

ASSESSMENT OF SALIVARY CORTISOL LEVEL IN XEROSTOMIA PATIENTS

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Abstract

Background: The present study was conducted to assess salivary cortisol level in patients with xerostomia. **Materials & Methods:** 52 patients with subjective symptoms of dry mouth (Group I) of both genders. Equal number of healthy subjects was selected as control (Group II) were enrolled. The concentration of cortisol in the saliva ($\mu\text{g/dl}$) was determined by using a salivary cortisol enzyme immunoassay kit. **Results:** Group I had 12 males and 14 females and group II had 16 males and 10 females. The mean cortisol level in group I was $2.38 \mu\text{g/dl}$ and in group II was $1.90 \mu\text{g/dl}$. The difference was significant ($P < 0.05$). **Conclusion:** There was low level of salivary cortisol in xerostomia patients.

Key words: Cortisol, dry mouth, xerostomia.

Introduction

Dry mouth is a relatively common symptom. When we examine the literature, we see a wide variation in the data, which offers figures for prevalence of between 14% and 46%, being consistently higher among women. Dry mouth is found to be more common within the older population, where its frequency oscillates between 13% and 39% for those able to look after themselves, and increasing up to 60% in institutionalized or hospitalized individuals. Changes in the salivary glands are related to age; however there is no evidence that xerostomia is solely a result of the aging process. Of the different causes observed, those more frequently associated with xerostomia are menopause and certain depressive conditions.

Xerostomia is known as dry mouth is due to inadequate saliva in either quantity of flow or quality of saliva. It is also called as salivary gland hypofunction. Inadequate production of saliva results in xerostomia, hence it can be seen in various conditions. It is a symptom of various disorders and it is not a disease.¹

Salivary cortisol is an accurate reflection of the free, biologically active portion of cortisol in the blood. Salivary measures of cortisol have been shown to be a valid and reliable reflection of serum cortisol.³ Some authors state that salivary cortisol may actually provide a better measure of

the stress response than serum cortisol, as its measures of the amount of the unbound cortisol are more accurate compared to the serum cortisol measures. Salivary measures of cortisol have been shown to be a valid and reliable reflection of serum cortisol. Thus there is alteration in salivary cortisol level in depressed patients and healthy individuals.⁴ The present study was conducted to assess salivary cortisol level in patients with xerostomia.

Materials & Methods

This study was conducted among 52 patients with subjective symptoms of dry mouth (Group I) of both genders. Equal number of healthy subjects was selected as control (Group II). All were informed regarding the study and written consent was obtained.

Data such as name, age, gender etc. was recorded. For collection of saliva, sterile disposable plastic collectors were used. Subjects were instructed to pool saliva in the floor of the mouth for one minute and then expectorate it into disposable plastic collectors. The saliva collected was then transferred to coded collection tubes, graduated in milliliters. The concentration of cortisol in the saliva ($\mu\text{g/dl}$) was determined by using a salivary cortisol enzyme immunoassay kit. The values were recorded and subjected to statistical analysis. P value < 0.05 was considered significant.

Results

Table I Distribution of subjects

Groups	Group I	Group II
Status	Study	Control
M:F	12:14	16:10

Table I, graph I shows that group I had 12 males and 14 females and group II had 16 males and 10 females.

