Evaluation of the Chemical Effects of the Drugs with Xerostomy Effect on the Oral Cavity

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Medications are the primary etiologic factor in the appearance of xerostomia, dysfunction subjectively perceived by the patient as the sensation of dry mouth. The purpose of this study was to evaluate the knowledge and attitudes towards oral health in a group of adults undergoing treatment with drugs that have a secondary effect of xerostomia. The study was conducted on a sample of 64 adults with a mean age of 46-65 years with at least one chronic condition treated with at least one of the following drugs: antihypertensive, anticholinergic, antihistamine, anti-asthmatic, anxiolytic, antiparkinson, chemotherapy, oral antidiabetics, antineoplastic, antirheumatic. The results of the study show that following the administration of any of the classes of drugs administered, the side effect of xerostomia was manifested in all patients.

Keywords: xerostomia, dry mouth, antihypertensive, anticholinergic, antihistamine, anxiolytic, antiparkinson, chemotherapy, antidiabetics, antineoplastic, antirheumatic

Xerostomy or dry mouth sensation is considered a complex condition that affects several dental functions, affecting their quality of life. Often, xerostomia is accompanied by a decrease in salivary flow with consequences on oral health. [1] Currently, the diagnosis and treatment methods for this condition are varied and it is difficult to obtain favorable results in all cases, as the etiology seems to be multifactorial where both local and systemic factors would participate [2-5]. Although xerostomia may occur frequently in the general population, clear and defined tools are needed for diagnosis and treatment. Today, patients suffering from xerostomia consult many health professionals to resolve this complex condition. Medications are most commonly incriminated in the occurrence of xerostomia, dysfunction subjectively perceived by the patient as dry mouth sensation. Because of the subjective appreciation and in the context of diseases that are much more invalid for the patient, xerostomia is mostly unconscious. The overlooking of such a condition, logically leads to a lack of attitude of the patient, regarding the taking of preventive measures in front of the adverse consequences that may occur in the oral cavity. The increased prevalence of chronic diseases that have been associated with a hyposialic medication is a pertinent reason for evaluating the hyposiality in order to ensure a sustained prevention of the oral cavity. Adult patients most often associate besides significant caries experience, multiples, controllable risk factors (hygiene, diet, periodic controls) and uncontrollable risk factors not salivary hyposecretion. The purpose of this study was to evaluate the knowledge and attitudes towards oral health in a group of adults undergoing treatment with hyposial medication. The specific objectives were: to determine the prevalence of xerostomia, as a subjective manifestation of hyposiality by age groups, sex, type of pathology, type of medication, assessment of knowledge level and attitude regarding xerostomia.

Experimental part

The study was conducted on a sample of 64 adults with an average age of 46-65 years. The inclusion criteria were for the age of the subjects to be over 18 years old and to present at least one chronic condition treated daily with medication belonging to any of the following therapeutic classes: antihypertensive, anticholinergic, antihistamine, anti-depressant, antidepressant, anxiolytic, anti-Parkinson's, chemotherapy, antineoplastic, antirheumatic. The data were collected on the basis of a questionnaire, designed in the theme of this study, which included 47 questions, regarding the patients' knowledge and attitudes regarding the causes, complications and importance of the treatment of hyposiosia., Questions for the evaluation of oral status (OS) (self-report of gingival bleeding , dental mobility, dental sensitivity, untreated caries, compromised treatments, halitosis, xerostomia, edentatives., questions regarding knowledge and attitudes towards gold-dental hygiene, diet, frequency of controls. Participation of the subjects was voluntary, anonymous and based on consent. The selection of the batch was carried out in the waiting rooms of several medical units in Iasi as well as the specialized ambulatory of the Spiridon Polyclinic (Allergology, Pneumology, Mental Health). The data were entered and processed statistically in the program SPSS 14.00 for Windows, with statistical significance of $p \leq 0.05$.

