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Research Article

Laser Acupuncture Therapy: An Alternative Treatment to Mitigate the Menopausal Hot Flashes Symptom

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Abstract

Background and objective: Hot flashes symptoms are considered as the maximum popular menopausal signs that triggered scientists to look for other therapeutic methods with super-performance such as laser acupuncture. So, the main objective of the research study was to evaluate the feasibility of laser acupuncture for reducing hot flashes and offering an alternative therapy. **Materials and Methods:** The research study was performed on 120 menopausal cases with an age range of 40-60 years old with the continuous suffering of hot flushes. Participants have been divided into different groups as follows: (a) Laser acupuncture, (b) Oral tibolone 2.5 mg/day therapy, (c) Combined therapy and (d) No interventions. Serum FSH, LH and E2 levels have been measured before and after application management. **Results:** Treatment with laser acupuncture and medical therapy using oral tibolone 2.5 mg/day significantly improved the menopausal disorders with $p < 0.05$ and $p < 0.03$, respectively. Additionally, the combined therapy group showed higher significant decrease in the rate and number of hot flushes with $p < 0.001$. Concerning the hormonal changes; on one side, medical drug therapy and combined therapy revealed higher significant amelioration in the FSH hormone than laser therapy; on the other side, laser therapy did not show significant differences in LH and E2. **Conclusion:** laser acupuncture therapy considered an efficient alternative therapy for reduction of postmenopausal hot flushes and amelioration of the hormonal disorders.

Key words: Laser acupuncture stimulation, acupuncture, menopause, hot flushes, tibolone medication, menopausal hormone disorders

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Competing Interest: The authors have declared that no competing interest exists.

Data Availability: All relevant data are within the paper and its supporting information files.

INTRODUCTION

The transitional phases of amenorrhea and premenopause¹⁻² trigger a change in the ovarian function and hormonal disturbance³ and followed by post menopause after the last menstrual period¹. The menopause is accompanied by hormonal disturbances and physiological down-regulation of ovarian hormone secretion^{1,4-7}.

Menopause is a phase with hormonal disorders that can occur naturally through the aging process between 40 and 58 years of age⁸ or artificially from ovarian surgical removal, radiotherapy and chemotherapy^{9,10}. All these natural menopausal phases induce vasomotor and vaginal symptoms, urinary stress incontinence, sexual dysfunction, mood disturbance and depression and cognitive difficulties¹¹⁻¹³.

Moreover, the prominent subsequent vasomotor symptomatic disorders are the formation of hot flushes as temporary and recurring episodes of heat sensation and reddishness linked with sweating, increased skin temperature in the face, neck, head and breast followed by cutaneous vasodilation signs^{10,14-17}. Additionally, these flashes are considered as behavioral brain reflex to the decreased and fluctuated hormonal secretions such as estrogen and gonadotropin that triggering in stable thermo-regulation mechanisms and temperature homeostasis^{11,18-21}.

So, acupuncture using needles into certain points in the body is considered as the popular applied type of complementary medicines with different therapeutic ameliorative therapies²². Additionally, manual pressure (acupressure), small electric currents through the inserted needles (electro-acupuncture) and lasers can also stimulate these points.

Approximately half of women experiencing menopause associated symptoms use complementary and alternative medicine therapy for managing their menopausal symptoms¹⁵. Further, laser acupuncture has been defined as the new local stimulation procedure for conventional acupuncture points with low-intensity and non-thermal irradiation²³ in order to re-establish the energy flow balance and depletion²⁴. Cohen *et al.*²⁵ used laser specific acupuncture points for menopausal complications through the kidney qi and Yin energy in order to balance, nourish the heart and quieten the spirit and generally the mental and behavioral disorders. So, the originality of the present work lies in the fact that laser acupuncture could be considered as a new technology that combines the advantages of traditional Chinese acupuncture with needles and modern laser medicine depending upon the oscillating energy enhancement of the same acupuncture points.

The current study aimed to assess the activity and the impact of the specific laser acupuncture points in the postmenopausal complications such as the number and intensity of hot flashes and the disturbances in the hormonal regulation in comparison to the drug treatment and no-intervention.

MATERIALS AND METHODS

Randomized and double-blinded 120 menopausal female subjects aged in the range of 40-60 years using the kupperman menopausal index (KMI) equal or more than 15, have been recruited randomly at the National Institute of Laser Medical Center, Cairo University and Ain Shams University maternity hospital, Cairo, Suez Health Insurance Hospital, Suez. The study was performed for 6 months from November, 2015 to end of April, 2016. All analysis and sample selection were carried out under the ethical patients committee of the Suez Health Insurance Hospital, Suez. Ethical approval and permission to conduct the study were obtained from the local ethics committee No. #2019/01/1236 and the administration of the study was based on international ethical guidelines. Informed consent had been signed by each patient before they participated in the study.

