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Common Drugs Causing Xerostomia

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Mini Review

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Abstract

Saliva is need for maintaining a healthy mouth environment and general health.Many factors can affect the volume and compositions of saliva. Xerostoma which refers to a subjective sensation of dry mouth, is derived from the Greek words "xeros" (ξηρός), which means "dry," and "stoma" (στόμα), which means "mouth." Reduced salivary flow and altered salivary gland composition and function are the outcomes of xerostomia.Symptoms of xerstomia include dryness or a feeling of stickiness in your mouth. Saliva that seems thick and stringy, bad breath and having hard time chewing, speaking and swallowing. There are many different causes of xerostomia, which include medicine, aging, cancer therapy, nerve damage and tabaco and alcohol use. The most common drugs causing xerstomia anticholinergic drugs, antidepressant drugs, diuretics, calcium channel blocker and beta-blockers. Different mechanism of causing xerostomia cytotoxic drugs by direct damage to salivary gland, antidepressant drugs by their anticholinergic side effects, and diuretic by excreting more fluid and electrolytes.

Keywords: Xerostomia; Salivary Gland; Dry Mouth; Antihypertensive Drugs; Diagnosis

Introduction

The parotid, submandibular, and sublingual glands, in addition to hundreds of smaller salivary glands dispersed throughout the mouth, all produce saliva. The average daily salivary flow rate is estimated to be one liter, and diurnal rhythms can cause flow rates to vary by as much as 50%. There are two types of salivary flow: stimulated, which happens when an exogenous factor acts on the secretory mechanisms, and unstimulated, or resting [1]. Saliva is need for maintaining a healthy mouth environment and general health.Many factors can affect the volume and compositions of saliva , the term Xerostoma which refers to a subjective sensation of dry mouth, is derived from the Greek words “xeros” (ξηρός), which means “dry,” and “stoma” (στόμα), which means “mouth.” Reduced salivary flow and altered salivary gland composition and function are the outcomes of xerostomia [2]. There are various mechanisms underlying xerostomia caused by drugs. Most medications have an adverse effect, such as an anticholinergic or sysympathomimetic action, diuretics by excreting bodily fluid causing dehydration, and cytotoxic medicines by directly damaging the salivary glands [3]. A number of medication classes have been linked to xerostomia. Among the medications that have been linked to a 10% or higher frequency of xerostomia are, but are not exclusive to: Agents anticholinergic: atropine oxybutynin, and belladonna. Agent’s antipsychotics and antidepressants: phenelzine, haloperidol, and Citalopram.

The highest percentages of xerostomia was associated with calcium channel blockers (31.1%), diuretics (26.8%) and beta-blockers (23.1%), respectively. Among the above drugs higher percentage of xerostomia were associated with amlodipine, furosemide and propranolol [4].

According to literature Review

A literature search was performed on 20th April 2009 using MEDLINE and EMBASE using the terms dry mouth and xerostomia in combination with diagnosis, investigations and

treatment. Xerostomia mainly affects middle-aged and older people and can be severely debilitating. The most frequent causes of xerostomia are anticholinergic drugs, diabetes, dehydration, and radiation therapy for head and neck cancer. Addressing the underlying cause of xerostomia is the primary step in treating it, after which salivary stimulants and/or substitutes are administered [5]. In another study of 1,544 potentially relevant studies, 52 were deemed eligible for inclusion in the final review and 26 in metaanalyses. In the intervention studies, urological medications (odds ratio (OR)=5.91, 95% confidence interval (CI)=4.04-8.63; I2=62%), antidepressants (OR=4.74, 95% CI=2.69-8.32, I2=21%), and psycholeptics (OR=2.59, 95% CI=1.79-3.95, I2 =0%) were significantly associated with dry mouth. The observational studies found a substantial correlation between xerostomia and salivary gland hypofunction and a number of drugs, as well as various pharmaceutical types [6]. In older adults, medication use was substantially linked to both xerostomia and hypofunction of salivary gland. Drugs used for urinary incontinence are associated with high risk of dry mouth In order to help with prescription and drug management, future research should create a risk score for medication-induced dry mouth [7]. Xerostomia improved in 338 patients (75.3%). Those with mental illnesses showed a noticeably lower rate of improvement (63.6%) (P=0.009).

