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To Assess Efficacy of 'Modified Schirmer Test' (Mst) in Evaluation of Postmenopausal Hyposalivation or Xerostomia.

KEYWORDS: MST, Xerostomia, Postmenopausal.

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ABSTRACT *Objective:Present techniques for salivary flow measurement are cumbersome and time consuming for dentists to use routinely. The present study is designed to assess efficacy of modified Schirmer test (MST) in evaluation of postmenopausal hyposalivation or xerostomia.*

Materials and method:The study group includes 30 postmenopausal females while control group has 30 healthy menstruating females. MST was performed by placing a strip of routine Schirmer test paper in floor of mouth adjacent to lingual frenum. Readings were recorded at one minute, two minute and three-minute interval.

Results:The mean reading for the control subjects at three minute was 22.9 mm, while mean reading for the test group was 15.53mm. ($p<0.05$)

Conclusion:From obtained data, it can be said that, present study validated a semi quantitative test to discriminate between subjects with normal and decreased salivary flow.

INTRODUCTION

Saliva is an integral factor for maintenance of oral and eventually systemic health. Saliva in the oral cavity starts the digestive process, exerts antimicrobial effects, helps maintain the normal oral environment, tooth and mucosal integrity, mediates taste sensation and assists in mastication and deglutition.

Reduced salivary flow or xerostomia results mainly from decreased production of saliva[1]. Hyposalivation can lead to inflammation of oral mucosa, dysgeusia, candidiasis, high caries index, speech difficulty and deglutition problems. Its diminution or absence can also cause significant morbidity and reduction in patient's perception of life[2]. Variety of factors can cause hyposalivation which may be evident in healthy or diseased individual. Mainly it is found in Sjogren's syndrome, patients undergoing radiation therapy, HIV infection, postmenopausal women, dehydration due to any systemic illness, psychological factors like anxiety or depression and also in number of other conditions[1, 2, 3, 4].

Salivary flow can be measured by saliva collecting devices, wafer test, segregators and swab method.[1,2] These qualitative and quantitative methods, which were previously used to measure salivary flow although gave accurate measurements, were time consuming techniques. Also they require special equipments, trained personnel, longer time interval and so still remain unwieldy as screening procedures for xerostomia and hyposalivation in the dental operatory.

The Schirmer test is used routinely by ophthalmologist to measure the tear film wetness. Studies have been carried out to detect salivary flow using modified form of schirmer test (MST). One study successfully tried MST in patients suffering from graft versus host disease and patients who received head and neck radiation[2]. Few studies have used MST to measure salivary flow of Sjogren's syndrome patients compared with healthy subjects as well as diseased one.

Objective of the present study was to evaluate efficacy of MST to discriminate between salivary flow of healthy and postmenopausal subjects, which might further help them to seek required hormone replacement therapy.

Materials and method

Two groups of subjects were studied in the department of Oral Medicine and Radiology department, SP Dental College, Wardha, India. Control group included 30 healthy menstruating females who were sampled randomly from the Oral Medicine department and gynecology department. In a test group 30 menopausal women were selected who did not use any medicine on regular basis, no prior hormone treatment with negative history of systemic diseases. Screening instrument, which was used to obtain proper history, was questionnaire. All the participants were asked to refrain from eating, drinking, smoking, chewing for at least one hour before the study. Subjects were examined and underwent MST in a closed room with no air condition or heating, in the morning hours.

MST was performed with Schirmer paper strip (Bell pharma, Mumbai, India). The test strip is a 4-cm. long strip of filter paper caliberated in 1mm interval from 5-35mm along its length that has been rounded at its wick end (Reading ranged from 5-35mm). When the wick end contacts moisture, the flow of moisture can be read at its length at designated intervals.