Results and discussions

The results of the study indicate that the subjects were 57.81% female and 42.19% male. Subjects were included in the following age groups, respectively 18-25 years 6.3% (4), 26-35 years 14.1% (9), 36-45 years 14.1% (9), 46-65 of years, 48.4% (31), more than 65 years 17.2% (11). The study participants came from different social categories 40.62% having high school, 25.0% university studies, 20.31% elementary studies and 14.06% postgraduate studies. Most of the subjects were from the rural area

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71.88%. All subjects included in the study had at least one general condition, thus distributing 54.7% (35) cardiovascular disease, 26.6% (17) respiratory or allergic disease 26.6 (17), CNS affect 15, 6% (10), gastrointestinal disorders 10.9% (7), endocrine disorders 14%, 1 (9), urinary disorders 4.7% (3), liver disorders, 9.4% (6), disorders autoimmune 9.4% (6), radiotherapy area / head neck 4.7% (3). Asked about the causes of xerostomia, 45.31% of the subjects answered yes and 54.69% negative. The answers to the question about the complications of xerostomia reveal that 65, 62% of the subjects do not know the complications of xerostomia in the oral cavity, while 34.38% answered yes. When asked about treatment, most subjects 76.56%, stated that they do not perform a home xerostomia treatment. Ask about occupational prevention 68.75% of the subjects answered negative, 12.5% of the subjects said they did not have this problem, and 18, 75% of the subjects answered yes, regarding the addressability to the doctor 59, 38 % of doubters find it very important and 40, 62% do not. For the question *Have you ever addressed a professional (family doctor, dentist, pharmacist) for the treatment of dry mouth?* only 18, 75% of the subjects answered yes while 81.25% answered negative. When asked about the state of dental hygiene, 59.38% of the subjects stated that they had soft tissue and deposits and 40.62% of the subjects answered negative. To the question about the presence of dental mobility, 40.62% of the subjects answered yes and 59.38% answered no. Distribution of answers to questions *At present, you have one of the following problems: sensitive teeth is 64.1% (41) that yes, for the question* Do you have cured or pigmented teeth 64.06% (31) have said yes, defective obturations 48.4% (31), root residues 29.69%. Distribution of answers to the question *Do you have an unpleasant odor of oral cavity?* was 43.75% (28) for those who answered yes to the question *Do you suffer from dry mouth? 50% have declared that not even before, only 15% had declared that they are suffering from this condition.* 75% (48) of the respondents intend to refer the dentist for the existing problems and 43.75% (28) have answered positively.

When asked Do you consider it normal for teeth to age with age? 15.6% (10) subjects answered that they avoid oral-dental hygiene if they bleed the gums, and 9.4% (6) do not know what attitude to take, 10% (7) avoid teeth hygiene when the teeth are sensitive. 32.8% (21) of the subjects do not consider that they should consult the dentist if they do not have toothache, 6.3% (4) do not know. Also the answers to the question *Do people with dry mouth have a higher risk of caries? they pointed out that 54.69% of them do not know about the existence of this risk. Only 58.38% (38) are aware that certain medications can give a dry mouth, 32.8% (21) that it is normal for the mouth to be drier, 34.4 (22) not knowing this . The attitudes regarding the nutrition genius have obtained the following results. For the question Are small and frequent snacks throughout the day harmful to the teeth?* 64% (41) state that they do not know this fact, but mostly 87.5% (56) believe that sugary carbonated juice is harmful to the teeth. The vast majority of subjects prefer the treatment of dental lesions instead of extraction 78.12% (50) over 7.8% (5). There remains a percentage of 7.8% (5) who do not use toothpaste and toothbrush for hygiene and 60.9% (39) do not use mouth water, 75% (48) do not use interdental floss or brushes 78.12 % (50). The majority of the subjects use interdental brushes for oral hygiene, 98.4% (63) compared to 1.6% (1), and 79.7% (51) compared to 20.3% (17) use chewing gum. Dental brushing is never 3.1% (2), several times a year 3.1% (2) and several times a week 15.6% (10). 53.1% (34) compared to 46.9% (30) are accustomed to rinsing their mouth after each meal and 26.6% equally consider that morning brushing is as important as evening brushing, 35.9 % (23) considering that only the morning and 37.5 (24) considering that only the evening. On average, the duration of dental brushing is given less than 1 minute 14.1% (9), 1 minute 28.1% (18), 2 minutes 43.8% (28), 3-5 minutes 14.1% (9) 37.5 (24) do not know if they use fluoride toothpaste, 15.6% (10) yes and 46.9% (30) no, 95.3% (61) as against 4.7% (3) it does not use interdental wire, 39.1 (25) does not use mouth water and 26.6% of those who use it do not know what their mouth water contains, and equally 17.2% (11) states that their mouth water contains alcohol, respectively fluorine. Also 17.2% (11) compared to 82.8% had professional fluoridation in the cabinet and 60.9% (39) had professional hygiene compared to 39.1 (25) that they did not. To the question *How often do you eat between the main tables or drink sugary, flat or sour juices* the subjects answered mainly that 1-2 times a day 37.5% (24) 2-3 times a day 12.5% (8) and more than 3 times 10.9% (7) from time to time but not every day 31.3% (20) I never eat between meals 7.8% (5), 20.3 % (13) compared to 79.7 (51) are tobacco and coffee consumers. Water consumption was 2 liters per day for 25% (16) of the respondents, less than 2 liters for 59.4% (38) and more than 2 liters for 15.6% (10), 17, 2% (11) taking a mouth-drying medicine, 35.9% (23) do not know if they take a mouth-drying medicine and 46.9% (30) say they do not take any mouth-drying medicine. The correlation of the responses of the subjects with general affections regarding the symptomatology felt emphasized that although the symptoms of hyposiosia appeared in many situations there are no statistically significant differences $p \geq 0.05$. The correlation of the responses of the subjects with general disorders regarding the fact that they often have the sensation of dry mouth indicates that in general there are no statistically significant differences in particular they are present in the patients with diseases of the central nervous system and renal diseases $p < 0.05$ (Table 1)