The change rate diminished as more anticholinergics were utilized (P=0.018). Be that as it may, xerostomia made strides in roughly 60% of patients getting three or more anticholinergics. The unstimulated salivary flow expanded altogether more in patients who detailed an enhancement of xerostomia (0.033±0.053 mL/min) than in those who detailed no advancement (0.013±0.02 mL/min) (P=0.025) In this study, mouth dryness was improved in 75.3% of patients taking xerogenic medicines as a result of xerostomia treatment. Patients taking xerogenic drugs will have a much higher quality of life and may have a decrease in symptoms if xerostomia caused by drug side effects can be treated [8].

Many conditions can cause a reduction in salivary flow. Some produce reversible dryness, whereas others result in changes that are essentially permanent. In a geriatric population dry mouth are more likely to be related to medications than to changes in the salivary glands. Temporary conditions include the use of certain drugs, viral infections, dehydration, and psychogenic causes, such as fear. Numerous diverse types of drugs have been related with dry mouth. These include drugs antimotion sickness, antihistamines, antidepressants, antipsychotics, antianxiety anti parkinsonism drugs, antihypertensive, decongestants, diuretics, opiates, and meperidine Many of these drugs, including antihistamines, antidepressants, antipsychotics, antianxiety medications, and decongestants, cause dryness because of their anticholinergic action. Some drugs affect fluid and electrolyte balance. The antihypertensive medication methyldopa causes dryness because it is metabolized to methyl norepinephrine in the brain and stimulation of α2-adrenergic receptor in the brain stem.

Dryness in the elderly appears to be related to medication use or systemic disease rather than to changes directly attributable to age [9].

The results of this review include the oral side effects and prevalence as reported in the literature. The three most frequent side-effects encountered with these medications were xerostomia (80.5%), dysgeusia (47.5%), and stomatitis (33.9%). The included table should fill the need for a ready reference for dentists in monitoring and counseling patients regarding the potential oral side-effects of the medications [10].

About 72% of the subjects experienced xerostomia sometime during the day.. Fifty-five percent of participants reported using one or more xerogenic medications, with an 86% prevalence in the nursing/long-term-care facility. People who experienced xerostomia had trouble chewing and swallowing, and they were much more likely to steer clear of dry foods like bread, sticky foods like peanut butter, and crunchy foods like veggies in their diets. Certain drugs, like the systemic agents oxybutynin and triazolam and the inhalants ipratropium and triamcinolone, may be statistically linked to xerostomia, reduced salivary flow, and/or particular food avoidances [11].

Salivary gland disease gives rise to salivary gland enlargement, pain, and prolonged xerostomia (dry mouth). Xerostomia is the most common long-standing problem for the majority of affected patients. Dry mouth can have a variety of causes, but persistent xerostomia is a particular issue in Sjögren's syndrome and following head and neck radiation. Saliva substitutes are typically used to treat xerostomia, but there are now many possible systemic therapies for xerostomia that has been present for a long time. While there is still limited clinical utility for some, especially immune suppressants, there is fundamental interest in their potential to reduce gland damage in Sjögren's syndrome. Others, which act on cholinergic receptors to stimulate salivation, are or may prove to be clinically helpful in doing so, in particular pilocarpine and cevimeline [12]. Studying 529 adult outpatients, the association between xerostomia and other oral symptoms, salivary flow, nonoral symptoms, medications, and specific diseases was examined. It has been noted that there is a strong correlation between oral dryness and symptoms suc as fungal infections, vaginal itching, dry eyes, dry throat, and dry skin. These nonoral symptoms had an inverse relationship with the flow of entire saliva that was at rest but not stimulated, and a positive correlation with the

oral symptoms included in this study's first section. A number of medication classes have been linked to dry mouth. It was also substantially correlated with hypertension and diabetes mellitus. About 50% of the individuals with hypertension and diabetes reported having dry mouth. Nevertheless, Even though most of them were on medication, many of these individuals did not take any xerogenic medications, so it is not possible to fully attribute the relationship between xerostomia and these disorders to drug use. According to the findings, xerostomia and a number of other oral symptoms are reliable markers of hypofunction of the salivary glands. Furthermore, they propose that a few nonoral symptoms may be a sign of widespread xerosis [13].

Like in the general population, medicine is the most frequent cause of xerostomia in cancer patients. Pharmacological or mechanical stimulation of the salivary glands can increase saliva production in these patients. Mouthwashes or gels that soften and lubricate the injured oral mucosa can help treat painful oral mucosa. Patients undergoing radiation therapy for malignant tumors of the head and neck belong to a particular patient category. Salivary gland hypo function is a natural consequence of this treatment, which is unavoidably linked to damage to the oral tissues, including the salivary glands. As supportive dental care, it is recommended to periodically stimulate the salivary glands in individuals with residual secretory capability using gustatory or mechanical stimulation. As an alternative, cholinergic medications might be used to increase salivsalivry flow [14].

