**Xerostomia in Primary Care**

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Xerostomia also known as dry mouth is a relatively common condition which can present acutely or chronically and has a variety of different causes. Xerostomia or hypo salivation is often caused by several temporary and chronic conditions which lead to salivary gland hypofunction. Temporary causes include, most commonly, the short term use of certain medications, infections, and dehydration. Chronic causes of xerostomia include rheumatologic diseases such as Sjogren syndrome most commonly, as well as rheumatoid arthritis, systemic lupus erythematosus and scleroderma; other medical conditions e.g. sarcoidosis, amyloidosis, and lymphoma. Several medications can cause xerostomia most specifically drugs with antimuscarinic and antihistaminergic properties e.g. diphenhydramine and other antihistamines. Specific medications most likely to cause dry mouth are certain psychotropic agents e.g. antidepressants, antipsychotics, opioids, and certain antihypertensive agents such as diuretics and ACE inhibitors/ angiotensin receptor blockers. Side effects of radiation for head and neck cancers are also associated with salivary gland damage causing acute and chronic xerostomia. Physical examination should include a thorough oral and intraoral assessment with attention to the major and minor salivary glands, oral mucosa, tongue teeth and lips as well lymph nodes, skin, joints and other organs which may indicate systemic disease.

**Case Study**

Samantha is a 51 year old generally healthy female who presents to your family practice office with progressive worsening of dry mouth and dry eyes for the past 10-12 months. She describes the dry mouth as a tacky, dry feeling requiring frequent sips of water with and without food and more recently at night. She has noticed difficulty swallowing food without water. She has tried various sour lemon candies and even lemon juice in water to try and get her salivation with little improvement. Samantha also reports dry, cracked tongue and lips with frequent chapping and cracking. She has had to visit the dentist for cavities 3 times over the past 2 years.

In addition to dry mouth and hypo salivation Samantha reports progressive worsening of dry eyes over the past 12-18 months. She describes bilateral eye dryness, grittiness and soreness with the need to use artificial eye drops very frequently. Samantha reports increased fatigue and occasional joint pains without swelling which she attributes to aging. Her medical history is otherwise unremarkable and she does not take medications on a regular basis. She denies fever, chills, rashes, weight changes,

She is a non-smoker and drinks less than 1-2 glasses of red wine per month. She denies sick contacts or recent travel.

**DISCUSSION QUESTION:**

What additional subjective and objective information would you want to know about Samantha’s illness? Is there diagnostic testing to consider?

**ANSWER:**

Additional information to aid the diagnostic process of xerostomia includes review of recent and past infections such as HIV and Hepatitis C, assessment of medications including over the counter and complementary/alternative therapies, history of head and neck irradiation. A review of systems should focus on skin, joint and muscle pains, cough or dyspnea and gastrointestinal symptoms and lymph nodes which may reveal rheumatologic causes for xerostomia.

Sam’s physical examination reveals bilateral conjunctival injection, absence of salivary pooling sublingually with dry intraoral mucous membranes and a dry, fissured tongue with atrophic papillae. She also has cracking and dryness of the lips. There is mild tenderness bilaterally in the parotid glands without swelling. There is no localized or generalized lymphadenopathy.

Additional testing in the patient who presents with xerostomia is guided by the presence or absence of other symptoms such as dry eyes and organ specific symptoms. Diagnostic tests include assessment of saliva production, blood tests and salivary gland biopsy. Assessment of salivary gland function may include whole sialometry which directly measures unstimulated or stimulated saliva production as well as salivary gland imaging with ultrasound or MRI. Serologic studies should include antinuclear antibodies (ANA) by immunofluorescence staining assay, anti-Ro/SSA and anti-La/SSB antibodies which are strongly indicative of Sjogren syndrome, and rheumatoid factor. Labial salivary gland biopsy is a useful tool to assess the cause of salivary gland dysfunction and assist in the diagnosis of Sjogren syndrome.

**DISCUSSION QUESTION:**

What is your initial diagnosis for Sam’s presentation?

**ANSWER:**

Based on Samantha’s history and physical examination of chronic progressive dry eyes and dry mouth (sicca symptoms), fatigue a positive ANA, and positive anti-Ro/SSA and r anti-La/SSB antibodies her diagnosis is primary Sjogren syndrome. Salivary gland biopsy is pending but would likely reveal focal lymphocytic sialadenitis.

**DISCUSSION QUESTION:**

What are the management options for Sjogren syndrome and xerostomia?

General management for dry mouth regardless of cause includes preventing dry mouth with frequent oral hydration, avoidance of irritating oral agents such as coffee, acidic drinks, tobacco and adequate humidification. Patients should be encouraged to stimulate salivary flow with sugar free sucking candies, lozenges and chewing gums. Regular dental care with dentist visits at a minimum of every six months, daily flossing, fluorinated mouth rinses, and the use of dry mouth fluridated toothpaste are also essential. More specific therapies for dry mouth include saliva substitutes in sprays, rinses or gels forms which contain a combination of carboxymethylcellulose, polyethylene glycol, sorbitol with more viscosity than water.

Oral medications which stimulate saliva production may be used when topical therapies are inadequate. Pilocarpine and cevimeline are cholinergic agonists administered orally three to four times daily. Both pilocarpine and cevimeline are effective for dry mouth and dry eyes however adverse effects may limit long term tolerability. Cholinergic adverse effects are dose dependent and include flushing, sweating,nausea, vomiting and diarrhea, and frequent urination.

**Summary**

Xerostomia is a symptom with several different etiologies ranging from medications to Sjogren syndrome. It is important to determine the cause of xerostomia. General measures for dry mouth management include oral hydration with water, sugar free lozenges and gum, meticulous oral hygiene and dental care and avoidance of irritating and acidic food/beverages. Saliva substitutes may be used in addition to above measures.

When topical therapies are inadequora oral pilocarpine or cevimeline may improve dry mouth and related sicca symptoms.

**Recommended Reading**

Jacqueline M. Plemons, DDS, MS, Ibtisam Al-Hashimi, BDS, MS, PhD, Cindy L. Marek, PharmD. Managing xerostomia and salivary gland hypofunction: Executive summary of a report from the American Dental Association Council on Scientific Affairs. The Journal of the American Dental Association, Volume 145, Issue 8, August 2014, Pages 867–873

Kruszka P, O'Brian RJ. Diagnosis and management of Sjogren syndrome. Am Fam Physician. 2009 Mar 15;79(6):465-70