

Effect of Laser Acupuncture on Female Chronic Pelvic Pain

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Abstract: *Background:* Chronic pelvic pain (CPP) is non-cyclic pain situated in the pelvis, anterior abdominal wall at or below the umbilicus, lumbosacral area of the spine, or buttocks for more than 6 months. *Purpose:* The purpose of this study is to investigate the effect of laser acupuncture (LA) on female chronic pelvic pain. *Materials and Methods:* Pretest posttest randomized controlled trial design was used in the current study. Forty married female patients with chronic pelvic pain participated in the study. subjects were recruited from outpatient clinic of obstetric department of El-Menofyia university hospital in Cairo, patients randomly be divided into two equal groups Group A received medical treatment and group B received medical treatment plus LA. Treatment was given for 6 weeks; then, VAS was used to assess pain level. *Results:* There were no statistically significant differences between pre and post values of VAS but both groups improved (P=0.000) *Conclusion:* There is no added effect of adding laser acupuncture to medical treatment on pain level in female chronic pelvic pain.

Key words: Laser Acupuncture • Pain • Chronic Pelvic Pain

INTRODUCTION

Chronic pelvic pain (CPP) is non-cyclic pain situated in the pelvis, anterior abdominal wall at or below the umbilicus, lumbosacral area of the spine, or buttocks for more than 6 months. Not only severe CPP cause functional dysfunction in patients, it also decreases the quality of life. A clear CPP diagnosis is always difficult; 75% of patients do not have a diagnosis [1].

Because of the complex clinical signs and phenotypes of CPP, treatment of these patients remains a challenge. Many non-surgical and surgical methods exist but have a small impact on the control of CPP. In addition, many of the suggested medical and surgical procedures have the potential for injury [2].

Chon *et al.* [3] have found that the Low-level laser therapy (LLLT) in acupuncture was a safe and effective treatment of CPP. Low-level laser therapy (LLLT) in acupuncture is a low-power laser applied to acupoints for

providing luminous energy, capable to produce photobiological induction that results in biochemical, bioelectric and bioenergetic effects.

Existing evidence provides some insight into the anti-inflammatory effects, neuromodulation and cellular effects of LLLT; however, the data remain sparse overall. Only a limited number of studies have assessed the effects of LLLT on specific acupoints. More robust studies are needed to examine the effects of LLLT on additional acupoints and to determine how these effects may be translated into clinical outcomes. Differences in laser characteristics-such as wavelength, power output and energy dose-affect the level of light scattering and penetration through skin tissue. In addition, light penetration is difficult to standardize because of the complex optical properties of skin and heterogeneity in skin characteristics and treatment locations among individuals. The skepticism surrounding laser acupuncture (LA) is compounded by the absence of

guidelines for laser parameters and energy dosages. Studies remain difficult to replicate and published results are inconsistent. However, systematic reviews of RCTs examining the clinical effectiveness of LA show promise in supporting it as an effective treatment for reducing myofascial pain and for managing musculoskeletal pain and support LA's use for addressing postoperative nausea and vomiting [3].

Laser acupuncture has many features that make it an attractive treatment option, compared with classic acupuncture, for certain patient populations. LA may be preferred by pediatric and geriatric patients and by patients with needle phobias because it does not penetrate the skin and LA is associated with minimal sensation and minimal risk of infection, trauma and bleeding complications. These features may make LA more feasible in patients with serious comorbid conditions, hospitalized patients and other patients with increased risks of complications such as bleeding and infection. In addition, the duration of treatment is generally shorter and more acupoints can be used during finite treatment times [3].

So, this study was conducted to investigate the effect of laser acupuncture on pain on female chronic pelvic pain.

MATERIALS AND METHODS

Design of the Study

Pretest Posttest Randomized Controlled Trial

Study Sample: Forty married female patients with chronic pelvic pain participated in the study and each participant signed the consent form. Subjects were recruited from outpatient clinic of obstetric department of El Menofya university hospital in Cairo.

Patients randomly be divided into two equal groups using coin toss method: Group (A) (Control Group): It was composed of 20 female patients with chronic pelvic pain who received non-steroidal anti-inflammatory drugs only for 6 weeks. Group (B) (Study Group): It was composed of 20 female patients with chronic pelvic pain who received laser acupuncture therapy plus non-steroidal anti-inflammatory drugs for 6 weeks.

Patients were selected under the following criteria: Their age ranged from 35 to 45 years, their body mass index was from 25 to 30 kg/m², they should be non-smokers, their maximum parity number is not more than three, they should have sedentary lifestyle without participation at any exercise training program during this study.

