthal syndrome, age
Prevalence of oral lesions in older people

Danish community study
668 individuals 65-95 y/o

75% had 1 or more lesions
Lingual varicosities (28.3%)
Denture stomatitis (12.7%)
Candidiasis (11.8%)
Fissured tongue (9.1%)
Frictional keratoses (8.4%)

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Fissured Tongue

- More severe form is called “lingua plicata”
- More common with psoriasis & geographic tongue
- Incidence increases in older patients
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Fissured Tongue

Brush with simple dentifrice (5-15 strokes) after each meal and at bedtime
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Median Rhomboid Glossitis

- Rhomboid plaque in central tongue
- Developmental defect
- Persistent tuberculum impar
- Chronic hyperplastic candidiasis
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Median Rhomboid Glossitis

- Special stains reveal hyphae
- Low grade chronic hyperplastic candidiasis
- Can treat with topical or oral azoles
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Geographic Tongue

- Glossitis areata migrans
- Transient, annular plaques of the tongue
- Benign migratory glossitis
- Bald vs hyperplastic patches
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Geographic Tongue

• 1-2% of population
• More in younger patients; less common with age
• Possible association with atopic diathesis, psoriasis
Prevalence of oral lesions in children and youths

NHANES III Data
WHO Oral Diagnosis Classification

10,030 individuals 2-17 y/o
Males > females
Lips > tongue > buccal mucosa
Lip/cheek bite (1.89%)
Aphthosis (1.64%)
Recurrent HSV labialis (1.42%)
Geographic tongue (1.05%)

Geographic Tongue
Geographic Stomatitis
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Geographic Tongue

- Irritation from foods and flavors
- No associated systemic disease
- Association with psoriasis
- Spontaneous remission will occur
- Reassurance is in order
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Sublingual Varices

• Benign vascular dilatations
• 10% population age ≥40
• No clinical significance
Prevalence of oral lesions in older people

Danish community study
668 individuals 65-95 y/o

75% had 1 or more lesions

Lingual varicosities (28.3%)
Denture stomatitis (12.7%)
Candidiasis (11.8%)
Fissured tongue (9.1%)
Frictional keratoses (8.4%)

Ten Tongue Troubles
Sublingual Varices

• Benign vascular dilatations
• Reassurance
• No clinical significance
Ten Tongue Troubles
Oral Hairy Leukoplakia

- Characteristic white linear “hairy” plaques
- Lateral tongue borders and buccal mucosa
- Association with EBV infection
- Association with immunodeficiency
ORAL "HAIRY" LEUCOPLAKIA IN MALE HOMOSEXUALS: EVIDENCE OF ASSOCIATION WITH BOTH PAPILLOMAVIRUS AND A HERPES-GROUP VIRUS

DEBORAH GREENSPAN
MARCUS CONANT
SOL SILVERMAN, JR

JOHN S. GREENSPAN
VIBEKE PETERSEN
YVONNE DE SOUZA

Departments of Stomatology (Divisions of Oral Medicine and Oral Biology), Dermatology, and Pathology, Schools of Dentistry and Medicine, University of California, San Francisco, California, USA
Oral Hairy Leukoplakia in a HIV-Negative Renal Transplant Patient: A Marker for immunosuppression?

Peter Itin\textsuperscript{a}, Theo Rufli\textsuperscript{a}, René Rüdlinger\textsuperscript{b}, Gieri Cathomas\textsuperscript{c}, Beat Huser\textsuperscript{d}, Michael Podvinec\textsuperscript{e}, Fred Gudat\textsuperscript{f}

Departments of \textsuperscript{a}Dermatology, \textsuperscript{c}Microbiology, \textsuperscript{d}Nephrology, and \textsuperscript{f}Pathology, University of Basel; \textsuperscript{b}Department of Dermatology, University of Zürich, and \textsuperscript{e}Department of Otorhinolaryngology, Kantonsspital Aarau, Switzerland
Ten Tongue Troubles
Oral Hairy Leukoplakia

• Often asymptomatic
• No malignant potential
• Treatment not required
• Underlying cause of immunosuppression should be addressed
Ten Tongue Troubles
Herpetic Geometric Glossitis

- Tender/painful linear fissures on dorsal tongue
- Striking geometric pattern
- Immunocompromised host defense
- Chronic HSV infection
- Responsive to acyclovir therapy
BRIEF REPORT: HERPETIC GEOMETRIC GLOSSITIS

Marc E. Grossman, M.D., Amy W. Stevens, M.D., and Philip R. Cohen, M.D.
Extremely painful longitudinal fissure with branched pattern on dorsum of tongue

NEJM 329:1859, 1993
Acute Herpetic Gingivostomatitis
Herpetic Geometric Glossitis
Ten Tongue Troubles
Herpetic Geometric Glossitis

