XEROSTOMIA
A Matter of Concern

Dr. Manish Khatri
Dr. Himanshu Aeran
Dr. Shweta Dogra

Introduction

Alteration of salivary gland function during disease states may have profound influences on the oral tissues. Xerostomia or the complaint of oral dryness is often a symptom of salivary gland dysfunction[1]. It occurs because of destruction and atrophy of acinar cells of the salivary glands and decrease in the number of secretory granules. The various symptoms associated with xerostomia includes unpleasant taste or loss of sense of taste, difficulty in eating dry foods, soreness of mouth, burning and painful oral mucosa, strong breath malodor, difficulty in controlling dentures and mucosal ulceration due to dentures and difficulty in speech and swallowing.

Clinical Signs [2,3,4]

- Presence of large amounts of plaque on teeth, prosthesis and tongue dorsum.
- Increased inflammatory response to the presence of amount of plaque leading to destructive gingival and periodontal disease[5].
- Greater periodontal attachment loss is seen in radiated patients as compared with non radiated patients with the same amount of dental plaque.
- Ulceration of the oral mucosa and frequent oral infections.
- Caries: rapid tooth destruction occurs especially along the cervical margins and on the incisal edges of the teeth. Patients with Sjogren's syndrome often have many carious lesions despite of good oral hygiene and regular dental care. Caries may develop rapidly after radiation therapy or medication usage in patients with salivary gland dysfunction.
- Oral Candidiasis: an overgrowth of candida albicans can occur, particularly at the commisures of mouth and under removable prosthesis. The tongue can become beefy red, fissured and have partial or total papillary atrophy.
- Absence of saliva produced by gland palpation or presence of a thick discharge. The reduced salivary flow predisposes the gland to retrograde bacterial infections that can recur and be difficult to manage.
- The mucosa, lips and tongue appear dry. The buccal mucosa will stick to a mouth mirror when the tissue is retracted.
- The tongue may manifest the deficiency by atrophy of the papillae, inflammation, fissuring, cracking and in severe cases by areas of denudation.
- Sialometry and oral examination are dependable tools for xerostomia screening.

Causes of Xerostomia[3,6]

The three main causes of xerostomia are:

Medications

Tricyclic antidepressants, antihistamines, antihypertensives and diuretics use may be the most common cause of salivary gland hypofunction and complaints of xerostomia in geriatric patients. Medical professionals formerly viewed reduced salivary gland output as a function of age but, during the last two decades, several studies of healthy, unmedicated cohorts have found no age related changes in parotid salivary flow rates and modest or no decline in submandibular/sublingual flow rates. These observations have led to the conclusion that salivary changes and complaints in older individuals are the result of systemic medication or diseases, rather than the ageing process.

Therapeutic radiation for treatment of head and neck cancer

Diminished or complete loss of salivary secretion may occur within a week or two after the beginning of radiation. There is some damage of the acinar cells and decrease in the number of secretory granules present with congestion, edema and inflammatory cell infiltration of the interstitial connective tissue with no remarkable changes in the ducts of salivary glands.

Sjogren's Syndrome

Etiology of the syndrome includes genetic, hormonal, infectious and immunologic in nature and is

described as a triad consisting of keratoconjunctivitis sicca, xerostomia and rheumatoid arthritis. Xerostomia occurs because of the destruction and atrophy of the acinar tissue of the salivary glands.

Other causes of xerostomia include dehydration, systemic diseases with polyurea as a feature like in poorly controlled diabetes, thyroid disorders, psychogenic causes and depression, organic diseases of the salivary glands, nutritional deficiencies.

Management of Xerostomia[3,6]

Symptomatic and corrective therapies have been suggested to aid in eating, communication, pain and emotion of the patient. Studies have shown improvement in both xerostomia and quality of life scores of the patients with management and treatment.
Control of infection:

Candidiasis

- Angular stomatitis is common and as it is often associated with staphylococci and streptococci along with candida, miconazole is a preferred treatment
- The dentures should be left out of the mouth at night and stored in sodium hypochlorite solution, chlorhexidine or nystatin solution
- An antifungal such as miconazole gel or amphotericin or nystatin ointment should be spread on the denture before re-insertion and a topical antifungal should be used four times daily
- Denture hygiene is important. Oral hygiene should be used and a use of 0.2% chlorhexidine mouthwash helps control candidiasis and periodontal disease.

Bacterial Sialadenitis

- Acute sialadenitis needs treatment with a penicillinase resistant antibiotic such as flucloxacillin.

Dental Caries

- Dietary control of sucrose intake and the use of fluorides are essential to control dental caries in patients with xerostomia. 1% sodium fluoride gels or 0.4% stannous fluoride gel can be used daily.

Periodontal Diseases

- Oral prophylaxis including through scaling and polishing with proper oral hygiene instructions with the use of 0.2% chlorhexidine mouthwashes has been implicated.
- These have to be reinforced at each recall visit of the patient.
- Periodontal treatment may include root planing and curettage with further follow up of the patient.

Treatment of Xerostomia

Items to avoid

- Drugs causing xerostomia.
- Dry foods are to be avoided and alcohol and smoking should be reduced.
- Limit caffeine containing beverages as these dehydrate the body.

Artificial Lubricants[7]

- Use of artificial saliva (which contain carboxymethyl cellulose or mucin) and frequent mouthrinse, especially during meals may be helpful.
- Coating the tissue surface of dentures with petrolatum, lubricating jelly, silicon fluid or one of the commercial semisolid denture adhesive preparations can temporarily increase denture retention and decrease irritation of underlying soft tissues.

Stimulating Agents[7,8]

- These agents stimulate remaining secretary functional tissue and can be:
- Mechanical like chewing gum
- Gustatory like citrus containing beverages and sugarless hard candies
- Pharmacologic like sialogogues, which are drugs that stimulate the flow of saliva. Pilocarpine hydrochloride in 5mg doses (ten drops of a 10% solution) before meals will cause a pronounced flow for two to five hours. Side effects are excessive sweating and discomfort.
- If decrease in salivary flow is due to nutritional deficiency, nicotinamide 250-400 mg TDS can be given for two weeks

Other suggestions

- Patient should maintain a balanced diet as patients with xerostomia avoid foods such as fruits that burn their unprotected mucosa. Drugs with less potent anticholinergic side effects should be prescribed and drug schedules should be modified such that they do not interfere with periods of peak salivation like in meal times.

Future Directions[9]

- Gene therapy approaches to direct salivary growth and differentiation or modify remaining tissues to promote secretion.
- Creation of biocompatible artificial salivary gland.
- Salivary transplantation.

Conclusion

Xerostomia and its associated symptoms have a considerable, negative global impact, resulting in shame, anxiety, disappointments and verbal communication difficulties. Xerostomia interferes with nutrition & use of dentures, deteriorates oral hygiene and predisposes patients to oral candidiasis and other dental problems (e.g. dental caries). However once xerostomia establishes the satisfactory measures of control are limited. Treatment of resultant dry mouth is at present poor. Therapeutic options are artificial sali-