

DRY EYES DRY MOUTH

The Under Recognized
Under Treated Side of
Autoimmune Disease

Diseases that Decrease Moisture

- Sjogren's
- Diabetes
- Scleroderma

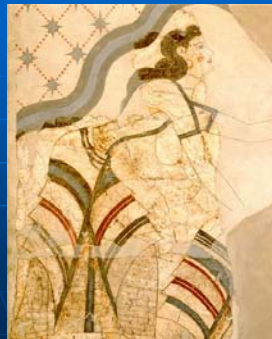
Other Causes

- Radiation
- Medications

Symptoms

- | | |
|--|--|
| ■ DRY EYE | ■ DRY MOUTH |
| Sensation of sand in the eyes | Difficulty speaking without drinking liquids |
| Burning, stinging or grittiness of your eyes | Problems with taste |
| Difficulty wearing Contact lens | Difficulty chewing and swallowing dry food |
| | Badly fitting dentures |
| | Tooth Decay |
| | Cracks at the corners of your mouth |
| | Bleeding gums |

Sjogren's Syndrome



What You and
Your Doctors
Should Know
about
Dry Eyes and
Dry Mouth

Definition of Sjogren's Syndrome

- Chronic Inflammatory Autoimmune Disorder
- Immune Cell Attack on Salivary and Lacrimal Glands
- Diminished Lacrimal and Salivary gland secretion

Dry Eyes and Dry Mouth

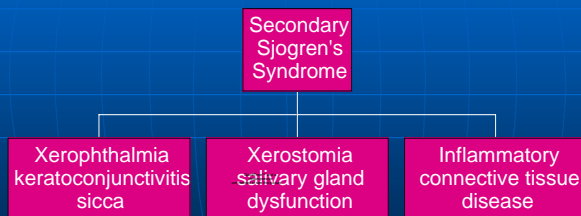


- Primary Sjogren's
- Secondary Sjogren's



- Scleroderma

Sjögren's syndrome



Secondary Sjögren's syndrome

Rheumatologic diagnoses:
RA, SLE, Scleroderma, PBC,
MCTD, polymyositis, FMG,
others

Other conditions:

Hashimoto's
thyroiditis, pernicious anemia,
myasthenia gravis, chronic
active hepatitis, celiac sprue

Things to Keep In Mind

- Sicca Symptoms are Common in Scleroderma: 60-70% of SSc patients
- Complications include severe oral cavity and eye problems
- Treatment for Sjogren's Syndrome is aimed at preventing complications and ameliorating the Symptoms
- Good Preventive Care is Key

What Every Medical Student Knows About Sjogren's Syndrome

- Predominantly Women
- Glandular Symptoms: Dry Eyes, Dry Mouth, Dry Skin, Vaginal Dryness, Dry Airways
- Autoantibody production: RF, ANA, Ro/La,
- Cell Mediated Autoimmunity: Lymphocytes (mostly T cells) infiltrate salivary glands, pancreas, kidneys, lung~FIBROSIS

Extraglandular Symptoms:

- Fatigue
- Joint Pain
- Neurologic Disorders
- Vasculitis

DIVERSE SYSTEMIC MANIFESTATIONS

- **Skin:** xeroderma, purpura, photosensitivity
- **Lungs:** xerotrachea, bronchitis, interstitial pneumonitis.
- **GYN:** dyspareunia, vulvovaginitis
- **Renal:** nephritis, hyposthenuria, cystitis
- **GI:** esophageal dysmotility, gastritis, pancreatitis, liver dysfunction
- **Heme:** anemia, leukopenia, lymphoma
- **CNS:** neuropathies

Autoantibody production: RF, ANA, Ro/La,

Cell Mediated Autoimmunity:
Lymphocytes (mostly T cells) infiltrate
salivary glands, pancreas, kidneys,
lung~FIBROSIS

•**Early involvement of the Salivary Gland in a patient with Scleroderma may be a marker for Severe Disease**

•**Clues to the Pathogenesis of Autoimmune Disease???**



What is the Cause of Sjogren's Syndrome

- **B cells:** acting out of control, soliciting their own help, independent of normal T cell regulatory mechanisms, present signals that result in the production of antibodies



And that ain't all



- T cells, dysregulated function, inflammatory cytokines
- Positive feed back loop
- Genetics: Multiple gene "signatures"
- Viral trigger: Not convincingly demonstrated yet



Blood, Sweat and Tears

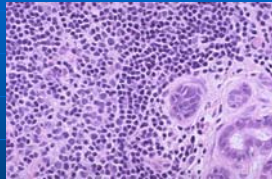
- Ocular Complications: Corneal Ulcers, Severe Corneal Disease resulting in Blindness
- Oral Complications: Dental caries, infections, Difficulty swallowing and Loss of Taste, Cracking of the Lips, Hyposalivation

