Sjögren’s Syndrome: Dental Considerations

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Sjögren’s Syndrome: Dental Considerations

LEARNING OBJECTIVES:
After reading this article, the individual will learn:

- The characteristics of Sjögren’s syndrome (SS) and how to identify patients having SS.
- How to treat patients with xerostomia resulting from SS.

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INTRODUCTION
Sjögren’s syndrome (SS) is a chronic autoimmune rheumatic disease. It is the second most common rheumatic disease in the United States, after rheumatoid arthritis (RA), affecting one to 4 million people. It typically begins in the fourth to sixth decade of life. The majority (90%) of SS sufferers are middle-aged white perimenopausal females. SS has also been seen in men, children, and the aged. The prevalence ratio of women to men is 9:1. The objective of this article is to discuss the characteristics of SS, how dental clinicians can identify patients having SS, and how to treat patients with xerostomia resulting from this disease.

There are 2 types of SS, primary and secondary. Primary SS occurs independently of any other associated disorders or systemic disease. Secondary SS occurs in association with another connective tissue disease such as systemic lupus erythematosus, RA, scleroderma, or relapsing polychondritis. Secondary SS accounts for approximately 60% of Sjögren’s patients.

ETIOLOGY
Although the etiology of SS is unknown, multiple factors are thought to be involved in its development:

- Environment: infection by Epstein-Barr virus and Helicobacter pylori bacterium is considered as a possible factor for initiating SS.
- Sex hormones: the majority of SS sufferers are females, suggesting that sex hormones may play a role in the autoimmune response.
- Genetics: genetic factors are considered likely to play a role, eg, in white people, HLA-DR3 gene is misread as an antigen by lymphocytes; another example is the presence of self-antigen ICA-69. When ICA-69 occurs as a component of a specific cell or tissue, that cell or tissue is mistakenly recognized as foreign by the immune system and triggers an immune response.
- Increased antibodies: the presence of Sjögren’s-
associated antibodies such as anti-Ro/SSA and anti-La/SSB is associated with increased SS symptoms.

- Inflammatory reactivity: lymphocytes accumulate in the salivary glands and produce several proinflammatory cytokines, thus sustaining the disease. An accumulation of lymphocytes, called a focus of inflammation, is characteristic in exocrine glands of people with SS. This focus is what is found when a lip biopsy of a minor salivary gland is performed in the diagnosis of SS.

**SYMPTOMS**

The hallmark symptoms of SS are xerophthalmia (dry eyes) and xerostomia (dry mouth). SS sufferers often report that their eyes feel extremely dry, gritty, or sandy; they may experience a reduction in tearing. They may report that the eyes burn and/or itch, appear red, and are more sensitive to sunlight than usual. If not treated early enough ulcers of the cornea can occur, which may lead to blindness.

Xerostomia affects the oral cavity, causing difficulty swallowing, speaking, chewing, and wearing dentures; changes in taste; burning or soreness of oral mucosa; fissured tongue (Figure 1); and increased susceptibility to oral candidiasis. Xerostomia also results in enamel demineralization (Figure 2) and an increase in the incidence of dental caries (Figures 3 and 4) as well as increased accumulation of bacterial plaque and associated gingival inflammation and periodontal disease.

SS affects the major salivary glands (parotid, submandibular, and sublingual), causing them to appear enlarged, swollen, and tender on palpation. SS also affects the blood vessels, the nervous system, muscles, skin, heart, and other organs such as the kidneys. As a result, sufferers may develop muscle weakness, confusion and memory problems, dry skin, and feelings of numbness and tingling in the extremities. They may also report having joint or muscle pain, low grade fever, increased fatigue, and vasculitis. Lymphomas develop in 6% of SS patients.

**DIAGNOSIS**

Most recent criteria state that one may be diagnosed as having SS if one is positive for 4 of the following 6 diagnostic tests, including one objective measure (ie, by histopathologic examination [lip biopsy] or antibody screening [blood test]).

- Salivary function tests: determine the actual severity of xerostomia. Unstimulated saliva is produced by the salivary glands at rest. If the unstimulated salivary flow is less than 0.1 mL/min it is positive for SS.
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- Schirmer’s test: this test is performed for the diagnosis of dry eyes. It assesses tear formation. The test involves placing a filter paper in the lower conjunctival sac. If less than 5 mm of paper is wetted in 5 minutes then the Schirmer’s test is positive for SS.

- Lip biopsy: involves performing biopsy of minor salivary glands in the lower lip. Lip biopsy report is considered positive for SS when there is presence of a focal score of one or more.¹²

- Serologic and laboratory findings: blood test is performed to detect for SSA (anti-Ro) antibodies; SSB (anti-La) antibodies; antinuclear antigen; rheumatoid factor. Presence of these antibodies in the blood is positive for SS.

- Patient reports of symptoms of dry mouth: a positive response to all of the following questions is considered diagnostic for salivary hypofunction:¹³ Do you sip liquids to aid in swallowing food? Does your mouth feel dry when eating food? Do you have difficulty swallowing food? Does the amount of saliva in your mouth seem to be too little? Do your nose or throat feel dry? Do you have a dry cough, hoarseness of voice? Decreased sense of taste?

