

Xerostomia A Continuing Challenge for Oral Healthcare Professionals – A ReviewChaitali Tajane^{1*}, Kedar Saraf², Mahendra Patat³, Prachi Patekar⁴¹PG student, dept. of OMDR, SMBT Dental College Sangamner, Maharashtra India²Reader, dept. of OMDR, SMBT Dental College, India³Professor, dept. of OMDR, SMBT Dental College, India⁴PG student, dept. of OMDR, SMBT Dental College, India**Review Article*****Corresponding author**

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Abstract: Xerostomia is a subjective symptom of dryness of mouth that causes lower secretion of saliva. Oral healthcare professionals encounter the symptoms of dry mouth and because of which significant complications of oral cavity can occur. Dryness of mouth occurs because of alterations in the secretions of salivary gland. It causes difficulty in mastication, deglutition, altered changes in taste sensation and also responsible for carious teeth. And dryness of mouth is more susceptible to recurrent infections, pain and abnormal irritation. Salivary gland function is associated with many conditions which includes local and systemic causes, deglutition, aging, some medical disorders, and medications and because of radiation and smoking. Treatment of xerostomia carried out mainly with respect to the cause of the abnormality till the time only palliative treatment should be carried out.

Keywords: Xerostomia, saliva, dryness, salivary gland, mastication, deglutition, hypofunction, radiation, smoking.

INTRODUCTION

Saliva is very essential thing for maintaining oral and general health of population. People don't notice its importance and presence until they lost it. Its absence or lower secretions directly or indirectly affect the overall quality of patient's life definitely [1]. Xerostomia is defined as the dryness of the mouth which is due to the changes in the composition of saliva or reduced salivary flow. And dryness of mucosa is more susceptible to recurrent infections, pain and abnormal irritation [2].

Dryness is associated with number of local and systemic causes and various treatment modalities which includes palliative for unknown cause, systemic medicaments, psychological counseling for stress induced and acupuncture can also be utilized for its treatment but it is always associated with unavoidable complications[3].

PREVALENCE

Prevalence of xerostomia reports in overall general population are not confirmatory [4]. When prevalence rate of xerostomia in patients with Sjogren's syndrome and patients receiving chemotherapy and radiotherapy for cancer are considered then it is nearly about 100%[5]. Also some studies states that increasing age, postmenopausal women are some conditions that has high prevalence rate[6]. Previously it is proven that the population older in age were more susceptible for xerostomia[5]. But now it is proven that increasing age and hyposalivation are irrelevant things that is they don't have any inter-relation[7]. So it concludes that xerostomia is mainly because of its causes that we have

listed in further discussion and it is not related to the aging process alone [8].

ETIOLOGICAL FACTORS-

- Sjogrens syndrome is a disease of salivary gland that causes decrease in the salivary gland secretion by its direct action on salivary gland itself [9]. It is an autoimmune disease in which there is inflammation of exocrine glands[10]. In this xerostomia is seen with xerophthalmia (dry eyes), it affects mainly women after the fourth decade of life[11]. It causes lymphocytic infiltration in the connective tissue that is responsible for destruction of the secretory acini of salivary glands and ultimately for hyposalivation[12].
- Radiation induced
Ionizing radiation to head and neck region for the treatment of cancer results in pronounced changes in salivary glands located within primary beam and degree of damage is related to dose-time-volume factor. Serious acinar cells appear to be more sensitive to radiation than the mucous cells. As the dose increased disorganization and destruction of

acinar cells occur, resulting in their replacement by fibrous or faulty tissue resulting in hyposalivation[1].

- Smoking tobacco, alcohol or caffeine containing fluid drinking, sleeping with keeping mouth open or mouth breathing can also be the causative factor for xerostomia[1].
- Pharmacologically induced
There are about 42 drug categories and 56 subcategories which can cause xerostomia[8], includes anticholinergic agents, antidepressants and antipsychotic agents, antihypertensive and diuretics[13].
- Systemic alterations resulting in xerostomia

Nutritional deficiencies states like pernicious anemia, iron deficiency anemia, deficiency of vitamin A and hormones can cause xerostomia[14].

Fluid loss associated with hemorrhage, sweating, diarrhea, vomiting are also implicated as causative factor[15]. Developmental abnormalities of salivary gland, tumors, autoimmune states such as rheumatic disorders, scleroderma, mixed connective tissue disease and systemic lupus erythematosus (SLE), etc[16]. Stress induced xerostomia is also common finding[5].

CLINICAL MANIFESTATIONS

- Dryness of leads to multiple oral health complications and indirectly affects the quality of life[8].
- Mostly the patients having xerostomia do not have any serious complaint about dryness but they may come across difficulty in chewing, speaking, and also having dysphasia, difficulty in wearing dentures and complains of ulcerations in denture covered areas[17].
- Saliva has self-cleansing action on dentition so that food does not remain stuck to the teeth but hyposalivation is responsible for caries formation and periodontal diseases[13].
- Susceptibility of infections of oral cavity also gets increased by opportunistic fungal infections such as candida albicans¹⁸ and angular cheilitis[19].
- Increased thirst, increased uptake of fluid especially while eating, mucosa appears thin, pale and dry. Tongue blade may adhere to soft tissues. Saliva of the patients having xerostomia will be thick and ropy due to which there may be bad breath and foul smelling[20-22].