TESTS for Sjogren's Syndrome

- SEROLOGIES: ANA, RF, SSA, SSB (Ro/La)
- Minor Salivary Gland Biopsy
- MRI: Parotid Gland Volume and Inflammation

The Lip Biopsy

- labial histology*
- focus score / 4mm
- >50 mononuclear cells



- Autoantibodies*
- anti-SS-Ro or
- anti-SS-La

Salivary glands



- SUBMANDIBULAR (submaxillary) mixed = 45 %
- PAROTID serous = 35 %
- SUBLINGUAL mucous = 10 %
- MINOR mucous (slgA) = 10 %

The Oral Problem

- Sjögren's syndrome (SS) on a histopathological level is a benign lymphosialadenopathy which includes autoimmune lymphocytic infiltration of the salivary glands. Oral clinical manifestations of SS typically include : **hyposalivation, glossitis, mucositis, angular cheilosis, and increased caries rate.**

Subjective evaluation of xerostomia

- Dryness ?
- Comfort ?
- Drink liquids ?
- Swallow ?
- Speak ?
- Wear dentures ?
- Sleep ?

Surrogate clinical symptoms

Rhodus, et.al.
J Dent Research, 1991; 71: 460.

Saliva is Not Just Spit

- Saliva contains
 - 40 essential proteins
 - 13 electrolytes and minerals
 - 7 small organic molecules

salivary gland evaluation

Surrogate clinical signs

Rhodus, et.al.
[J Dent Research](#), 1991; 71: 460.

- unstimulated whole salivary flow rate:
 - 100% SG function = 0.5 ml/min
 - 80% SG function = 0.4 ml/min
 - 70% SG function = 0.3 ml/min
 - 50% SG function = 0.2

Evaluation of Dry Mouth

- Quantifiable:
assessed by Whole Unstimulated Flow (WUFS)
- Scintigraphy



Why Do I need Saliva?

Correct Answer is All of the below

- Eating
- Chewing
- Swallowing
- Speaking

Difficulty Swallowing is A Problem in people with Sjogren's

- GERD
- Misdirected Swallowing
- Pharyngeal Retention

Salivary constituents: physiochemistry

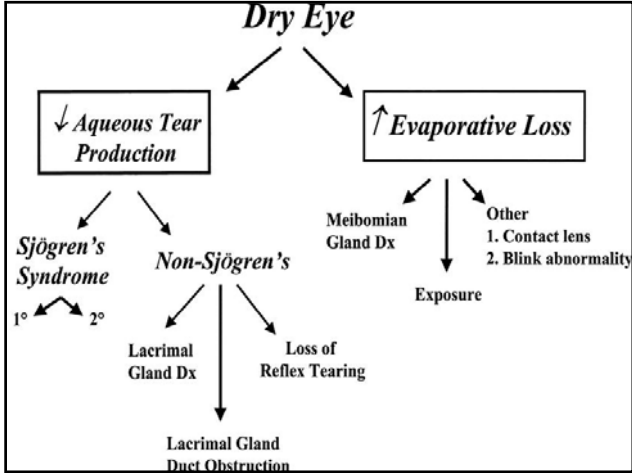
- essential electrolytes (Ca, P, Mg, F, etc.)
- immunoglobulins (sIgA, IgG, etc.)
- buffering capacity (statherin)
- viscous glycoproteins (APRPs, etc.)
- antimicrobial enzymes (lysozyme, etc.)
- digestive enzymes (amylase, etc.)
- lubricity, moistening, cleansing

Evaluation for Ocular Dryness

- Symptoms don't necessarily correlate with Glandular function
- Severe problems secondary to dryness can develop in individuals who lack Corneal Sensation
- ***Who should be checked?: Everyone***

Ocular Problems in Scleroderma

- keratoconjunctivitis sicca
- progressive shallowing of conjunctival fornices
- peripheral ulcerative keratitis
- eyelid tightness.