Graph I Distribution of subjects

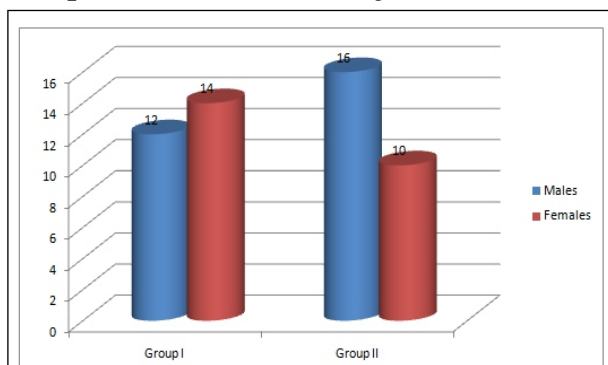
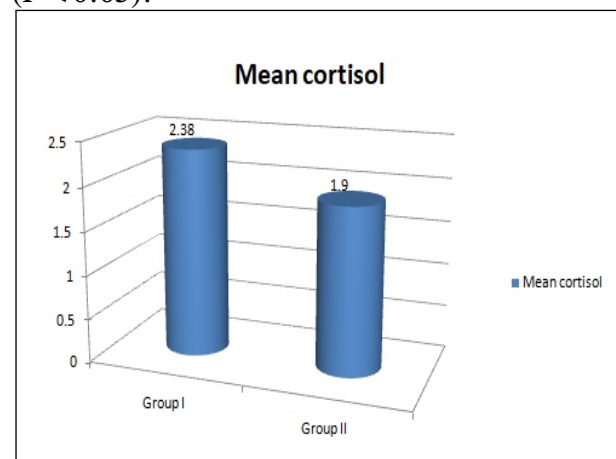


Table II Cortisol level in both groups

Groups	Mean	P value
Group I	2.38	0.04
Group II	1.90	

Table II, Graph II shows that the mean cortisol level in group I was 2.38 $\mu\text{g/dl}$ and in group II was 1.90 $\mu\text{g/dl}$. The difference was significant ($P < 0.05$).



Discussion

Xerostomia may be a symptom of a serious systemic disease, such as systemic lupus erythematosus, rheumatoid arthritis,

scleroderma, sarcoidosis, amyloidosis, Sjogren's syndrome, Parkinson's, Diabetes, or hypothyroidism. A systemic disease is one that affects the entire body. The present study was conducted to assess salivary flow and salivary cortisol level in patients with xerostomia.

In this study, group I had 12 males and 14 females and group II had 16 males and 10 females. Gomez et al¹¹ evaluated the relationship between unstimulated salivary flow rate and the presence of xerostomia, and to determine the levels of salivary cortisol and its relationship with xerostomia. Thirty women were selected from patients attending the Department of Medicine and Buccofacial surgery, and formed into two groups, study and control. Samples of unstimulated salivary flow were collected, and the amounts of salivary cortisol determined using the ELISA technique (enzyme-linked immunosorbent assay). The mean unstimulated salivary flow rates for the control and study group were 0.37 ± 0.28 ml/min and 0.24 ± 0.18 ml/min, respectively. The concentration of salivary cortisol was 3.47 ± 1.64 ng/ml for the control group and 2.29 ± 2.60 ng/ml for the study group. The statistical tests applied showed no significant differences for either variable between the two groups in the study.

We found that the mean cortisol level in group I was 2.38 $\mu\text{g/dl}$ and in group II was 1.90 $\mu\text{g/dl}$. Vaseemuddin et al¹² conducted a study which comprised of 30 patients (study group) (group I) with subjective symptoms of dry mouth and 30 control subjects (control group) (group II). All the subjects were divided into 3 age groups. Group I - 40 years of age. Stimulated and unstimulated saliva was collected and measured for the concentration of cortisol in the saliva ($\mu\text{g/dl}$) by using a salivary cortisol enzyme immunoassay kit with a lower sensitivity of 0.36 $\mu\text{g/dl}$. The mean cortisol level in stimulated saliva in group I was 1.78 $\mu\text{g/dl}$ and in group II was 1.52 $\mu\text{g/dl}$. The difference was non-significant ($P > 0.05$). The volume of unstimulated saliva in group I was 0.62 ml/min and in group II it was 1.86 ml/min. The difference was non-significant ($P > 0.05$). The volume of stimulated saliva in group I was 1.84 ml/min and in group II it was 3.62 ml/min. The difference was non-

significant ($P > 0.05$).

Pajukoski et al¹³ affirmed that the subjective sensation of a dry mouth, xerostomia, is not necessarily associated with hyposalivation. This association between xerostomia and hyposalivation is not a constant. Xerostomia can occur in spite of the existence of correct glandular function and normal salivary flow rates. Healthy postmenopausal women, the principal risk group, did not present a deterioration in glandular function nor a reduction in salivary flow.

Conclusion

Authors found that there was low level of salivary cortisol in xerostomia patients.

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