

Evaluation of salivary flow rate in menopause females

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ABSTRACT

Background: There is an association of menopause with salivary flow rate and oral symptoms with salivary flow rate. The present study was conducted to assess salivary flow rate in menopause females in known population.

Materials & Methods: The present study was conducted on 68 post menopausal females. Equal number of control pre- menopausal females was also taken. The whole unstimulated salivary flow rate (USFR) was determined by spitting method. The flow rate was then calculated in milliliters per minute.

Results: Group I consisted of 68 premenopausal females in the age group of 30-44 years. Group II consisted of 68 postmenopausal females in age group of 45-70 years. USFR was normal seen in 46 in group I and 6 in group II, low seen in 15 in group I and 37 in group II and very low seen 5 I group I and 15 in group II. The difference was significant ($P < 0.05$).

Conclusion: Authors found that there was significant reduction in salivary flow rate in post menopausal females as compared to pre- menopausal females.

INTRODUCTION

It has been observed that life expectancy of women has increased significantly during the last decade, and most women spend one third of their lives after menopause.¹ Menopause is the eternal termination of menstruation due to loss of ovarian follicular activity. For many decades, women's health has been a universal concern. The emphasis of females' well-being researchers and health policy planners has also moved toward postmenopausal women, and latest developments propose an upsurge in their number and life expectancy.² For centuries, instabilities of temperament

and behavior have been accompanying with reproductive endocrine system variation in womankind. Long-standing concerns of variations in ovarian hormonal intensities include morbidities interrelated with age such as vascular diseases, osteoporosis, complications linked to memorization, urinary incontinence, and skin aging.³ Saliva plays an essential role in maintaining oral health. Alterations in salivary function may lead to impairment of oral tissues and have a large impact on the patient's quality of life. Previous investigations have shown that, salivary pH, buffering capacity and flow rate play important roles in the oral mucosal defence.⁴ When the

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salivary flow rate is reduced, susceptibility to various oral diseases is enhanced. In the current scenario, a controversy still exists on the association of menopause with salivary flow rate and the association of oral symptoms with salivary flow rate.⁵ The present study was conducted to assess salivary flow rate in menopause females in known population.

MATERIALS & METHODS

The present study was conducted in the department of Oral Medicine & Radiology. It comprised of 68 menopausal females. Equal number of control premenopausal females was also taken. Study design was approved by the institutional ethical committee and informed consent was taken from all the participants.

Subjects were divided into two groups. Group I consisted of 68 postmenopausal females in age group of 45–70 years. Group II consisted of 100 premenopausal females in the age group of 30-44 years. The whole unstimulated salivary flow rate (USFR) was determined by spitting method. Saliva was collected in a graduated test tube graded in 0.2 ml increments upto 10 ml, fitted in a funnel. With low forced spitting, the unstimulated saliva was then collected per minute for 5 minutes in the graduated test tube fitted with funnel. The flow rate was then calculated in milliliters per minute. Results thus

obtained were subjected to statistical analysis. P value less than 0.05 was considered significant.

RESULTS

Table I: Distribution of patients

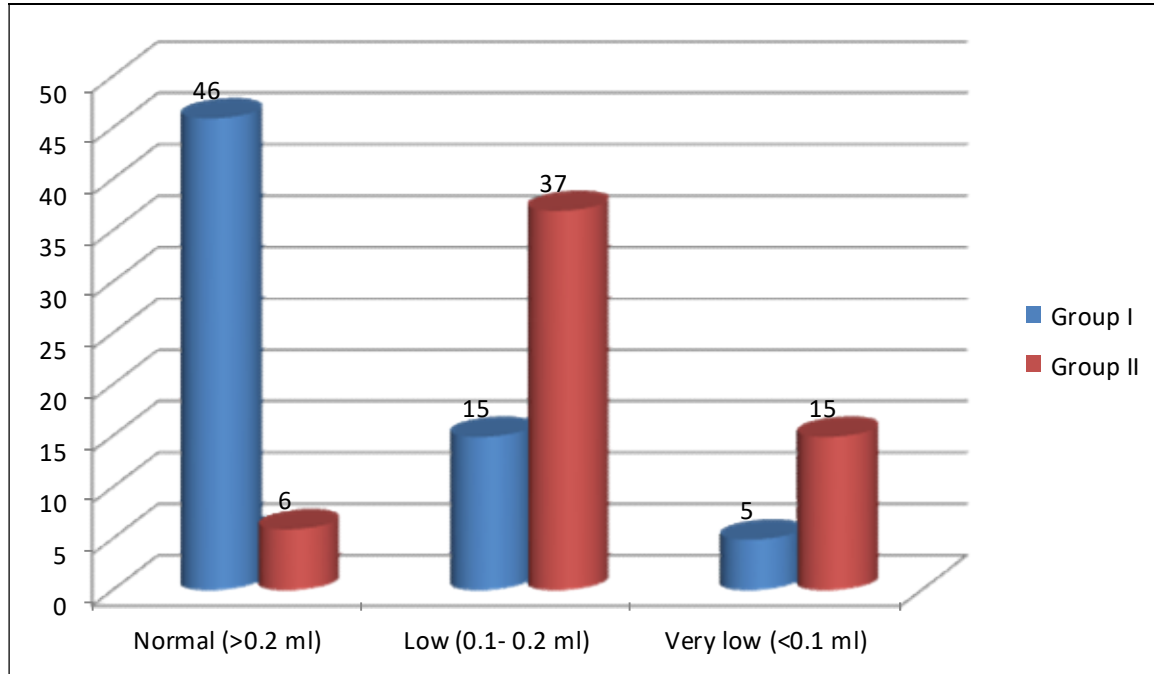
Parameters	Group I	Group II
Menstrual status	Pre- menopausal	Post- menopausal
Age group	30- 44	45-70