- Bland, soft diet
- Acyclovir 200 mg every 4-6 hr
  or
- Valacyclovir 500 mg every 12 hr
  or
- Famiciclovir 250 mg every 8 hr
Ten Tongue Troubles

Macroglossia

• Tongue enlarged out of proportion to jaws

• Many associations

• May require Bx for diagnosis
Acromegaly
Ten Tongue Troubles
Macroglossia

**Primary:** Down Syndrome, developmental

**Tumors:** Hemangioma, lymphangioma, neurofibroma, neurilemmoma, thyroglossal duct cyst

**Infections:** Actinomycosis, tuberculosis, histoplasmosis, syphilis

**Metabolic:** Hypothyroidism, acromegaly, multiple myeloma, amyloidosis

**Other:** Angioedema, sarcoidosis, superior vena cava syndrome
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Tertiary Syphilis

- Localized granuloma which ulcerates
- Painless leukoplakic patch which ulcerates
- Persists for months
- Not infectious
Amyloidosis
Amyloidosis
Ten Tongue Troubles
Diseases of the Tongue

Color Atlas of
THE TONGUE
in Clinical Diagnosis

D.W. BEAVEN • S.E. BROOKS
Oral Dermatology

Clinics in Dermatology
Volume 34, Number 4,
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Oral Dermatology, Part I

Guest Editors: Roy S. Rogers, III, MD and Nasim Fazel, MD, DDS
Ten Tongue Troubles

Bonus

What to do with a patient who has symptoms of a sore, burning mouth?
The symptoms of the sore, burning mouth are the result of one or several conditions. Success in the management of BMS is dependent on identifying **ALL** factors causing the symptoms and managing these simultaneously.

The prognosis for patients with symptoms of the sore, burning mouth is optimistic for a good outcome.
Burning Mouth Syndrome

**Learning Objectives**

The learner will be able to assess the patient suffering from a sore, burning mouth for the many potential causes.

The learner will be able to develop and carry out a plan of management for each factor simultaneously.

The learner will be able to reassure the patient that optimism regarding the prognosis is a realistic goal.


Burning Mouth Syndrome

Symptoms of a sore, burning mouth are common and distressing.

The BMS is a complex, multifactorial condition.
## Symptoms of the Burning Mouth Syndrome

### Prevalence

<table>
<thead>
<tr>
<th>Populations at risk</th>
<th>No.</th>
<th>%</th>
<th>% F</th>
<th>Age range</th>
</tr>
</thead>
<tbody>
<tr>
<td>General dental practice</td>
<td>392</td>
<td>5</td>
<td>85</td>
<td>40-50</td>
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<tr>
<td>Menopause clinic</td>
<td>114</td>
<td>26</td>
<td>100</td>
<td>40-60</td>
</tr>
<tr>
<td>Diabetes clinic</td>
<td>110</td>
<td>10</td>
<td>–</td>
<td>50-80</td>
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</table>

Burning Mouth Syndrome
Glossodynia

- Syndrome of burning, stinging, tingling, scalded sensations of mouth, especially the tongue
- Diagnosis of exclusion
- Requires a thorough evaluation
- Incidence of 11.4 per 100,000 person years
- Women 18.8 to men 3.7

Burning Mouth Syndrome

Syndrome of burning, stinging, scalded sensations of mouth, especially the tongue

There are primary and secondary forms of the syndrome of the sore, burning mouth
Burning Mouth Syndrome

Primary BMS is idiopathic

Secondary BMS may have one or more causes

The key to management of these patients is to seek any and all causes of the distressing symptoms
Burning Mouth Syndrome

Primary BMS is idiopathic

The key to management of these patients is to seek any and all causes of the distressing symptoms

Secondary Burning Mouth Syndrome

Identify and address each element to insure best outcome

The outlook for patients suffering from symptoms of the BMS is optimistic
Clinical Assessment and Outcome in 70 Patients With Complaints of Burning or Sore Mouth Symptoms

Lisa A. Drage, M.D., and Roy S. Rogers III, M.D.

- **Objective**: To review a series of patients with a burning or sore mouth for elucidation of associated conditions and treatment outcome.
- **Material and Methods**: We retrospectively studied 70 consecutive patients with a burning or sore mouth who were encountered at a tertiary-care center between 1979 and 1992. Clinical and laboratory findings were summarized, and follow-up data were analyzed.
- **Results**: The study cohort of 56 women and 14 men had a mean age of 59 years. They had had a burning or sore mouth for a mean duration of 2.5 years. Multiple etiologic factors for the burning or sore mouth were present in 37% of the study subjects. The most frequently associated conditions were psychiatric disease (30%), xerostomia (24%), geographic tongue (24%), nutritional deficiencies (21%), and allergic contact stomatitis (13%). With a treatment course tailored to the suspected causal factor, 72% of the patients who had follow-up reported improvement.
- **Conclusion**: With a directed investigation, one or more causes could be identified in most patients who had a burning or sore mouth. Successful management of these symptoms was possible in a majority of the patients.