The correlation of the answers of the subjects with general affections regarding the question On a scale of 0 (not at all) to 10 (extremely annoying) how much it will affect the sensation of dry mouth indicates that in general there are no statistically significant differences in particular. being present in patients with nervous and renal diseases $p < 0.05$ (Tab. 2)

Xerostomia is a symptomatology frequently seen in dental practice, has many negative effects on oral health and can have a negative impact on quality of life. The specialized literature reports high prevalence values with variations between geographical areas and age groups and due to differences in inclusion criteria and study methodology [2]. Epidemiological studies reported its prevalence between 0.9 and 64.8% [3]. In this study the prevalence of xerostomia reported often and very often was 17%. Xerostomy is more common in women, and its prevalence is highest after age 60, probably due to increased drug intake, due to chronic disorders, such as hypertension, diabetes, depression, etc.; [10,11] however, there are reports that age itself acts as a risk factor for xerostomia. Field et al. [12] reported that drug use and age independently increase the likelihood of developing xerostomia 1.24 times every 10 years. The same authors also reported a nearly fourfold prevalence of xerostomia in patients taking drugs (28%), compared to those not taking any (7.5%). It has been reported that not only the type of drug, but also the number of drugs taken (polypharmacy or simultaneous use of several drugs) increases the likelihood of developing xerostomia, which is a common

Table 1

CORRELATION OF THE RESPONSES OF THE SUBJECTS WITH GENERAL AFFECTIONS REGARDING THE FACT THAT THEY OFTEN HAVE A DRY MOUTH

Follow a chronic disease treatment	Do you often feel that your mouth is dry?							p
	A	B	C	D	E	F	Total	
Cardiovascular	2	10	17	2	3	1	35	,894
Respiratory and allergic	0	7	6	1	2	1	17	,336
CNS and psychiatric	0	3	3	0	3	1	10	,011
Gastric	0	1	4	0	2	0	7	,293
Endocrine, nutrition and metabolism	1	2	6	0	0	0	9	,628
Kidneys	0	0	1	0	2	0	3	,008
Liver	1	1	0	0	1	0	3	,370
Autoimmune	0	2	3	0	1	0	6	,925
Sjogren's syndrome,	0	0	0	0	0	0	0	-
Do radiation therapy to the neck area	0	0	3	0	0	0	3	,646
A-never; B-very rare; C- occasionally; D-often ; E-very often; F-permanent.								

Table 2

CORRELATION OF THE ANSWERS OF THE SUBJECTS WITH GENERAL AFFECTIONS WITH THE ANSWERS TO THE QUESTION ON A SCALE OF 0 (NOT AT ALL) TO 10 (EXTREMELY ANNOYING) HOW MUCH WILL THE DRY MOUTH AFFECT?

General conditions - the question Follow chronic treatment for diseases	On a scale of 0 (not at all) to 10 (extremely annoying) how much does the dry mouth feel affect you?											Total	p
	0	1	2	3	4	5	6	7	8	9	10		
Cardiovascular	7	6	6	3	1	6	1	1	2	1	1	35	,734
Respiratory and allergic	1	2	3	2	3	3	1	0	1	1	0	17	,527
CNS and psychiatric	4	0	1	0	0	1	1	0	2	1	0	10	,036
Gastric	3	0	0	0	1	2	1	0	0	0	0	7	,574
Endocrine, nutrition and Metabolism	1	2	0	1	1	2	1	1	0	0	0	9	,794
Kidneys	0	0	0	1	0	1	0	0	0	1	0	3	,006
Liver	2	0	0	0	0	1	0	0	0	0	0	3	,910
Autoimmune	3	0	0	0	2	1	0	0	0	0	0	6	,235
Sjogren's syndrome,	1	0	0	2	0	0	0	0	0	0	0	3	,319

