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Effect of Acupressure Therapy on Salivary pH in Habitual Tobacco Users – An Original Study

Dr. Pooja Narain[1], Dr. Akshay Verma[2*], Dr. Shivendra Rana[3], Dr. Nancy Srivastava[4], Dr. Ajay Sharma[5], Dr. Shreeyam Mohapatra[6]

[1]Professor & Head, Dept of Oral Pathology & Microbiology, Rajasthan Dental College & Hospital, Jaipur.
[2*]Professor, Dept of Oral Pathology & Microbiology, Rajasthan Dental College & Hospital, Jaipur
[3]Professor, Dept of Oral Pathology & Microbiology, Rajasthan Dental College & Hospital, Jaipur
[4]Reader, Dept of Periodontology, NIMS Dental College & Hospital, Jaipur
[5]Reader, Dept of Oral Pathology & Microbiology, Rajasthan Dental College & Hospital, Jaipur
[6]Associate Professor, Dept. of Oral Medicine & Radiology, SCB Dental College, Cuttack

Corresponding Author
Dr. Akshay Verma
Professor, Dept of Oral Pathology & Microbiology, Rajasthan Dental College & Hospital, Jaipur.
Email: dr.akashyavermaop@gmail.com

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ABSTRACT:

In recent times, the traditional remedies have gained importance as an alternative therapeutic practice. Amongst them, acupuncture is being widely used as an alternative therapy for the treatment of numerous diseases. In the present study, pH of saliva was noted in 20 habitual tobacco users and was found to be acidic in nature. With the help of therapeutic action of acupressure the affected habitual users were treated to understand the action of acupressure on salivary pH.

Keywords: acupuncture, acupressure therapy, salivary pH

1. Introduction

The word 'acupressure' is related to 'acupuncture'. 'Acu' means a needle and 'puncture' means to 'pierce'. Acupuncture means the art of treating diseases by piercing specific points (acupoints) in the body whereas acupressure refers to the art of treating diseases by applying pressure on specific points with the help of one's thumb or unpointed things. Acupressure is the science of nature which teaches us to cure diseases through the inbuilt mechanisms of the body -- the technique of how to send the current to all the desired parts of the body.[1] The acupuncture may trigger the body to release pain-relieving chemicals in the body called endorphins, noradrenaline, encephalin and serotonin in its process.[2]

A non-pharmacological alteration therapy (acupuncture) used for more than 3000 years in China has been shown to be effective.[3] In the Indian book of Ayurveda about 1800 BC, there is indication about the massage and acupressure being used for the purpose of healing.[2] In recent years, complementary and alternative medicine therapies have grown in popularity in the cancer setting, and many patients and doctors choose to use them alongside their orthodox treatments.[4] The use of acupuncture and acupressure has a long history for the past forty years.[5]

The acupressure therapy is based on a non pharmacological theory that differs radically from modern allopathic medicine. Unlike acupuncture, the theory of acupressure is based on the belief that the human body has 14 imaginary meridians that conduct energy to specific anatomical region.[6] These imaginary meridians, which originate in the fingertips, provide a direct pathway to the brain. In turn, the brain is able to communicate with the organ associated with a particular meridian.[7] Each meridian is classified according to the specific organ to which it is associated. According to the theory of this science, manipulation of the tissues along a meridian has the ability to re-establish proper energy conduction to the affected organ. When acupressure is applied, the interruption is relieved, the energy flow resumes, and the organ is able to function normally.[8]

It is believed that acupuncture and acupressure enhances the release of neuropeptides and stimulates the autonomic nervous system improving saliva secretion.[9,10]

The pH of whole saliva is estimated to be 6.7 -7.4.[11] Variation in saliva pH from normal, may cause pathology or aggravate pathology. Several investigators[12,13] suggested that the effect of chewing and smoking tobacco results in a decrease in salivary pH. Tobacco in general is used in smoking and smokeless tobacco forms. A healthy cell has a pH of 7.35 while a cancer cell is more acidic.[14]

The dynamic and pivotal nature of saliva encouraged us to include the investigation of values of salivary pH in habitual tobacco users. Recent worldwide acceptance of the acupressure therapy and advantages like easy to learn, quick to provide, cost free and effective relief instigated us to perform this therapy on our subjects to analyses the effect on the salivary pH. Hence, the present study included measuring of salivary pH in habitual tobacco users and consequently the effect of acupressure therapy on salivary pH.

2. Material and Method

A total of 20 patients with a habit of tobacco consumption (smoked/chewed) for a minimum period of 5 years with minimum of 5 exposures per day were enrolled in the study. 20 age and gender matched patients with no habit of tobacco were kept in control group.

Unstimulated saliva sample were collected in the morning between 9am and 10am. The patients in study group were told not to eat or drink or smoke in the morning before submitting the sample.