The study subjects were categorized into 4 research groups with 30 individuals in each group as follow: (A) Treated with laser acupuncture, (B) Treated with oral tibolone 2.5 mg/day, (C) Combined therapy with Laser acupuncture and oral tibolone 2.5 mg/day, (D) Control group could not receive conventional therapy (self-care group). Moreover, all medical assessment parameters have been evaluated through a blind evaluative before and post treatment.

Primary outcome assessment: Change in the moderate to the severe mean number of hot flushes/week through a combination of the Mann Whitney Values (MWW) of the kupperman menopausal index (KMI) and the recurrence of counteractive events by the end of treatment. Secondary outcome measurements include menopausal symptoms and quality of life, Hot flush weekly weighted score, kupperman menopausal index (KMI), assessments of hazardous events, physical examinations, urogenital symptoms, laboratory investigations (FSH, LH, Estradiol).

The laser acupuncture therapy was performed through using the 6 acupuncture points (Sanyinjiao (sp6), Hegu (Li4), Quchi (Li11), Fengchi (GB20), Guanyuan (CV 4) and Fuliu (Ki7)) according protocol of Cohen²⁵ for each woman 3 sessions/week as shown as in Fig. 1a-d. Moreover, the continuous follow-up time was necessary in order to record the full result outcomes of laser therapy as the treatment of

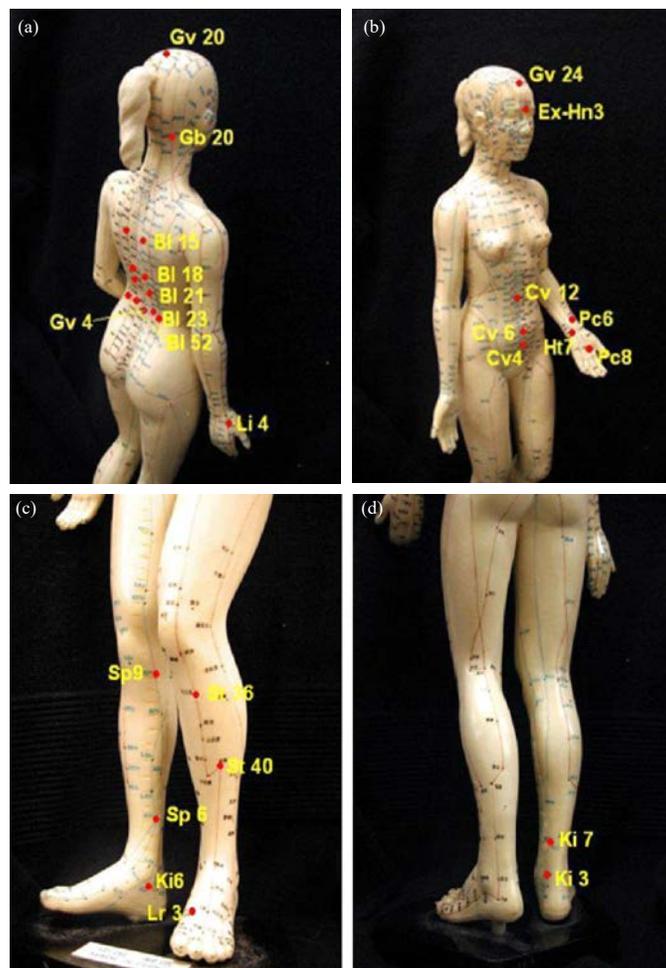


Fig. 1(a-d): Laser acupuncture points used in the study

Main laser acupuncture points treated in the study: Sanyinjiao (sp 6), Hegu (Li4), Quchi (Li11), Fengchi (GB 20), Guanyuan (CV4) and Fuliu (Ki7))

choice for menopausal women hot flushes. Laser acupuncture procedures have been carried out using Laser Model Giotto, classic I (LED SpA, Italy). Each point was stimulated with infrared laser diode with stimulation time for 90 sec using 904 nm wavelength and strength, power of 5 MW.