DIAGNOSIS

- It is difficult to diagnose salivary gland hypofunction because there is considerable fall of salivary flow rate is within the normal physiological rate[23].
- Some symptoms are self-explanatory for dryness or xerostomia, such as feels like dryness of mouth,

feeling more dryness while eating, swallowing (dysphagia) mainly dry foods, want to drink more water while eating dry food[24].

- Sialography and scintigraphy is also for salivary gland functional test[25].
- Laboratory tests are used for diagnosis of anemia, leucopenia, etc[26].
- Biopsy of minor salivary gland especially for lower lip may show lymphocytic infiltration in glands[27].

COMPLICATIONS

Xerostomia or dry mouth directly or indirectly comes across the following complications

Dental caries: Dental caries is the main complication of xerostomia. Saliva is having self-cleansing action on dentition, protein and electrolyte composition of saliva are responsible for remineralization of dentition and also dilute the oral acidic components. Because of this food stays in contact with teeth for longer duration. And patient will increase the fluid intake mainly sugar containing beverages (which stimulate the salivary flow) to keep oral environment moist[28].

Candidiasis: Saliva free oral cavity is a favorable condition for the growth of fungus *C.albicans*[18], mainly in the patients using dentures, having smoking habit and medically compromised patients (mainly diabetic)¹.

MANAGEMENT

Vast varieties of newer treatment modalities are available for patients with xerostomia and it is mainly selected according to the etiological aspect of disease for example if xerostomia is because of the side effect of any drug then practitioner can recommend an alternative medicine[29].

Treatment can be divided into five main categories

- Preventive therapy
- Symptomatic (palliative) treatment
- Local or topical salivary stimulation
- Systemic salivary stimulation
- Therapy of underlying systemic disorders

Preventive therapy

It includes supplemental fluorides, remineralizing solutions, cariogenic diet and maintenance of optimal oral hygiene[30].

Symptomatic (palliative) treatment

It is mainly oriented towards the symptomatic relief to the patient that includes frequent sips of water to wet the oral mucosa, oral rinses and/or gels can be used. At home patient can hold ice chips in mouth; humidifiers can be used at night, minimal intake of caffeine and alcohol[30].

Local or topical salivary stimulation

Sugar free sialogogues (eg. Sugar free chewing gums and mint), salivary substitute is used in this. Saliva substitute. Well balanced artificial saliva should have neutral pH, certain electrolytes (including fluorides) to correspond nearly to the natural nature of saliva. It contains sorbitol, spirit of lemon, xanthan gum, potassium chloride, sodium chloride, magnesium chloride, calcium chloride, sodium fluoride. They uses after rinsing mouth place approximately half inch of gel on tongue and spread throughly for oral balance[31].

Biotène Oralbalance gel, Xerotin oral spray are also used. Duestom oral balance saliva substitute gel (Indico) is also available. BioXtra spray, Spray liberally onto gums, tongue and lips as often as required. Especially practical and convenient for daytime use. Glandosane aerosol spray and Saliveze oral spray are artificial saliva preparations only for patients whose dry mouth is secondary to radiotherapy. Saliva Orthana spray can be prescribed for any cause of dry mouth [31].

Systemic salivary stimulation

Any agent that has ability to influence salivary gland to increase production of saliva is termed as secretogogue. These are bromhexine, anetholetrithione, pilocarpine HCl, cevimeline HCl and bethanechol are medications that apper to act via the parasympathetic system[14].

Doses are as following,

Pilocarpine HCl : 5.0 to 7.5 mg three or four times daily

Cevimeline HCl : 30 mg three times daily

Bethanecol : 25 mg three times daily

Anethole dithiolethione : 25 mg three times daily.

Therapy of underlying systemic disorders

Patients having candidiasis secondary to xerostomia can be treated with antifungal drugs[32]. Anti-inflammatory therapies to treat the autoimmune exocrinopathy of Sjogren's syndrome[33].

When all conventional approaches are done and does not have fulfillment then we have to prefer optional medical therapies such as TENS, Acupuncture, Gene transfer, GTR.

TENS (Transcutaneous Electrical Nerve Stimulation)

This method is mainly depends on certain trigger points in and around the head and neck region, which works by stimulation of the parasympathetic innervations of salivary gland tissue. Twice per week for six week showed improvements in salivary flow rate and results lasts upto six months after treatment [34].

Acupuncture

It is also depends on trigger points in and around head and neck region.

It acts through multiple injection series with small needles of varying sizes[35].

Gene transfer and Guided tissue regeneration (GTR)

It could help to restore the function repairing salivary by parenchymal damage. In gene transfer specific functional protein is used and it is transferred into ductal cells, which allows salivary glands to secrete[36].

Now a days GTR is commonly used for various procedures in medical field. GTR mainly replaces the tissues that is damaged or fully vanished because of any specific disease. It was suggested that an artificial salivary gland could be constructed by using this method to obtain salivary gland cells[37].

CONCLUSION

Xerostomia is a condition that currently has no definitive means for treatment.

A number of palliative and inductive treatment methods appear to be effective for reducing the morbidity associated with this condition; however, many of the current treatment options that are available are merely transient and as such are not considered to be a satisfactory treatment option.

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