During performing the test, subjects sat upright in the dental chair. Each subject was asked to swallow once to clear secretion in the mouth. The strip was held between cotton pliers and touched the wick end to the floor of the subject's mouth to either the right or the left side on the lingual frenum. During this procedure tongue was slightly raised and gently retracted so as not to inadvertently wet the strip. The length of wetting on the strip was read as indicated by the level of moisture on it, in millimeters at one, two, and three minute intervals. The strip was removed for 2-3 seconds to take the reading. When the reading was less than 5mm, the reading was recorded as 5mm, and when the reading was greater than 35mm, it

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was recorded as 35mm.

The wilcoxon matched pairs signed rank test was used for statistical analysis. Statistical significance was achieved when p values were lee than 0.05.

Results

The healthy control group included 30 females aged 18-45 years. The test group of postmenopausal females included 30 females in the age range of 50-70 years. The mean of flow of saliva for control group at the end of first minute, second minute, and third minute was 13.7mm, 18.46mm, and 22.9mm respectively. While the mean of flow of saliva for test group at the end of first minute, second minute, and third minute was 9.93mm, 112.86mm, and 15.53mm respectively. (table 1)

On observation, it was noticed that individuals who showed third minute reading below 15mm had subjective complaint of mouth dryness or hyposalivation. In the test group out of 30 postmenopausal females 11 females reported with slight mouth dryness or hyposalivation but was without complaint of burning sensation of oral cavity. While 5 postmenopausal females reported with significant/ obvious complaint of xerostomia/hyposalivation who also complained of burning sensation of oral cavity.

In control group, saliva flow, below 15mm at the end of third minute was not found in any individual.

When comparisons were made between striking different values for flow of saliva among control group and test group, with the help of Wilcoxon matched pairs signed rank test, the difference obtained was significant. ($p<0.05$) (Graph 1)

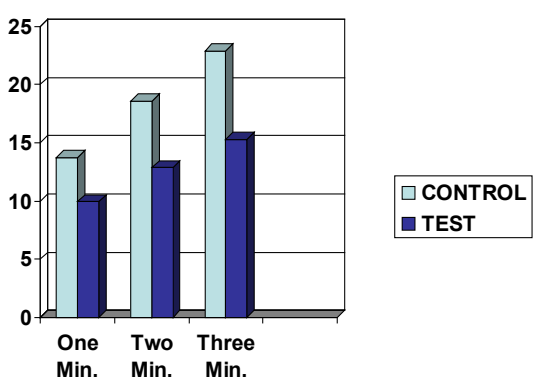
One minute two minute Tablethree minute

GROUP	Mean	Median	SD	Mean	Median	SD	Mean	Median	SD
CONTROL-GROUP	13.7	15	2.119	18.46	19.5	2.84	22.9	24	3.457
TEST GROUP	9.93	10	3.55	12.86	13.0	4.56	15.53	15.5	5.661

Table 2

GROUP	ONE Minute (mm)	TWO Minute (mm)	THREE Minute (mm)
CONTROL GROUP Vs TEST GROUP	R1'=1365	R2'=1394	R3'=1365
TABULATED VALUE	237	237	237
p-value	p<0.05 SIGNIFICANT	p<0.05 SIGNIFICANT	p<0.05 SIGNIFICANT

Graph 1.



Discussion

Xerostomia or hyposalivation leading to burning mouth syndrome was found to be common complaint among postmenopausal women1, 5.Studies in the past reported mouth dryness in postmenopausal women, but there was no proved clinical evidence for decreased salivary flow with

age in healthy women6,7. Ovarian harmones were thought to be involved in oral symptoms and sings of menopausal women5

MST was tried by Chen et al in detecting saliva flow of graft versus host disease patients and post-radiotherapy patients. Where Chen et al reported significance of MST as saliva flow measuring test. Fontana et al studied salivary flow of 90 patients in the age range of 9-90 with the help of MST, concluding MST as a viable diagnostic tool for evaluating hyposalivation. Pia Lopez Jornet et al used MST in Sjoren's syndrome and in patients with xerostomia due to systemic lupus erythematosus, scleroderma, rheumatoid arthiritis, who concluded that MST can distinguish between healthy adults and subjects with hyposalivation.