Table I shows that group I consisted of 68 premenopausal females in the age group of 30-44 years. Group II consisted of 68 postmenopausal females in age group of 45–70 years.

Table II: Whole unstimulated salivary flow rate (USFR) in two groups

USFR	Group I	Group II	P value
Normal (>0.2 ml)	46	6	0.01
Low (0.1- 0.2 ml)	15	37	0.02
Very low (<0.1 ml)	5	15	0.03

Table II, graph I shows that USFR was normal seen in 46 in group I and 6 in group II, low seen in 15 in group I and 37 in group II and very low seen 5 I group I and 15 in group II. The difference was significant (P< 0.05).



Graph I: Whole unstimulated salivary flow rate (USFR) in two groups

DISCUSSION

Menopause with its absence of specific hormonal stimuli may be a cause or a predisposing factor for oral discomfort. In addition, researchers have proposed that menopause may also affect salivary gland function, since salivary glands contain sex hormone receptors. Many studies have examined salivary flow rates in the context of aging, but the results are conflicting. Some authors have reported significantly lower salivary flow with age, and others have not.⁶

Saliva contains water, organic and inorganic molecules which are exposed to hormonal changes in females. So, pregnancy, menstruation, and hormone replacement therapy can have a direct effect on the entire body including the metabolism of the periodontal tissues.⁷ During pregnancy, various complex interactions are occurring in the body, thereby changing the pH, biochemical composition and flow rate of saliva. Various hormones secreted by the body during pregnancy like

progesterone, estrogens and human gonadotropins are primarily responsible for this change.⁸ The present study was conducted to assess salivary flow rate in menopause females in known population.

In present study, group I consisted of 68 premenopausal females in the age group of 30-44 years. Group II consisted of 68 postmenopausal females in age group of 45-70 years. Bhatia et al⁹ conducted a study which comprised of 45 pregnant female and 45 non pregnant females of the same age group. Both stimulated and non stimulated saliva was collected from the patients and was compared. The salivary flow, pH and buffering capacity were measured by GC saliva collection buffer kit. The mean± SD unstimulated flow rate was 5.32 ±1.64 and 4.47±1.45 in non pregnant and pregnant patients. The mean± SD unstimulated salivary flow rate was 9.38±2.15 in pregnant patients and 7.76± 1.75 in non-pregnant patients. The mean pH was 6.20 ± 0.32 and 6.90 ± 0.36 in pregnant and non pregnant patients

respectively. The mean buffering capacity was 7.34 ± 1.62 in pregnant females and 10.1 ± 1.40 in non pregnant females.

We found that USFR was normal seen in 46 in group I and 6 in group II, low seen in 15 in group I and 37 in group II and very low seen 5 I group I and 15 in group II. Ship et al¹⁰ divided patients into three groups of 20 patients: Group 1: Pre-menopausal women (control), Group 2: post-menopausal women (case), Group 3: post-menopausal women on HRT (case). It was found that salivary flow rate significantly lower in the post-menopausal women in comparison with the menstruating women and also there was improvement in the flow rate in individuals who were on HRT, it was also observed that salivary pH of the post-menopausal group was significantly lower than that of the control group, statistically significant difference in buffer capacity values was found between the groups however buffer capacity values were higher in the post-menopausal group than the control group.

Mojabi et al¹¹ in their cross-sectional study was conducted on forty healthy postmenopausal women (case group) and forty regularly menstruating healthy women (control group). Salivary pH was measured using pH strips. Oral Hygiene Index-simplified (OHI-S), Decayed Missing and Filled Teeth (DMFT index), Community Periodontal Index (CPI), and Loss of Attachment (LOA) were assessed clinically. Salivary pH and flow rate in the case cluster were considerably lesser when related to the control group ($P < 0.001$). OHI-S, DMFT, CPI, and LOA were found to be greater in postmenopausal women when related to the control group ($P < 0.001$).

CONCLUSION

Authors found that there was significant reduction in salivary flow rate in post menopausal females as compared to pre- menopausal females.

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