

The Use of Laser on Acupuncture Points For Smoking Cessation

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Abstract: Four hundred and eighteen male smokers were subjected to laser treatment at various acupuncture points for the cessation of cigarette smoking. The results showed that laser treatment at various acupuncture points produced different therapeutic effectiveness. It was found that auricular acupuncture points were relatively more effective for the cessation of cigarette smoking as compared to the acupuncture points of the nose (gall bladder) and wrist (Tim Mee). The data also indicated that one minute exposure of laser treatment with an intensity of 3 mW provided the best therapeutic result. Based on these findings, it is concluded that laser treatment on acupuncture points for cessation of cigarette smoking is clinically effective.

THERE ARE various treatments for the cessation of cigarette smoking, for instance, nicotine chewing gum,¹ hypnosis,² counseling and group support.³ But so far, none has produced satisfactory results. Recently, it was reported that there was high success of using needle acupuncture treatment for cigarette smoking.^{4,6} However, this therapeutic method has still not been widely accepted by smokers because of the pain that arises during needling. In view of this, we have used laser treatment at auricular points of the cigarette smokers and the resulting effectiveness was found to be comparable to that of needle acupuncture.⁷ The attempt of the present study was to

examine further into the effectiveness of using laser treatment on various acupuncture points, especially those on the ears for cessation of cigarette smoking.

Material and Methods

Smokers: Four hundred and eighteen male subjects from 30 to 50 years of age with at least two years of smoking history were chosen for the present study. They had smoked from 20 to 60 cigarettes per day. Before each treatment, information on the smoking history of each individual was recorded. Before and after the treatment, no encouragement and support to stop smoking were given so that the results of the treatment were not affected by any psychological approach.

Laser Treatment: Several local-made laser units with output light power of 2, 2.5, 3 mW at the end of the optic probe were used. Various acupuncture points were chosen for the treatment for three consecutive days per week. Three days later, this was repeated for another week. During treatment, the optical probe of the laser was placed a few millimeters away from the acupuncture points without touching the skin of the acupuncture point. On the control subjects, the optical probe of the laser acupuncture unit was placed near the skin of the acupuncture points but without the laser ray in operation. For the sake of simplicity and statistical analysis, a smoker who showed over

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50% reduction in the number of cigarettes smoked per day after two weeks of laser treatment was considered a positive responder.

Statistical Determination: The significance of the results was determined by Friedman test and Chi square.

Results and Discussion

In our previous work, we have demonstrated that laser stimulation on auricular points produced an overall success rate of over 80% in reducing and stopping cigarette smoking. This result was further confirmed in the findings of the present study. Table 1 shows that a laser beam of 2.5 mW and 3 mW for one minute exposure produced a significantly ($p < 0.05$) higher percentage of positive responders than those treated with a 2 mW laser beam of the same duration.

Table 2 shows that by varying the time exposure of the 3 mW laser beam to the various acupuncture points, one could see that regardless of the different auricular acupuncture points, one minute of the laser gave the best therapeutic results ($p < 0.05$). Because of these findings, laser beam with 3 mW intensity at the end of the optical probe and one minute exposure were adopted for the treatment throughout the study.

Table 3 shows that acupuncture points in the nose (Gallbladder) and wrist (Tim Mee) were used for the laser treatment. Results showed that there was no significant difference in therapeutic effectiveness between the two different groups. The results also indicated that their therapeutic effectiveness was relatively lower than that of acupuncture points on the ears (Table 2). Hence, the data of the present study were not in good agreement with the findings of Olms⁸ who claimed an overall success rate of 84% for stopping smoking using Tim Mee acupuncture points for needle acupuncture. The author further claimed by using two additional acupuncture points (agresor point on the ear and gall bladder point on the nose) along with Tim Mee and a soft laser, a success rate of over 94% was obtained.

In order to find out whether more than one acupuncture point on one ear or on both ears used for laser treatment at the same time would

give a better therapeutic result, study of Table 4 was carried out. The data showed that except for the group treated with acupuncture point E37, E52 and E7, the laser treatment of using more than one acupuncture point at the same time does not give a better therapeutic result. In addition, it is very impractical to use three laser units just for treating a single smoker at only one time.