The head of the machine was targeted perpendicularly with direct contact to each point. Additionally, the conventional therapy group with traditional medication was prescribed with oral Livial (Tibolone, 2.5 mg/tablet) for 6 consecutive weeks. Enzyme-linked immunosorbent assay (ELISA) used for the estimation of the levels of follicle stimulating hormone (FSH), luteinizing hormone (LH) and the levels of E2. All these parameters have been measured 1 day before the end of the treatment, according the Health Labs kit protocol.

Statistical analysis: Statistical analysis was performed by using the software program Statistical Package for the

Social Sciences (SPSS 15.0, Chicago, IL, USA). Participants' demographic information and levels of major measured variables were analyzed by descriptive statistics. Means and standard (Mean±SD) deviations of the clinical indices were calculated, after which the evaluation between groups was compared using a Student's t-test. Two-way ANOVA analysis was used to study the repeated measures for the clinical indices across the 6 data collection points (treatments for 6 weeks, followed-up evaluation twice/week) and value of p<0.05 was considered as statistically significant for the above statistical analysis.

RESULTS

Effect of Laser therapy on hot flashes episodes: The present clinical research study has imposed the role of the laser acupuncture therapy in decreasing the hot flushes rate and severity among post-menopausal women with hot flushes

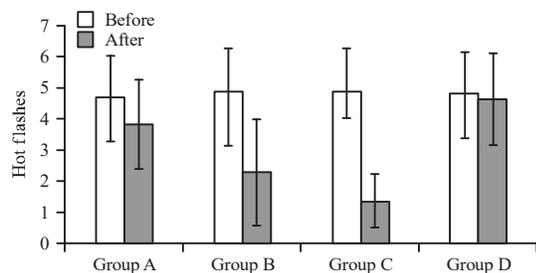


Fig. 2: Effect of laser and tibolone 2.5 mg treatments on the hot flashes rate

Values are expressed as Mean \pm SE

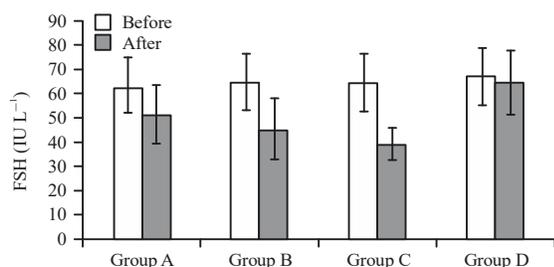


Fig. 3: Effect of laser and tibolone 2.5 mg treatments on the serum level of follicle-stimulating hormone (FSH) among menopausal women

Values are expressed as Mean \pm SE

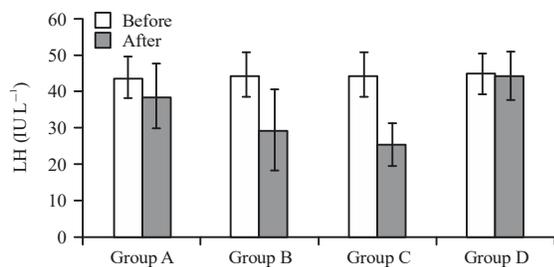


Fig. 4: Effect of laser and tibolone 2.5 mg treatments on the serum level of luteinizing hormone (LH) among menopausal women

Values are expressed as Mean \pm SE

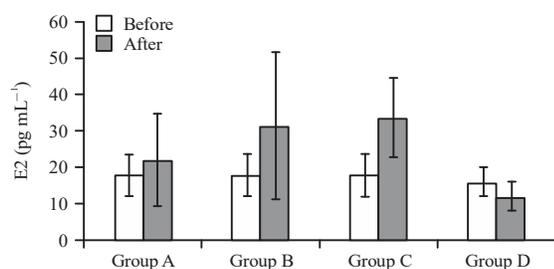


Fig. 5: Effect of different treatments on the serum level of estrogen hormone (E2) among menopausal women

Values are expressed as Mean \pm SE

history. Results revealed significant improvement for post-menopausal hot flashes disorders between before and after the laser acupuncture and medical therapy using oral tibolone 2.5 mg/day with $p < 0.05$ and $p < 0.03$, respectively as shown in Fig. 2. While the integrated combined therapy group treated with laser and drug treatment enhanced significant decrease in the rate and number of hot flashes suffering behavior with $p < 0.001$ as shown in Fig. 2. Moreover, the control group with no-intervention treatment did not show significant change before and after treatment of the laser. The indicated laser acupuncture points showed highly significant amelioration in the number of hot flashes among groups as shown in Fig. 2.