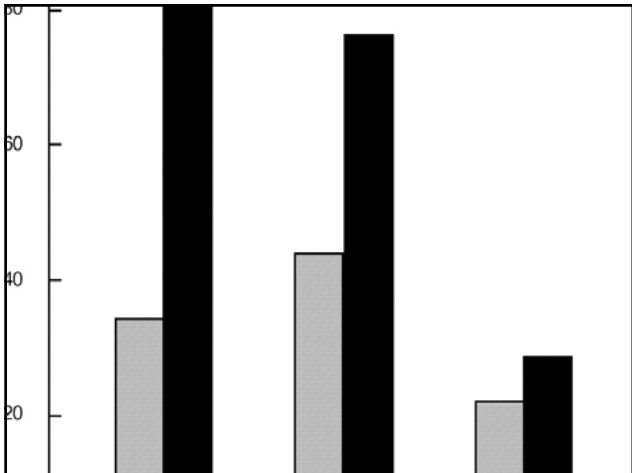


Dry Eye (KCS) Definition

- Disorder of the Tear film
- Damage to the surface of the eye

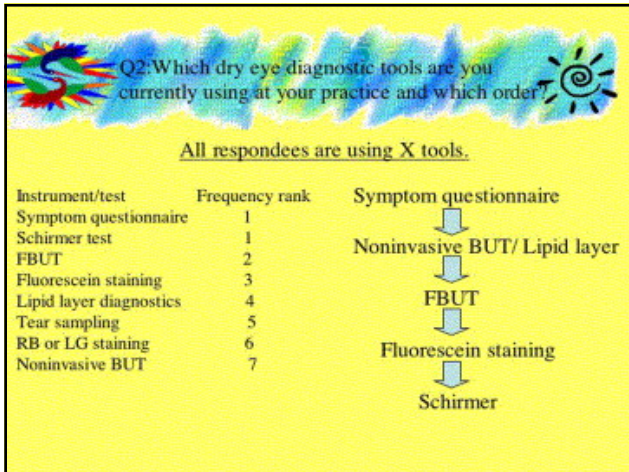
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    graph TD
      DE[Dry Eyes] --> TD[Tear Deficiency  
Sjogrens  
Non Sjogren's]
      DE --> ED[Evaporative Dry Eye  
Contact lens use  
Blepharitis]
      DE --> DL[Disorders of Lid  
Disorders of the Globe]
  
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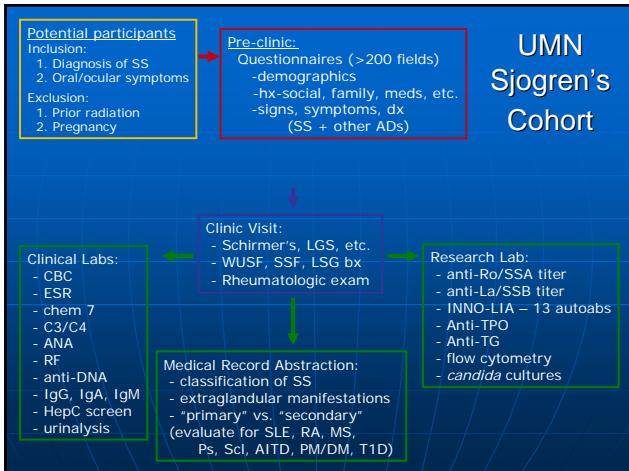


The Eye EXAM

- Schirmers Test < 5mm
- Decreased Tear Production
- Increased Tear Evaporation
- Lissamine staining: Tear Break UP-Cornea and Conjunctiva



The Research Clinic



Therapy

Treating the Discomfort
Preventing the Complications

Management of Dry Eye

- Artificial tears
- Punctal Plugs
- Oral stimulants
- Topical antiinflammatories

Salivary gland hypofunction - Rx

- **moisture and lubrication:**
- H₂O, avoid diuretics and acids
- **simulate:** artificial salivas-moisturizers (Salivart[®], Oral Balance[®], MouthKote[®])
- **stimulate:** pilocarpine HCl (Salagen[®])
cevimeline HCl (Evoxac [®])

Artificial salivas

EVOXAC[®]

CEVIMELINE HCL
30 MG TABLETS

Sjögren's syndrome- Rx

- soft tissue (oral mucosa) and opportunistic infections:
- antifungal agents (nystatin, clotrimazole, fluconazole)
- antiinflammatory agents (benedryl, topical corticosteroids, milk of magnesia, sucralfate, orabase, etc.)
- Anesthetics, analgesics
- NaHCO₄ ; avoid irritants

Palliative treatment

- mild: benedryl + carafate+ Maalox
elixir 160cc 40cc
40cc ± kaopectate
 ± nystatin
 ± anesthetic (dyclone , lidocaine) ± antibiotic (tetracycline, penicillin)
- Mycolog II ointment

Sjögren's syndrome- Rx

TREATMENT CONSIDERATIONS
FAQs

COMPLEX RESTORATIVE
PROGNOSIS
WHITENING
DENTURES
IMPLANTS

Novel Therapeutics

- Abatacept: Prevents activation of T cells
- Rituxan and other anti-B cell molecules: depleting autoantibody producing cells
- Anti-Cytokine therapies: Removing inflammatory mediators