- Patient reports of symptoms of dry eyes: a positive response to all of the following questions is considered diagnostic for dry eyes:¹³ Do your eyes feel dry, “gritty” or “sandy,” or burn? Do you use tear substitutes more than 3 times a day?

- In addition, clinical signs such as dry fissured tongue, swollen salivary glands, and enlarged lymph nodes in the neck may assist in the diagnosis of SS.

**MANAGEMENT**

There is no known approach to prevent or cure SS; therefore treatment is tailored to managing the symptoms. Early diagnosis and aggressive symptom-based treatment will help alleviate much of the discomfort, retard the progression of the disorder, and promote comfort and productivity.¹⁴

Patients with SS are at high risk for dental caries, as xerostomia increases the vulnerability of tooth enamel. Thus, extra effort must be made to protect teeth from demineralization and dental caries (Figures 5 and 6). SS sufferers should have a comprehensive dental exam and bite-wing radiographs annually to detect any new carious lesions. In addition, they should receive frequent dental checkups due to increased risk for other oral disease. These patients are also at high risk for periodontal disease and should receive periodontal prophylaxis every 3 months followed by an application of fluoride varnish.¹⁵

The dentist or dental hygienist should reinforce the importance of regular brushing and flossing. An electric toothbrush is recommended to effectively remove plaque and prevent gingivitis.¹⁶ Patients need aggressive fluoride therapy in the form of professionally applied concentrated sodium fluoride varnishes and daily use of prescription strength fluoride toothpaste (PreviDent 5000 Dry Mouth [Colgate-Palmolive Company]). Calcium also has a remineralizing effect on dental enamel. A calcium-containing remineralizing oral rinse such as Caphsol (Eusa Pharma) is recommended. Antibacterial rinses such as 0.12% chlorhexidine gluconate (Actavis MidAtlantic) are indicated in an effort to reduce gingivitis.¹⁷

Xerostomia also causes the oral mucosa to become dry and sore. Oral lubricants such as vitamin E or Oral Balance (GlaxoSmithKline) are effective in soothing these irritated tissues. Patients are advised to break the vitamin E capsule in the mouth and swish and spit. Xerostomia also causes the lips

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**Figures 5 and 6.** Intraoral appearance of SS. SS causes decalcification of enamel and increases the risk for dental caries. (Images courtesy of Dr. Athena Papas.)
to become dry. The regular use of topically applied oil-based balms or vitamin E-containing balm may provide soothing relief to dry cracked lips. The use of xylitol-containing salivary stimulants such as Biotene gum (GlaxoSmithKline) or Trident gum (Cadbury Adams USA) can help stimulate salivary flow in patients having remaining functional salivary tissue. Xylitol interferes with the growth of cariogenic bacteria; it is safe and approved as a therapeutic sweetener by the US Food and Drug Administration.17

Nonselective muscarinic receptor agonists such as Pilocarpine or Civemiline may be prescribed for patients to promote salivary function. These are parasympathomimetic drugs and act therapeutically at the muscarinic acetylcholine receptor M3 subtype. Sialagogues should always be taken with food.18

For patients who are not able to afford prescription medications or are unable to tolerate them, there are over-the-counter products by Biotene gum for treatment of dry mouth. Over-the-counter products have limited use and are not as effective as prescription medication.

Oral candidiasis is frequently seen in Sjögren’s patients. Treatment should be with topical antifungal rinses (Nystatin) or lozenges (Clotrimazole). Systemic antifungal medication such as Fluconazole is recommended for recurrent oral candidiasis or when topical antifungal agents are ineffective.17

Sjögren’s sufferers should try to minimize any factors that may exacerbate the symptoms of dry eyes and dry mouth. The use of medications increases with age, with more than 85% of persons aged 60 years and older taking at least one prescription medication. Therefore, the prevalence of medication-induced xerostomia is high in the elderly population.19 The side effect of xerostomia has been reported in approximately 80% of the most commonly prescribed medications, which can compound the discomfort of the xerostomia already resulting from SS. If possible, alternative, nonxerostomic medications should be used as substitutes.19

Patients should be counseled to avoid any products that can contribute to oral dryness or irritation. Alcohol has a drying effect and should be avoided in both beverages and in oral products such as mouthwashes. Caffeine acts as a mild diuretic which promotes fluid loss and may worsen dry mouth. If possible, patients should avoid or limit items which contain significant amounts of caffeine such as coffee, tea, and certain soft drinks. Tartar control toothpastes and tooth whitening products should also be avoided as they can be irritating to friable oral tissues. If patients tend to breathe through their mouths, it is often helpful to encourage them to try to increase nasal breathing and to be examined by an otolaryngology specialist if there are impediments to normal nasal breathing. The dry ambient air of most modern homes contributes to a sensation of dryness. The use of a humidifier, particularly at night, helps address this concern.17