The initial course of acupressure therapy was given to each individual of both the groups. The acupressure therapy was given by applying pressure for 2 to 3 minutes on the right and left palms at specific accupoints (Figure 1).[8] The therapy was repeated six times a week over a period of three months.
The salivary pH was measured by using Auto Deluxe pH meter (model: LT-10 Labtronics) for both study group and control group.
The saliva samples were collected 2 times once before the therapy and once after the therapy.

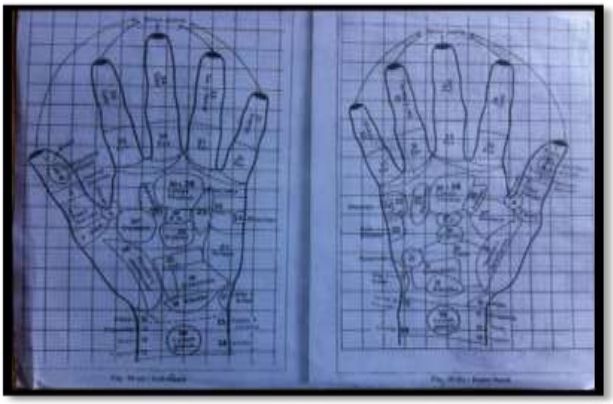

Fig -1 selective acupoints for acupressure therapy

3. Results

The study included 40 patients out of which 20 were having a habit of tobacco and 20 did not. There was no significant difference in age distribution and gender of the subjects between the study group and control group.
The mean salivary pH in study group was less than that in the control group and the difference was clinically significant (Table 1).
The difference in the salivary pH level after the acupressure therapy in comparison to before the acupressure therapy was not significant in both groups.

Table 1. Salivary pH before and after acupressure therapy in study group and control group

Salivary pH	Group	N	Mean	Std Dev	'p' Value*
Before Therapy	Study	20	6.710	0.055	<0.001
	Control	20	7.013	0.085	
After Therapy	Study	20	6.710	0.065	
	Control	20	7.026	0.092	

*Unpaired't' test

4. Discussion

The rediscovery of the natural traditional life science has contributed to improve the treatment strategies of the human diseases. So bioenergetics approaches, such as acupressure and acupuncture may largely counterpart on ailments.[15]
Acupressure points also called potent points are places within the skin that are especially sensitive to the conduction of bio electrical impulses throughout the body. Recent advances in acupuncture and acupressure suggested that this therapy may provide clinical benefit for cancer patients.[16]
The present study revealed that the pH of saliva in case of habitual tobacco users is 6.710 (mean pH) as compared to non-habitual tobacco users which is 7.013. This is in agreement

with the other reports. Parvinen T (1984) compared and analyzed the effect of smoking habit on flow rate, pH and lactobacillus counts in whole saliva 462 adult smokers and 180 non-smokers were compared. The pH of stimulated whole saliva was lower in smokers, and the differences were found to be statistically significant.[17]

This is further supported by T Rooban et al (2006) who observed the mean pH of saliva as 6.77 in case of non-chewers of tobacco and 6.57 in chewers. The differences between mean pH of chewers and non-chewers were statistically significant.[18]

In addition to it, as A Kanwar (2013) claimed that the saliva is the first biological fluid that is exposed to tobacco, and found salivary pH of whole saliva was 6.8 in tobacco smokers, 6.7 in tobacco chewers and 7.03 in controls and concluded that tobacco is responsible for the alteration in salivary flow rate and pH.[19]

After the acupressure therapy of 3 month, the present study revealed that the pH of habitual tobacco users was 6.710. Moreover, the pH of non-tobacco users, after the acupressure therapy of 3 month, was 7.372. There was no statistical difference in the pH of saliva before and after the therapy.

Possible acupressure therapy mechanisms include central, peripheral and autonomic nerve pathway activation and release of neurochemicals. Increase in blood flux has also been noted which affect the salivary gland metabolism and result in increased salivary secretion.[20]

Manual acupuncture affects the autonomic nervous system by increasing parasympathetic system activity and restriction of sympathetic tone through the release of several neuropeptides including basoactive intestinal peptide, neuropetide-Y, substance-P, calcitonin gene related peptided (CGRP) and neurokinin-A, in the acini, ducts and blood vessel of the salivary glands thereby increasing the salivary production.[21]

The neuropeptides that affect the salivary glands include SP, NKA, and CGRP causing an increase in salivary secretion.[21]

The rediscovery of the natural traditional medical science has contributed to improve the treatment of the human diseases and, in particular, it has been shown that the pharmacological approach is not the only possible strategy in the treatment of many diseases. Bioenergetics approaches, such as acupressure and acupuncture may largely counterpart on ailments.[13]

Acupressure points also called potent points are places in the skin that are especially sensitive to the conduction of bio electrical impulses throughout the body. Recent advances in acupuncture and acupressure suggested that this therapy may provide clinical benefit for cancer patients.[8]

