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Effectiveness of Transcutaneous Electrical Nerve Stimulation on Saliva Production and Improvement of Oral Symptoms in Patients with Xerostomia - A Prospective Study

By

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ABSTRACT

BACKGROUND AND OBJECTIVES:

Many people continue to struggle with xerostomia, the subjective complaint of dry mouth, and hyposalivation. This issue can have many different etiologies, including diabetes mellitus, hypertensive drugs, Sjögren's syndrome, medications, radiotherapy for head and neck malignancies etc. Several pharmaceutical and non-pharmacological treatments have been proposed for people who experience dry mouth. A novel method for treating these patients is transcutaneous electrical nerve stimulation (TENS).

AIM OF THE STUDY:

The present study was conducted for patients who have complaint of dryness of mouth. The main aim of the study was to evaluate the effects of TENS in stimulating whole salivary flow in patients with xerostomia and its effects in the improvement of oral symptoms in patients with xerostomia.

METHODOLOGY:

The present study was a single-blind, in-vivo, prospective, randomized clinical trial conducted on 40 subjects (20 TENS, 20 Placebo), wherein unstimulated and stimulated saliva were collected for 5 min in graduated test tubes fitted with a funnel while mean salivary flow rates were calculated. All subjects were given therapy for three sessions. The data were analyzed using SPSS version 20.0 (SPSS Inc., Chicago, IL, USA).

RESULTS:

The study included 40 subjects ranging in age from 23 to 67 years. The mean age of female participants was 47.82 years and for male participants, it was 53.6 years. Overall, the mean age was 50.71 years. In the present study, the mean salivary flow rates before and after therapy in session 1 in group A were 0.88 ± 0.97 mL/5min and 1.24 ± 1.23 mL/5min, at the end of session 2, they were 0.91 ± 0.88 mL/5min and 1.11 ± 0.97

mL/5min, and at the end of session 3, they were 1.00 ± 0.82 mL/5min and 1.13 ± 0.87 mL/5min respectively. P values of session 1(P = 0.027) and session 2(P = 0.032) were significant, but P value of session 3(P = 0.079) was not significant, considering P < 0.05 as statistically significant.

In the present study, the mean salivary flow rates before and after therapy in session 1 in group B were 2.0 ± 1.55 mL/5min and 2.02 ± 1.94 mL/5min; at the end of session 2, they were 2.25 ± 1.57 mL/5min and 2.37 ± 1.93 mL/5min; and at the end of session 3, they were 2.04 ± 1.55 mL/5min and 2.25 ± 1.91 mL/5min respectively. P values of session 1(P = 0.92), session 2(P = 0.45) and session 3(P = 0.10) were not significant, considering P < 0.05 as statistically significant. The comparison of mean salivary flow rates between both the groups analysed by unpaired t test in session 1, session 2 and session 3 was not significant. The comparison of group A and group B subjects in all the sessions based on a questionnaire, which they answered affirmatively, was also not significant.

CONCLUSION:

Although there was not much increase in mean salivary flow rate observed when both TENS and placebo groups were compared. But, there was statistically significant increase in mean salivary flow rate after TENS therapy in group A. Significant improvements in swallowing and mastication were also reported in both the groups. No serious side effects of the therapy were observed But it was quite successful in improving oral symptoms. The favourable findings of this study suggest that TENS may boost salivary flow rate and improve oral symptoms in the patients suffering from xerostomia.

KEYWORDS: Xerostomia, Salivary glands, TENS, Placebo, Oral symptoms