The actual mechanisms of the laser effect of acupuncture points that eventually led to the change of smoking desire after the treatment are still not fully understood. It is interesting to point out that there were some cases who showed withdrawal symptoms during the four-day interval between the first and the second week's treatment. However, these withdrawal symptoms would disappear immediately after beginning treatment the second week. This clearly suggests that laser treatment had produced a certain sedative effect to help the smokers overcome the distress arising from the marked reduction rate of smoking or cessation of smoking within a short period of time. According to the work of Chinese acupuncturists in Shanghai Medical School,⁹ blood of smokers was found to contain higher levels of endorphin than that of the non-smokers. If that is so, the increased amount of endorphin in the blood of smokers must be attributed to the stimulation of the cigarette smoking, likely due to action of the nicotine. Therefore, a sudden drop of endorphin in the blood of smokers due to abrupt cessation of cigarette smoking might lead to appearance of the withdrawal symptoms. Therefore, the effect of laser stimulation might likely regulate the sudden change in the amount of endorphin at the level of the central nervous system. Since electrical acupuncture has been known to activate the axis of hypothalamus, pituitary and adrenal glands,^{10, 11} one could assume that laser stimulation might also affect this system in a similar manner. If that is so, one cannot rule out the possibility that laser stimulation is also regulating the level of ACTH and corticosteroids as needle acupuncture did on smokers⁹ and drug addicts.¹²

However, it is not known why laser treatment could lead to the changes in smoking

One m

Laser treatment (mW)

Control

2.0

2.5

3.0

Effect o

Acupoints t

E37

E52

E7

E54

Table 1.
One minute laser stimulation exposure at auricular acupuncture point (E52)
with different outputs of light power (2, 2.5 or 3 mW).

Laser treatment (mW)	Positive responders (%)		Reduction in cigarette consumption (%)	
	Total smokers		50 - 75	75 - 100
			Positive responders (%)	
Control	8/30	(26.6)	20.0	6.6
2.0	14/26	(53.8)	38.4	15.4
2.5	16/20	(80.0)	40.0	40.0
3.0	24/28	(85.7)	15.3	70.4

Table 2.
Effect of laser treatment (3 mW) on various acupuncture points with different
duration exposures (1, 2 or 3 minutes).

Acupoints	Laser treatment (minute)	Positive responders (%)		Reduction in cigarette consumption (%)	
		Total smokers		50-75	75-100
				Positive responders (%)	
E37	1.0	34/42	(80.9)	19.0	61.9
	2.0	8/12	(66.7)	16.7	50.0
	3.0	0/10	(0.0)	0.0	0.0
E52	1.0	22/26	(84.6)	15.2	69.4
	2.0	12/16	(75.0)	25.0	50.0
	3.0	4/10	(40.0)	20.0	20.0
E7	1.0	18/24	(75.0)	33.4	41.6
	2.0	4/10	(40.0)	20.0	20.0
	3.0	6/10	(60.0)	20.0	40.0
E54	1.0	20/28	(71.4)	21.4	50.0
	2.0	4/10	(40.0)	0.0	40.0
	3.0	6/10	(60.0)	0.0	60.0

Table 3.
Effect of laser treatment (3 mW, 1 min. exposure) on acupuncture points of wrist and nose.

Acupoints in wrist and nose	Positive responders (%)		Reduction in cigarette consumption (%)	
	Total smokers		50-75	75-100
	Positive responders (%)			
Tim Mee (Wrist)	12/18	(66.6)	22.2	44.4
Gall bladder (Nose)	8/14	(57.1)	0.0	57.1

Table 4.
Effect of laser stimulation using more than one auricular acupuncture point on one ear or both ears during a single treatment session.

Acupoints	Positive responders (%)		Reduction in cigarette consumption (%)	
	Total smokers		50-75	75-100
	Positive responders (%)			
E37, E52 (One ear)	16/20	(80.0)	40.0	40.0
E52, E52 (Both ears)	12/16	(75.0)	0.0	75.0
E37, E52, E54 (One ear)	18/22	(81.8)	27.3	54.5
E37, E52, E7 (One ear)	16/16	(100.0)	50.0	50.0

behavior and cigarette consumption. As pointed out in the majority of smokers, they felt that their cigarette consumption was either weak or too strong. Others said that their smoking urge during consecutive treatment sessions were frequent throughout the whole length of the treatment, whether all these changes were linked to changes in the types of endogenous hormones has not yet been verified. As pointed out, there are at least two types of endogenous hormones in the central nervous system, the neurotransmitters, which have a controversial function.