feature in elderly patients [13]. Patients with xerostomia may complain of burning sensation, abnormal taste, dysarthria, dysphagia, dysphagia, halitosis, and lack of prosthesis retention. Examination may demonstrate the dry appearance of the oral mucosa, increased salivary viscosity, candidiasis (usually angular cheilitis or erythematous candidiasis), cracking and depapilation of the tongue, cervical cavity, and halitosis [14]. It has been documented that xerostomia is a good predictor of root caries development in elderly patients [15]. Xerostomy is correlated with low salivary flow (hyposalivation). However, many patients have dry mouth, with normal salivary flow; therefore, xerostomia does not reflect the need for salivary gland hypofunction. Hyposialia is defined as an objective reduction of salivary flow. Saliva is usually classified as unstimulated (re-stimulated) or stimulated. Unstimulated saliva reflects the basal flow aimed at protecting the mucous membrane of the mouth, and has been reported to range from about 0.29 ml / min to 0.4 ml / min. Stimulated saliva aids chewing and digestion and has been reported to be between 1-2 ml / min.1. Xerostomia has many negative effects on oral health and can have a negative impact on quality of life. Patients with xerostomia may have a burning sensation, abnormal taste,

Correlations between different questions that underline aspect of xerostomia	p
Number of medicines taken daily * Dry mouth sensation	.107
Gums bleeding * Avoid oral or dental hygiene	.954
Teeth sensitivity * Avoidance of oral and dental hygiene	.358
Presence of carious lesions * Presentation at the control in the absence of pain	.623
The presence of incorrect restorations * Presentation to the control in the absence of pain	.082
Presence of root residues * Presentation at the control in the absence of pain	.589
Presence of halitosis* Presentation at the control in the absence of pain	.565
Mouth dryness * Presentation at the control in the absence of pain	.964
Presence of soft/hard deposits * Presentation at the control in the absence of pain	.162
The presence of mobile teeth * Presentation at the control in the absence of pain	.687
Do I drink coffee? * Dry mouth sensation	.500
Do I use cigarettes? * Dry mouth sensation	.366
Daily water consumption * Dry mouth sensation	.027

Table 3
CORRELATION OF THE ANSWERS OF THE SUBJECTS WITH RESPECT TO DIFFERENT QUESTIONS THAT EMPHASIZE ASPECT OF XEROSTOMIA

dysarthria, dysphagia, halitosis and lack of prosthesis retention.

Conclusions

Within the limits of this study we can state the following conclusions: Although all the participants involved in the study had symptoms of hyposia, only 15% of them showed it often and very often. The taste, speech and swallowing of the patients with hyposialic medication is present in one third of the cases but treatment for this is followed by only 5% of the subjects. Half of the subjects do not know the causes and complications of dry mouth. The thirst sensation that appeared during sleep is present in more than two thirds of the studied group. Only about 20% follow a treatment for the prevention of cavities, including the use of adjuvant means, although all the respondents know that they must consult a professional for the symptomatology given by hyposialia, 75% declaring their intention to address the dentist for dental problems. The level of knowledge and attitudes regarding dental hygiene is remarkable considering that half of them perform the brushing twice a day even though the affected time is reduced only 15% by doing it properly and 65% of them state that they use tap water. mouth, 28% being aware of the unpleasant odor of the oral cavity. Although it suffers from dry mouth 17% uses mouth water with alcohol. Subjects not knowing its side effects 40% of subjects do not know that certain medications can give dry mouth, they are not convinced of the regular address of the dentist, although they know that people with dry mouth have a higher risk of developing caries lesions (60%) 64% do not know that hyposialia can be attributed to aging and I do not know that snacks between meals are harmful to the elderly, and most of them incriminate the carbonated juices. Although half of the patients were given 1-2 medicines a day, the rest, 35% do not know if the medicines taken have a hyposial medication and 60% consume less than two liters of water a day. Only about 20% of patients are consuming coffee and tobacco but in general, the number of snacks between meals is not alarming. Of the medications given to the various pathologies, only subjects with medication for CNS and urinary tract disorders have symptoms of dry mouth $p < 0.05$, which leads us to think that the disease itself may have an effect on salivary flow, there are no statistically significant differences between the number of medicines administered daily and the sensation of dry mouth.

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