Recommended Work-Up of Burning or Sore Mouth

- Thorough history
- Oral exam
- Lab tests
  - Complete blood cell count
  - Iron, total iron-binding capacity, iron saturation, ferritin
  - Vitamin B1, B2, B6, B12, D3 and folate
  - Zinc
  - Thyroid function tests (TSH)
  - Glucose and HbA1c
# Secondary Burning Mouth Syndrome

## Mayo Series

<table>
<thead>
<tr>
<th>Physical findings</th>
<th>No.</th>
<th>%</th>
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</thead>
<tbody>
<tr>
<td>Xerostomia</td>
<td>20/70</td>
<td>28.6</td>
</tr>
<tr>
<td>Dentures</td>
<td>17/70</td>
<td>24.3</td>
</tr>
<tr>
<td>Geographic tongue</td>
<td>13/70</td>
<td>18.6</td>
</tr>
<tr>
<td>Furred tongue</td>
<td>9/70</td>
<td>12.9</td>
</tr>
<tr>
<td>Atrophic tongue</td>
<td>6/70</td>
<td>8.6</td>
</tr>
<tr>
<td>Fissured tongue</td>
<td>5/70</td>
<td>7.1</td>
</tr>
<tr>
<td>Papillitis</td>
<td>5/70</td>
<td>7.1</td>
</tr>
</tbody>
</table>
Secondary Burning Mouth Syndrome
Mayo Series

Global assessment of 70 patients

- Women – 80%
- Abnormal tongue exam – 50%
- Xerostomia – 30%
- Denture wearers – 25%

Follow-up
- Improved – 70%
- Dramatically improved – 35%
Secondary Burning Mouth Syndrome

Identify and address each element to insure best outcome

The outlook for patients suffering from symptoms of the BMS is optimistic
Secondary Burning Mouth Syndrome

• Careful history and physical exam
• Lab testing for “correctable causes”
• Seek >1 cause
• Treat all potential causes simultaneously
Secondary Burning Mouth Syndrome

Causes

- Trauma (denture sore mouth)
- Candidiasis
- Diabetes
- Nutritional deficiencies
- Xerostomia
- Drugs
- Contactants
- Depression
- Cancerophobia
- GERD
Management Strategies for the Burning or Sore Mouth*

- Treat dry mouth
- Denture adaptation
- Control of oral habits
- Vitamin and mineral replacement
- Avoidance of allergens
- Avoidance of irritants
- Antifungal agents

*Tailor treatment to suspected causal factor or factors*
Burning Mouth Syndrome

SUMMARY
Symptoms of a sore, burning mouth are common and distressing

The BMS is a complex, multifactorial condition
Burning Mouth Syndrome

Identify and address each element to insure best outcome

The outlook for patients suffering from symptoms of the BMS is optimistic
Management Strategies for the Burning or Sore Mouth

Correct active causes

Low dose tricyclic antidepressant at bedtime, amitryptyline…10 mg for 4 weeks, 20 mg for 4 weeks, 30 mg for 4 weeks, reassess

Treat depression

Reassurance that cancer is not present
Secondary Burning Mouth Syndrome
Mayo Series

Prognosis

• Improved substantially – 35%
• Improved moderately – 35%
• Improved minimally – 30%
Ten Tongue Troubles

Bonus

What to do with a patient who has symptoms of a sore, burning mouth?
Management Strategies for the Burning or Sore Mouth

What to do when all else fails?

Treatment options for chronic sore, burning mouth symptoms

Management Strategies for the Burning or Sore Mouth

Topical capsaicin

Alpha lipoic acid

Clonazepam 0.25mg bedtime, increasing by 0.25 mg each week to 2.0 mg

Gabapentin
Management Strategies for the Burning or Sore Mouth*

• Topical capsaicin (Tobasco sauce) (J Otolaryngol 2004; 130:786-788.)

• Alpha lipoic acid 200 mg TID X 12 weeks (J Oral Pathol Med 2002; 31:267-269; Oral Dis; 2008;14:529-532.)
Management Strategies for the Burning or Sore Mouth*

Alpha lipoic acid 200 mg TID X 12 weeks (Oral Dis; 2008; 14: 529-532.)

- 31 of 35 patients took Rx as directed
- 11 of 35 (35%) reported benefit
- 14 of 35 (45%) reported no benefit

*Tailor treatment to suspected causal factor or factors*