It has to be emphasized that the cessation of smoking by laser acupuncture is also influenced by other factors as shown in the controls showed that it is likely that smokers who have been influenced by laser were waiting for treatment.

In conclusion, laser acupuncture points, especially E37, can be used effectively to reduce cigarette smoking. It is a simple and safe method which is enthusiastically accepted by smokers in our clinics. This is because laser acupuncture can produce any pain or inflammation as a result of the treatment.

behavior and cigarette taste of the smokers. As pointed out in our previous work,⁷ the majority of smokers after laser treatment often felt that their cigarette tasted like burning ash. Others said that the cigarette odor became too weak or too strong for them. They lost the smoking urge during the first week of the three consecutive treatments. In this period many of them were frequently not able to finish the whole length of their cigarette but instead held it or put it aside. Therefore, one may ask whether all these changes of smoking behavior linked to changes in the amount of different types of endogenous opioid peptides remain to be verified. As pointed out by Wolf and Wall,¹³ there are at least 18 endogenous opioid peptides in the central nervous system with controversial functions.

It has to be emphasized that to some extent, cessation of smoking treated with laser acupuncture is also affected by psychological factors as shown in Table 1. About 26% of the controls showed positive response. It is very likely that smokers of the control group might have been influenced by others while they were waiting for the treatment.

In conclusion, laser acupuncture on acupuncture points, especially the auricular ones, can be used effectively for cessation of cigarette smoking. It is a simple therapeutic technique which is enthusiastically welcomed by smokers in our clinics, regardless of age and sex. This is because laser acupuncture does not produce any pain and will not induce any inflammation as needles might occasionally do.

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References

1. Raw, et al.: Comparison of Nicotine Chewing Gum and Psychological Treatments for Dependent Smokers. *Brit. Med. J.*, 281, 1980, pp. 481-482.
2. Holroyd, J.: Hypnosis Treatment for Smoking: An Evaluative Review. *Int'l J. Clin. Hypnosis*, 28 (4), 1980, pp. 341-350.
3. Bigelow, G.E., Strtzer, M.L.: Tobacco Use and Dependence. In: *Principles of Ambulatory Medicine*. Eds. L.R. Barker, J.R. Burton, and P.D. Zieve. Williams and Wilkins, Baltimore, 1982.
4. Chen, J.Y.P.: Treatment of Cigarette Smoking by Auricular Acupuncture: A Report of 184 Cases. *Amer. J. Acupuncture*, 7 (3), 1979, pp. 229-234.
5. Parker, L.N., Mok, M.S.: The Use of Acupuncture for Smoking Withdrawal. *Amer. J. Acupuncture*, 5 (4), 1977, pp. 363-366.
6. Gilbey, V., Neumann, B.: Auricular Acupuncture for Smoking Withdrawal. *Amer. J. Acupuncture*, 5 (3), 1977, pp. 239-247.
7. Tan, C.H., Huang, X.G., Sin, Y.M.: The Effect of Laser on Acupoint for Smoking. In: *Proceedings of the Inter-Faculty Symposium on Laser*, National University of Singapore, 1985.
8. Olms, J.S.: Increased Success Rate Using New Acupuncture Point for Stop-Smoking Program. *Amer. J. Acupuncture*, 12, (4), 1984, pp. 339-343.
9. Shanghai Medical School, Acupuncture Study Group: Auricular Acupuncture on Smoking Taste and Plasma Endorphins. *J. Shanghai Acup. & Moxibust.*, 3, 1985, pp. 1-3. (In Chinese).
10. Sin, Y.M.: Comparative Studies Into the Effect of Acupuncture and Morphine on Acute Inflammation. *Alternat. Med.*, 1 (1), 1985, pp. 55-61.
11. Toyama, P.M., et al.: Beta-Endorphins and Cortisol Measurements Following Acupuncture and Moxibustion. *J. Holistic Med.*, 1982, pp. 58-67.
12. Wen, H.L., et al.: Changes in Adrenocorticotrophic Hormone (ACTH) and Cortisol Levels in Drug Addicts Treated by a New and Rapid Detoxification Procedure Using Acupuncture and Naloxone. *Comp. Med. East and West*, 4 (3), 1977, pp. 241-245.
13. Wolf, C.J., Wall, P.D.: Endogenous Opioid Peptides and Pain Mechanisms: A Complex Relationship. *Nature*, 306, 1983, pp. 739-740.