I Dawidson in 1997 investigated the influence of acupuncture on salivary flow rates in healthy subjects and found that there was increased unstimulated salivary flow both during and after manual acupuncture stimulation, it is possible that the salivary secretion is influenced by the augmented release of neuro-peptide caused by acupuncture. Some neuro-peptide has been shown to effect salivary secretion as well as capillary blood flow. In the United States acupuncture is used to treat variety of symptoms and conditions associated with cancer and side effect of cancer treatments.[22]

According to certain cultural believe, stimulating or interrupting the human energy is the principal mechanism for altering an individual`s response to negative stimuli.[8] In recent years, complementary and alternative medicine therapies have grown in popularity in the cancer setting, and many patients and doctors choose to use them alongside their orthodox treatment.[8]

The limitation of the study include the small study group as it was difficult to recruit patients to be available for acupressure therapy daily for a period of 3 month.

5. References

1. Susan K, Fraier RN. The efficacy of Acupressure for symptom management: A systematic review. Journal of Pain and symptom management 2011; 42: 589-603.
2. Kudva S. Acupressure & Dentistry ¬ Review & A Correlative. The Journal of Clinical Dentistry 2008. 30-34.
3. Burtonn Goldberg. Alternative Medicine. The Burton Goldberg Group. Alternative Medicine 1998.
4. JT Filshie, N.J. Carolyn. Complementary and Alternative Medicine. Anesthesiology Clin N Am 2006. 24: 81 – 111.
5. Li Beng Wong, Acupuncture in Dentistry: Its Possible Role and Application. Proceedings of Singapore Healthcare 2012:21:1.
6. Young J. Acupressure Step by Step: The Oriental Way to Health. London, England: HarperCollins UK; 1998.
7. Gach M. Acupressure's Potent Points: A Guide to Self-Care for Common Ailments. New York, NY: Bantam Dell Publishing Group; 1990.
8. Angela G, Hickman, Donald M. Bell, John C. Preston, Acupressure and postoperative nausea and vomiting; Tennessee. AANA Journal 2005; 73: 25-30
9. Johnstone PAS, Niemtzow RC, Riffenburgh RH. Acupuncture for xerostomia: clinical update. Cancer 2002;94:1151-6
10. Johnston MF, Sanchez EO, Vujanovic NL, Li W. Acupuncture may stimulate anticancer immunity via activation of natural killer cells. Evid. Based Complement Alter. Med 2010:1-14.
11. Kanwar A, SahK, Grover K, ChandraS, Singh R R. Long‑term effect of tobacco on resting whole mouth salivary flow rate and pH: An institutional based comparative study; European Journal of General Dentistry 2013; 2: 112-13.
12. T Rooban, G Mishra, J Elizabeth, K Ranganathan, TR Saraswathi. Effect of habitual arecanut chewing on resting whole mouth salivary flow rate and pH. Indian J Med Sci 2006; 60:95-105.
13. Ciolino LA, McCauley HA, Fraser DB, Wolnik KA. The relative buffering capacities of saliva and moist snuff: implications for nicotine absorption. J Anal Toxicol. 2001; 25(1):15-25.
14. HE Sartori. Killing cancer cells with high pH therapy; cesium chloride and cesium carbonate kills cancer cells. Pharmacol Biochem Behav 1984; 21:1-5.
15. Gardani G, Cerrone R, Biella C, Proserpio E. A progress study of 100 cancer patients by acupressure for chemotherapy-induced vomiting after failure with the pharmacological approach. Minerva Med. 2007; 6: 665-8.
16. Hickman AG, Bell DM, Preston JC. Acupressure and postoperative nausea and vomiting. AANA Journal 2005;73:379-385
17. Parvinen T. Stimulated salivary flow rate, pH and lactobacillus and yeast concentrations in non-smokers and smokers. Scand J Dent Res 1984; 92(4): 315-8.
18. Khan G.J, Mahmood R, Haq I, Din S. Secretion of Total Solids (Solutes) In the Saliva of Long-Term Tobacco Users. J Ayub Med Coll Abbottabad 2008; 20(1):64-71.
19. Andersson G1, Warfvinge G; The influence of pH and nicotine concentration in oral moist snuff on mucosal changes and salivary pH in Swedish snuff users. Swed Dent J. 2003; 27(2):67-75.
20. Garcia MK, Chiang JS, Cohen L. Acupuncture fr radiation induced xerostomia in patients with cancer: a pilot study. Head & Neck 2009;31:1360-8

21. Haker E, Egekvist H, Bjerring P. Effect of sensory stimulation (acupuncture) on sympathetic and parasympathetic activities in healthy subject. Journal of Autonomic nervous system. 2000 79:52-59
22. I Dawidson, M Blom, T Lundeberg. The influence of acupuncture on salivary flow rates in healthy subjects. J Oral Rehabil 1997; 24: 204-8.