In present study, hyposalivation in females past menopause was detected as those can be frequently encountered patients in routine practice. Study followed most commonly used screening instrument i.e. questionnaire2, 8. Kumar N. N. et al have also used MST to evaluate hyposalivation due to antidepressant where the specificity and sensitivity of the test was found to be 90.9% and 31.5% respectively.9

Present study obtained significant difference of salivary flow rate among control and test group. In addition, those postmenopausal females who denoted lowest range of readings reported hyposalivation with burning sensation of oral cavity.

In the present study, patients identified as having initial postmenopausal hyposalivation had had mild complaints of dry mouth for several years. They were not aware of the condition and none of them had asked for medical care for the same.

In routine clinical practice, only subjects with definite symptoms of xerostomia or burning mouth syndrome are investigated. Although the scarcity of information about postmenopausal oral manifestation of dry mouth at early stages produced biased and incomplete knowledge, early recognition of decreased salivary flow will be helpful in the understanding of salivary gland dysfunction, which may be further corrected with hormone replacement therapy.

Advantages of MST are, it is suitable, easy to perform, inexpensive, requires minimal time, gives least discomfort to patient, reproducible, & also useful screening and quantitative test to discriminate between subjects with normal and decreased salivary flow. However, present study has some shortcomings like; subjective complaint of dry mouth could be highly individual and some subjects didn't demonstrate reduced flow rate and vice versa.

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In addition, the study could not demonstrate structural and functional defects of salivary flow.

Hyposalivation, a common complaint of most postmenopausal, receives little attention. The lack of chairside screening test has contributed to the under estimation of its relevance as a problem for routine dental practitioner. Since one third of a woman's remaining life stays ahead after her last menses, protecting and maintaining her oral health should be a major consideration.

The healthy volunteers had significantly higher mean readings at all three time points using the MST than did the menopausal subjects, indicating, postmenopausal hyposalivation can be evaluated with use of MST. The study also supports the suggestion that the whole saliva test may have application in routine screening of patients who complain of xerostomia.2,10.

Conclusion

Salivary diminution or absence can also cause significant morbidity and reduction in patient's perception of life. From obtained data, it can be said that, present study validated a semi quantitative test to discriminate between subjects with normal and decreased salivary flow. The study also supports MST as chair side screening tool which is time saving, patient friendly, sensitive and specific to check salivary secretions.

References

1. Neville. Textbook of Oral & maxillofacial pathology. Salivary gland pathology. 2nd edi Saunders.2002 pp 389-430.
2. Austin Chen ; using modified Schirmer test to measure mouth dryness; vol.136,JADA 2005
3. Martin Greenberg, Michael Glick. Burket's Oral Medicine diagnosis and treatment. 10th edi. Harcourt Pvt.Limited 2003; pp235-270
4. Rajendran, Sivapathsundharam. Shafer's Textbook of Oral Pathology. 5thedi. Saunders 2006; pp 48-50
5. Forabosco A; efficacy of harmone replacement therapy in postmenopausal women. 1992;73;570-4.
6. Andy Wolff. A simple technique for the determination of salivary gland hypofunction; Triple O 2002;94;175-8.
7. Pia Lopez-Jornet et al. A simple test for salivary gland hypofunction using Oral Schirmer's test. Jr Oral Pathol Med 2006, vol. 35,244-248.
8. Fontana M, Zunt S, et al, A screening test for unstimulated salivary flow measurement. Oper Dent 30:3-8, 2005.
9. Kumar NN, Mamtha GP, Annigeri R. Modified Schirmer test- A screening tool for xerostomia among subjects on antidepressants.Oral Biolology 2014;vol.59,issue 8, 829-834.
10. Zunt Susan.Determining and managing salivary gland function in cancer patients: A fact Sheet for Dental Professionals. https://www.dentistry.iu.edu