

RESEARCH: ACUPUNCTURE WITH LASER

Laser therapy acupuncture, laser acupuncture, laser puncture

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Research article

Effectiveness of Laser Acupuncture in Relieving Chronic Insomnia: A Randomized, Controlled, Single-Blind Study

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Aims of the study: This study examines the therapeutic effects of Low Level Laser Therapy (LLLT) acupuncture on chronic insomnia. **The methods.** Thirty-seven adult subjects with chronic insomnia were recruited and randomly assigned to three groups, namely Group A (6 pairs of acupoints): Ex-HN 22, HT 7, SP 6, KI 3, LR 3 and PC 6, bilaterally distributed); Group B (acupoints like group A with the exception of PC 6, which was only used on the left side [ie the dominant side of the PC meridian], and the addition of DU 20, the main tone acupoint for the integration of all meridians); and a control group (sham LLLT). The subjects in the treatment groups (ie in groups A and B) received LLLT acupuncture and the subjects in the control group received sham LLLT twice a week for 15 minutes per session for five weeks. The sleep quality of all subjects was assessed using the Pittsburgh Sleep Quality Index (PSQI), the Epworth Sleepiness Scale (ESS), the Hospital Anxiety and Depression Scale (HADS), and a sleep diary. In addition, sympathetic activity was measured before and after each treatment session using heart rate variability (HRV).

Results. All three groups showed an improved PSQI score. However, only group A showed a significant reduction in initial sleep latency and the number of nocturnal awakenings, as well as higher sleep efficiency and a higher ESS score. In addition, Group B showed increased low frequency performance and normalized low frequency of the HRV signal, as well as lower normalized high frequency performance, suggesting increased sympathetic activity and decreased parasympathetic activity.

Conclusions. In chronic insomnia patients, LLLT appears to decrease sleep latency, decrease the number of nighttime wake-ups, and improve sleep efficiency.

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Clinical observations on laser acupuncture in simple obesity therapy

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short version

Objective: A previous study has shown that laser acupuncture is a useful healing method for the treatment of visceral postmenopausal obesity in combination with a low-calorie diet. We observe and evaluate the therapeutic effect of laser acupuncture in subjects with simple obesity in combination with a non-restrictive diet protocol.

Background data: The subjects included 73 women and 22 men with simple obesity and body mass indices $\geq 27 \text{ kg/m}^2$. The daily energy intake recommendations for obese women and men averaged 1620.0 and 1894.2 kcal, respectively.

The Methods: The Trion gallium aluminum arsenide cell phone laser was used to apply 0.25 J of energy three times a week to each of the following acupuncture points for four consecutive weeks: Stomach, Hunger, ST25, ST28, ST40, SP15 and CV9. The body weights and body mass indices of the test subjects were recorded before treatment and four weeks after treatment, and the percentage reduction in each parameter was calculated.

Results: Statistically significant reductions in body weight and body mass index were observed after four weeks of treatment. The mean reduction and the mean percentage decrease in body weight were 3.17 kg and 3.80%, respectively ($p < 0.0001$). The corresponding values for the body mass index were 1.22 kg/m^2 or 3.78% ($p < 0.0001$).

Conclusions: We came to the conclusion that laser acupuncture has a therapeutic effect on simple obesity by reducing both body weight and body mass index. In addition, the subjects showed good compliance with this convenient and non-restrictive diet protocol.

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Acupuncture Helps Regain Postoperative Consciousness in Patients With Traumatic Brain Injury: A Case Study

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short version

Objective: This case report illustrates the potential effects of acupuncture therapy in addition to Western medicine in regaining postoperative consciousness in patients with traumatic brain injury (TBI). **Clinical features:** A 65-year-old man suffered TBI after being involved in a car accident. His baseline Glasgow Coma Scale (GCS) was E1V1M2 and brain computed tomography showed right-sided subdural bleeding. He received emergency medical treatment and underwent a craniotomy to remove the torn brain and a subtemporal decompression, followed by a decompressive craniectomy the following day to remove an intracerebral hematoma due to late-onset temporo-parietal rebleeding. Twelve days after surgery, the patient remained in poor condition due to severe complications and the GCS was E2VtM4. His family then underwent counseling, and he subsequently received acupuncture treatment.

Intervention and result: This patient was treated with acupuncture three times a week, consisting of a strong stimulation with GV26 (Shuigou) and the 12 well points with the half-needle technique. After 3 weeks of consecutive treatment, his GCS score improved to E4VtM6. In addition, he regained consciousness and was able to tolerate rehabilitation programs.

Conclusions: We believe that an experienced physician can use acupuncture as a complementary therapy in patients with TBI who are unable to regain consciousness postoperatively.

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Electrophysiological effects of 650- and 808-nm single-point transcutaneous laser irradiation of the rat sciatic nerve: a study of relevance to low-level laser therapy and laser acupuncture

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Abstract:

Objective: The aim of this study was to assess the effects of transcutaneous 650 and 808 nm laser irradiation (LI) on a single point overlying the rat's sciatic nerve; a comparison with a four-point LI and the relevance for the clinical application of low-level laser therapy (LLLT) and laser acupuncture (LA).