Effect of laser acupuncture therapy for hormonal disorders:

Concerning the hormonal changes; on one side, medical drug therapy, combined therapy groups revealed higher significant amelioration in the FSH hormone with value $p < 0.001$ than laser therapy with value $p < 0.05$ as illustrated in Fig. 3, on the other side, oral drug treatment and combined therapy showed significant decreased LH $p < 0.001$ as shown in Fig. 4 and increased in E2 as shown in Fig. 5. No significant effect of laser therapy treatment for LH as shown in Fig. 4.

DISCUSSION

Hot flashes as a result of the menopausal complications triggered women to look for natural remedies and medications for relief from its consequents such as using conventional medicine such as Chinese needle²⁶. Furthermore, many menopausal women would prefer other hormonal replacement or even local estrogen therapies. Manson *et al.*²⁷ stated that menopausal women suffering from vaginal atrophy receiving treatment, urogenital atrophy are the only symptom that will experience at some level²⁸.

The present study is considered a modest contribution to the impact of the laser treatment for post-menopause symptoms such as hot flashes symptoms. Therefore, the present study demonstrated the significant role of laser therapy in amelioration of the hot flashes complications triggered by menopause. Additionally, the combined treatment of laser and drug medication was better than each therapy separately. Furthermore, our results were in agreement with Gaspar *et al.*²⁹, who has explored that laser therapy was better than hormonal therapy with consequent reducing of some common post-menopausal symptoms.

Additionally, on one side, the present study showed that laser therapy triggered sufficient amelioration in the endogenous hormones FSH, while, normal medication and combined therapy induced highly significant improvement in

both LH and E2 hormone levels. On the other side, laser treatment did not induce changes in the hormonal levels of LH and E2. The present study results was in agreement with Gaspar *et al.*²⁹ showed that laser treatment can be used in patients who have estrogen contraindicated with no contraindications and no known complications. Qu *et al.*³⁰ showed sufficient improvement in some physiological parameters such as serum follicular stimulating hormone (FSH), luteinizing hormone (LH), estradiol, progesterone and prolactin without a change in estrogen among the laser therapy patient. Moreover, the current study revealed that tibolone therapy has the ability to relief climacteric complaints of hot flashes. The points stimulate the blood flow to the vaginal tissue and regenerate vaginal cells to invigorate collagen development. Additionally, renewed collagen development helps to combat the symptoms of vaginal atrophy and hormonal impairments which can help reduction of the painful symptoms like rapid episodes of flushing/reddening of the skin and sensations of heat and sweating³⁰.

Tibolone showed statistically significant difference not only in the rate and severity of hot flushes before and after treatment, but also in the serum levels of FSH, LH and E2. These findings are in agreement with a prior research study displaying that tibolone exerts encouraging effects on climacteric symptoms among sever conditions of menopause patients⁴. Moreover, the particular attention for Tibolone depending upon its known activity mechanism as it enhances the estrogen receptor (ER) and both progesterone and androgen receptors through its metabolic products 3 α and 3 β -hydroxy and 3-Quito- Δ 4, respectively^{6,31,32}. The Er:YAG laser therapy showed it to be an excellent alternative for vaginal atrophy symptoms management, in post-gynecological cancer patients as well as in menopause women³³.

The present study used some of the acupuncture points common for treatment with a needle with traditional Chinese Medical therapy. The present study used specific acupuncture points that in a agreement with the acupuncture points used by Scheid³⁴, who considered that kidney deficiency triggering the menopausal symptoms, therefore, Ki point is considered acupuncture points Maciocia³⁵ used a combination of acupuncture points (Ki7-Ht6) and found that these points can improve some menopausal complications and decrease the rate of stop night sweating. Moreover, Linde *et al.*³⁶ proved that acupuncture is an effective treatment for preventing headaches, but for a migraine, studies show similar results in groups receiving "true" acupuncture and groups receiving "sham" acupuncture.

So, more research into the mechanistic role of the activity of laser therapy to reduce the severe menopausal symptoms.

In this target, the next stage of the research will be designed to increase the sample size, number of acupuncture points, the time interval of the therapy and recording more menopausal behavioral disorders to confirm or reject the laser therapy.

CONCLUSION

The present study, research concluded that laser therapy using the indicated acupuncture points improved the severity and rate of hot flashes with the improvement of the hormonal disorders.

SIGNIFICANCE STATEMENT

This study discovered the valuable role of laser acupuncture in combination with drug treatment that can be beneficial for post-menopausal complications and severe consequences of hot flashes. This study will help the researchers uncover the critical areas of laser treatment, acupuncture points that many researchers were not able to explore. Thus a new theory of menopausal disorders treatment using new and way from drugs, treatments may be arrived at.

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