On the other hand, cholinergic pharmacological preparations like cevimeline or pilocarpine can be used to increase salivary flow. To allow for the management of any early oral irritation and dental deterioration, a dental examination should be scheduled every three months following the completion of radiation therapy. A children's toothpaste or other specific dentifrice is advised for daily usage, as conventional dentifrice may be too strong in flavor for young patients. Applying a tiny amount of dentifrice to the flat surfaces of the teeth or misting the oral surfaces with water can help relieve nocturnal dry mouth. Patients may receive palliative oral care in the form of mouthwashes and saliva substitutes if stimulation of salivary production is unsuccessful. The everyday use of a mouthwash, It is recommended to use Biotène, Oral Balance, Zendium, or one of the saliva substitutes. Nowadays, a variety of saliva substitutes are sold commercially. These include xanthan gum (Xialine), polyacrylic acid, and carboxymethyl cellulose (Oralube and Glandosane), among other polymers that act as thickening agents. Bioactive saliva substitutes and mouthwashes with antimicrobial peptides are recent innovations that, while still in the experimental stage, can prevent microbial colonization of oral tissues and reduce or even eliminate mucosal and gingival irritation [15].

A 56-year-old man reported having trouble speaking, eating, and swallowing food, as well as dry mouth. His current medications, which include tramadol, amitriptyline, and simvastatin, may be the cause of his condition, according to his past medical history and physical examination results. In addition, a predisposition to snore and stress may indicate dry mouth, which could exacerbate the uncomfortable condition. According to investigations, the patient did not have any associated systemic problems and had true xerostomia. Because of the complex reasons for the condition, a multidisciplinary approach was required in its prevention in order to achieve long-term stability [16].

The term ˚Xerostomiå is well known as a subjective complaint-symptom of dry mouth and may be or may be not related to objectively measured hypo salivation. Numerous studies have shown that xerostomia is linked to a variety of conditions, such as systemic or local conditions [1,2] consequently, the level of salivary dysfunction is also related to xerostomia. Complication of dry mouth may vary. These issues make xerostomia therapy complex and cost time to complete the treatment as well as to maintain stability. Furthermore, older patients are likely to have a more severe case because they may have multiple medical conditions and take numerous medications that can reduce salivary flow. As a consequence, drug-induced xerostomia has still challenged clinicians regardless of how they could diminish appropriately the side effect [17].

Maintaining oral homeostasis, function, and health is greatly dependent on saliva. The aging of the population, the effects of certain systemic diseases, medical management, and commonly prescribed medications that decrease saliva production are all contributing factors to the rising prevalence of xerostomia and its consequences. Patients who have decreased salivary function are more susceptible to caries, denture discomfort, and opportunistic infections like candidiasis. The psychological effects of xerostomia can vary, ranging from minor adjustments to one's self-rated oral health to significant disruptions in one's quality of life or feelings of frustration, humiliation, or unhappiness. The prevalence, diagnosis, and clinical characteristics of dry mouth are discussed in this article along with possible treatments [18].

One of the main causes of oral lesions, which can be mistakenly diagnosed for underlying diseases, is adverse drug reactions (ADRs). This study aims to provide an overview and current understanding of drug-induced oral reactions. Electronic searches were conducted for articles published between January 2008 and August 2017 in the Scopus, Google Scholar, Cochrane, and PubMed databases.

The eligibility of the abstracts and titles was determined by two authors. 56 studies total were included in this review. Since the included studies lacked systematic homogeneity, no meta-analysis was carried out. Antihypertensive drugs were the most commonly reported cause of xerostomia, the most common oral adverse drug reaction. Methotrexate was found to be the second most common culprit agent for causing oral ulcerative and vesiculo-bullous lesions, after cardiovascular drugs. β-blockers and non steroidal anti-inflammatory drugs (NSAIDs) were discovered to be the most frequently implicated medications in the development of oral lichen planus [19].

Many of the patients that visit dental offices are receiving continuous medication treatment for a range of chronic conditions. Dentists therefore need to be aware of any possible negative effects these medicinal agents could have on the salivary gland and other oral cavity tissues. Many drugs can affect salivary gland function, which can result in side effects like xerostomia, hypo- or hyper salivation, or even gland swelling. Numerous additional health issues can be brought on by these disorders. This review will concentrate on the most prevalent drug classes-such as antidepressants, antipsychotics, psychoactive drugs, anti hyper tensives, and antihistamines-that are linked to dysfunction of the salivary glands [20].

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