Background data: Transcutaneous LI inhibits somatosensory and motor conduction when applied to four points above the sciatic nerve; however, the effects of the same total energy applied to a single point over the nerve, which corresponds to laser acupuncture, are not defined.

The methods of laser acupuncture: Transcutaneous 808 nm, 450mW, (13.5 or 54 J) continuous wave (cw) mode or 650 nm, 35mW, (1.1 or 4.4 J), cw LI or sham LI, was made applied to a single point above the midpoint of the rat's sciatic nerve for 30 or 120 seconds. Somatosensory evoked potentials (SSEPs) and composite muscle action potentials (CMAPs) were then recorded after 10 and 20 minutes, and after 24 and 48 hours.

Results: 120 seconds of 808 nm LI did not increase the SSEP amplitudes until after 10 minutes, without an effect of 30 or 120 seconds on SSEPs or CMAPs occurring at other times. LI 650nm for 30 or 120 seconds did not change SSEPs or CMAPs at any time.

Conclusions: Localized transcutaneous 808 LI at a single point overlying the sciatic nerve increases SSEP amplitudes compared to delivering the same total energy at four points, resulting in decreased

SSEP amplitudes and conduction blockage. Therefore, the area and length of delivery are important independent variables affecting clinical delivery for both LLLT and LA.

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Specific effects of laser puncture on cerebral blood flow

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The paper was received on May 10, 1999; adopted on August 23, 1999 after revision.

Summary: Acupuncture is a form of traditional Chinese medicine that has evolved over thousands of years. We examined the effects of laser puncture, needle acupuncture, and light stimulation on cerebral blood flow in 15 healthy volunteers (mean age 25.0 ± 1.9 years, 5 female, 10 male) using non-invasive transcranial Doppler sonography. In addition, 40 Hz stimulus-induced brain oscillations, heart rate, blood pressure, peripheral and cerebral oxygen saturation and the bispectral index of the EEG were recorded. Light stimulation significantly increased the posterior cerebral artery blood flow rate ($p < 0.01$, ANOVA). Similar but less pronounced effects were observed after needle acupuncture ($p < 0.05$, ANOVA) and laser puncture (ns) observed from vision-related acupuncture points. In addition, both laser puncture and needle acupuncture led to a significant increase in the amplitudes of the 40 Hz cerebral vibrations. The stimulation of vision-related acupuncture points with laser light or needle acupuncture triggers specific effects in certain areas of the brain. The results suggest that the brain plays an important intermediate role in acupuncture. The brain activity in and of itself explains nothing about the healing power of acupuncture. The stimulation of vision-related acupuncture points with laser light or needle acupuncture triggers specific effects in certain areas of the brain. The results suggest that the brain plays an important intermediate role in acupuncture. The brain activity in and of itself explains nothing about the healing power of acupuncture. The stimulation of vision-related acupuncture points with laser light or needle acupuncture triggers specific effects in certain areas of the brain. The results suggest that the brain plays an important intermediate role in acupuncture. The brain activity in and of itself explains nothing about the healing power of acupuncture.

Keywords: acupuncture; Brain; 40 Hz brain vibrations; Cerebral blood flow rate; Laser puncture; Light stimulation; Middle cerebral artery (MCA); Posterior cerebral artery (PCA); Transcranial Doppler Sonography (TCD)

Therapy of cervical tendomyosis

A randomized controlled double-blind study comparing dosed laser therapy at acupuncture points and classical acupuncture

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The aim of this randomized, controlled, double-blind study with regard to laser therapy was to examine the therapeutic effectiveness of low-level laser therapy (LLLT) on acupuncture points and conventional acupuncture in influencing symptoms of cervical tendomyosis.

Method: 48 patients (43 f, 5 m) with relevant neck pain were treated twice a week for 4 weeks (8 treatments), randomized in four groups of different forms of therapy: LLLT, output power 0 mW (placebo), 7 mW, 30 mW or needle acupuncture (4 × n = 12).

Acupuncture was performed as conventional meridian acupuncture, 15 minutes per session up to a maximum of 15 needles.

The LLLT was performed as stimulation at the same meridian points, 1 minute per point, a total of 15 points. Laser parameters: cw-IR-GaAlAs laser, 830 nm, energy density 0 J / cm²; 21 J / cm²; 90 J / cm², irradiation area 0.02 cm², laser-skin difference 8 mm. The subsequent evaluation took place four weeks after treatment (follow-up). The evaluation of the result measurements included:

Primary endpoints:

Pain: pain intensity (visual analog scale, VAS), pain sensation (pressure pain threshold, PPT);

Mobility of the cervical spine: Range of motion (ROM) (clinical distance measurement, three-dimensional analysis of the cervical spine, Zebris®).

Secondary endpoints:

mental health (questionnaire);

subjective judgment (pain, mobility);

clinically autonomous parameters (blood pressure, heart rate, skin temperature).

Results: Acupuncture and LLLT showed a significant reduction in pain intensity, this effect could be demonstrated four weeks after the end of the series (follow-up): Reduction of VAS by acupuncture 82.2%, by LLLT 7 mW 55.4%, 30 mW 29.1%, 0 mW 26.1%. PPT was significantly increased by all types of therapy.