Interventions

Medical Treatment: All patients in both groups (A & B) received medical treatment in the form of non-steroidal anti-inflammatory drugs, 3 times per day after meals, for 6 weeks.

Laser Acupuncture: Laser acupuncture was applied only for group (B): the following parameters were used: wavelength: 904nm, Laser probe power density: 15 J/cm², Pulse repetition frequency: 5000Hz, contact technique was used. It is applied 90 sec per point, 6 min per 4 points in every session. Protection of the investigator's eyes from the hazardous effect of laser irradiation by wearing special glasses. Laser acupuncture technique was used on following points: RT and LT BL-33: In the third posterior sacral foramen, RT and LT BL-35: On either side of the coccyx, 0.5 cun lateral to the midline [4, 5], SP6:3 can directly superior to the tip of the medial malleolus on the posterior border of the tibia, Sp9: on the medial aspect of the lower leg, in the depression of the lower border of the medial console of the tibia. Patients of laser treatment group was treated with laser once daily, three times per week, day after day for 6 weeks.

Outcome Measures

Visual Analogue Scale (VAS): Patients were asked to classify their pain according to the VAS, from 1 to 10. The pain severity was assessed by the VAS before starting treatment (first record) then after 6 weeks (as second record). The VAS consists of a line, usually 10 cm long with illustrating diagrams below. Each patient was asked to mark a point on the VAS line between the extremes that related to her pain intensity. Then, the centimeters were measured in each time from the left end of the line to the marked point to obtain the VAS score for pain intensity [6].

Statistical Analysis: In this study, data collection was conducted via data collection sheet and then the data was collected in large table to form raw data that was used as base for statistical analysis

SPSS version 24 was used to conduct the analysis of concurrent study. The descriptive statistics (the mean, the standard deviation, maximum, minimum and range) were calculated for all subjects in the study including age, height, weight, BMI and VAS.

Paired sample t-test was used to compare the difference between before treatment and after treatment results of VAS in each group while unpaired sample t-test was used to compare the before and after treatment results between the study groups for VAS variable.

RESULTS

The demographic data of the participated patients were represented in Table 1 and it showed that both groups are homogenous regarding age, weight, height and BMI.

Also, the VAS statistics showed that there is no statistically significant differences between pre and post values of VAS but both groups improved (P=0.000) as shown in Table 2.

Table 1: Demographics of both groups

	Group A	Group B	t	Sig.
Age (years)	39.46 ± 4.22	39.6 ± 3.98	-0.089	0.929
Weight (Kg)	75.69 ± 7.46	74.09 ± 8.62	0.521	0.607
Height (m)	1.66 ± 0.09	1.64 ± 0.11	0.474	0.64
BMI (Kg/m ²)	27.55 ± 1.49	27.32 ± 1.48	0.405	0.689

Table 2: VAS statistics

	Group A	Group B	t	Sig.
PreVAS (cm)	7.92 ± 1.04	8.27 ± 0.7	-1.038	0.309
PostVAS (cm)	5.15 ± 1.57	4.33 ± 1.11	1.61	0.119
t	5.74	13.852		
Sig.	0.000	0.000		

DISCUSSION

When comparing the current results with the previous ones unlike our results Law *et al.* [7] revealed that LA was efficacious in ameliorating musculoskeletal pain after 6 to 26 weeks of treatment, while the findings of the current study revealed no improvement after treatment. Sixteen articles revealed that LA had superior effects to the control group in terms of pain management. The laser parameters used for LA in these studies were as follows: wavelength, 632.8–980 nm; power, 4–200 mW; and energy, 0.275–43.2 J. Four studies [8- 11] came in agreement with the current study and revealed negative results for LA; two of these studies [8, 9] applied 0.2 J of energy to acupoints and one study [11] applied 61.2–68.8 J. A power density and energy that is too low or high can result in an ineffective response [12]. One study [13] treated patients three times weekly for only one week. The improper choice of acupoints, low frequencies, inadequate energy, infrequent treatments and unskilled therapists can all lead to a negative effect following LA therapy [14].

This study is the first one to discuss LA versus medical treatment also it focused on pain as the main problem is chronic pelvic pain. This study has few limitations; the first is the lack of physical therapy treatment in control group, while the second is using distal acupoints and finally using only one variable is not sufficient for judging the effect of treatment.

CONCLUSION

There is no added effect of adding laser acupuncture to medical treatment on pain level in female patients with chronic pelvic pain

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