Patients are advised to minimize consumption of carbohydrate-containing foods and beverages between meals, especially sticky foods such as cookies, bread, potato chips, gums, candies, acidic beverages, (such as most carbonated and sports replenishment drinks) and lemon products. Frequent sips of small amounts of sugar-free fluids, especially water, can be helpful in diminishing the effects of oral dryness. Many patients keep a bottle of water handy to moisturize their tissues. However, excessive sipping of water can actually reduce the oral mucus film lining the mouth and worsen dry mouth symptoms.17

CONCLUSION

SS is an autoimmune condition which results in dryness in many of the body’s tissues. The condition is rarely fatal, but its symptoms can severely compromise health and quality of life. The disease course of SS can vary with symptoms ranging from very mild to fairly significant. Individuals with secondary SS seem to have milder disease as compared to those with primary SS. Early diagnosis and treatment are extremely important in trying to prevent damage to major organs. Ocular and oral care is particularly important to prevent serious harm to eyes and teeth. Many effective strategies are available to help patients manage their symptoms (Table) as are helpful support groups such as the Web site sjogrens.org. Routine follow-up care with the physician and the dentist is essential.

With early intervention and good individualized care, people with SS should be able to lead full and comfortable lives.
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### Table. Treatment Summary for Sjögren’s Symptoms

<table>
<thead>
<tr>
<th>Category</th>
<th>Recommendations</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Dental Office Care</strong></td>
<td>- Frequent dental checkups due to increased risk for oral disease</td>
</tr>
<tr>
<td></td>
<td>- Annual comprehensive dental exam and bite-wing x-rays</td>
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<tr>
<td></td>
<td>- Periodontal prophylaxis every 3 months</td>
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<tr>
<td></td>
<td>- Fluoride varnish application</td>
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<tr>
<td><strong>Home Oral Care</strong></td>
<td>- Electric toothbrush to effectively remove plaque and prevent gingivitis</td>
</tr>
<tr>
<td></td>
<td>- Daily use of prescription strength fluoride toothpaste PreviDent 5000</td>
</tr>
<tr>
<td></td>
<td>- Calcium-containing remineralizing oral rinse such as Caphsol</td>
</tr>
<tr>
<td></td>
<td>- Antibacterial rinses such as 0.12% chlorhexidine to help reduce gingivitis</td>
</tr>
<tr>
<td><strong>Xerostomia</strong></td>
<td>- Oral lubricants such as vitamin E or Oral Balance can help soothe irritated tissues.</td>
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<td></td>
<td>- Topically applied oil-based balms or vitamin E-containing balm can relieve dry cracked lips</td>
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<td>- Over-the-counter products such as Biotene gum can help treat dry mouth</td>
</tr>
<tr>
<td><strong>Oral Candidiasis</strong></td>
<td>- Antifungal rinses or lozenges and systemic antifungal medication</td>
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### REFERENCES


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POST EXAMINATION QUESTIONS

1. Which of the following markers is present in the blood of a patient diagnosed with primary Sjögren’s syndrome (SS)?
   a. Rh factor.
   b. ANA.
   c. IgG.
   d. SSA.

2. Patients having secondary SS could have any of the following disorders EXCEPT:
   a. Rheumatoid arthritis.
   b. Lichen planus.
   c. Systemic lupus erythematosus.
   d. Scleroderma.

3. Which would NOT be an indicator of low risk for caries?
   a. Low streptococci and lactobacilli counts.
   b. Xerostomia.
   c. History of fluoridated drinking water in childhood.
   d. Three meals a day, no snacks.

4. Which is NOT appropriate to manage adult patients with high caries risk?
   a. Topical fluoride treatment in the dental office.
   b. Remineralizing solutions/fluoride toothpastes.
   c. Chewing xylitol containing gum.
   d. Dental examination and bitewing radiographs every 2 years.

5. Lip biopsy report for a patient suffering from autoimmune-induced xerostomia is considered positive when the focal score is one or greater. Unstimulated salivary flow below 0.1 mL/minute in a 15-minute collection is an indication for dry mouth.
   a. Both statements are true.
   b. Both statements are false.
   c. The first statement is false, the second is true.
   d. The first statement is true, the second is false.

6. Which of the following is FALSE about fluorides?
   a. Forms fluorapatite.
   b. Forms hydroxyapatite.
   c. Aids remineralization.
   d. Interferes with plaque bacterial physiology.

7. Which do NOT suppress the levels of Streptococcus mutans in the mouth?
   a. Chlorhexidine.
   b. Xylitol gum.
   c. Sorbitol gum.
   d. Topical fluorides.

8. Saliva is important in caries prevention because it restores the minerals that are lost from tooth structure. SS causes decalcification of enamel and increases the risk for dental caries.
   a. Both statements are true.
   b. Both statements are false.
   c. The first statement is false, the second is true.
   d. The first statement is true, the second is false.
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2.  ☐ a  ☐ b  ☐ c  ☐ d

3.  ☐ a  ☐ b  ☐ c  ☐ d

4.  ☐ a  ☐ b  ☐ c  ☐ d

5.  ☐ a  ☐ b  ☐ c  ☐ d

6.  ☐ a  ☐ b  ☐ c  ☐ d

7.  ☐ a  ☐ b  ☐ c  ☐ d

8.  ☐ a  ☐ b  ☐ c  ☐ d

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