There was a significant improvement in cervical mobility with acupuncture, LLLT 7 mW and LLLT 30 mW as opposed to placebo (0 mW LLLT).

Mental health was positively influenced by all forms of therapy, significantly only by the LLLT 7 mW. With regard to the subjective assessment (pain, mobility), there was no worsening of the symptoms. Increased (systolic and diastolic) blood pressure due to decreased heart rate and increased skin temperature after each procedure with one of the two methods was measured.

Conclusions: Acupuncture is a therapeutic option in the treatment of common neck pain. Dose-dependent effects of LLLT seem to be relevant, the output and energy density must be considered as important parameters for the effectiveness of this method. The LLLT 7 mW (energy density 21 J / cm²) seems to be more effective, but placebo also has a positive effect on pain and mental health.

Keywords: Acupuncture - Low Level Laser Therapy (LLLT) - Dosed Laser Therapy - Cervical Tendomyosis - Clinical Study

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LASER ACUPUNCTURE

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Acupuncture is traditionally understood as the stimulation of specific points on the body surface in order to achieve mainly regulating effects on the functions of the internal organs. The same points have been used to increase or decrease the functional status of various organs. In Traditional Chinese Medicine (TCM), the acupuncture points (AP) are connected by channels or meridians in and under the skin and have deep connections to the internal organs. Choosing the right points was just as important as the right type of stimulation, either reinforcement or sedation. In traditional Chinese medicine, the human model was mainly energetic, physiological, not anatomical. It was believed that the changes in the flow of energy, which are caused by the blockages in the channels or the acceleration of the flow and lead either to a deficit or an excess of life energy, Chih, which are the origin of diseases. The APs were the loci to balance the flow of energy through needle stimulation. Modern acupuncture is of a different nature. For the National Institutes of Health (NIH) consensus conference held in Bethesda, Maryland in November 1997, the term acupuncture was defined as stimulation, primarily through the use of rigid needles, from traditionally and clinically defined points on and below the Skin in an organized manner for therapeutic and / or preventive purposes. The stimulus application on the reactive points (by needle, heat, massage, transcutaneous electrical nerve stimulation / TENS,

In modern Chinese AP therapy, a combination of local tender points (AHSHI) and classic peripheral APs is common. Today laser acupuncture (LAP) represents a non-invasive and low-risk alternative to needle stimulation. A combination of local reactive (sensitive) points or Ahshi points and active muscle TPs forms a practical and effective basis for LAP in pain treatment. The LAP can replace needles in the treatment of functional disorders and is then aimed at classic APs. As a painless modality of acupuncture, LAP is well accepted by children and other sensitive patients. The LAP offers excellent opportunities for clinical studies on acupuncture. Recently, Schlager et al. Confirmed the effectiveness of AP Neiguan (PC6) in preventing postoperative vomiting in children undergoing strabismus surgery. In another randomized, double-blind, placebo-controlled study, low-intensity laser therapy was effective in preventing herpes simplex infection from recurring.

Our study groups at the Universities of Kuopio and Tampere investigated the analgesic effect of peripheral stimulation (needle acupuncture, transcutaneous electrical stimulation / TENS, massage, electrical stimulation, low-energy laser) that was applied to APs or TPs using pressure algometry. We performed a series of experiments with different wavelengths (633-904 nm) and both coherent and non-coherent irradiation. LEPT was given directly to TPs (1-2 J / TP) or local tender spots.

In blind cross-over studies, both HeNe and IR diode lasers (904 nm) increased the pain threshold (PTH). In a follow-up study on 54 MPS patients, the LEPT (820 nm, 1-2 J / TP) increased the PTH from $2.94 + 1.44$ to $6.56 + 0.96$ kg / cm² ($p < 0.001$) and the MGF from $0.60 + 0.28$ to $1.03 + 0.29$ bar ($p < 0.05$), while the VAS from $44.6 + 11.3$ to $9.3 + 6.4$ ($p < 0.001$) sank. In this and other series, we have found that the effect is greater on the side where the PTH and MGF levels are initially lower. As in our earlier studies with low and high frequency TENS, unilateral HeNe laser irradiation increased the PTH of the corresponding, contralateral untreated TPs in addition to the response on the treated side. More recently, the main focus has been on the central mechanisms and pathways. In a pilot study, changed LED light (880 nm, 1J / cm²), which the TPs in the trapezius (TE15) bilaterally and on proc. spinosus of C7 (DU14) significantly reduced the regional cerebral blood flow, e.g. in the thalamus, caudate nucleus and prefrontal cortex.

In our experience, less than 1 J / point or 100-200 J / cm² administered in a contact mode is primarily ineffective in clinical practice in the treatment of musculoskeletal disorders and myofascial pain from TPs. In many well-controlled, blind and double-blind cross-over studies that showed insignificant results, the actual radiation exposure at the target site was only a fraction of the dose normally used

in clinical practice. When treating APs with low resistance and high sensitivity, the radiation dose should be reduced to about 0.1-0.2 J / point (10 percent of the normal dose [1-2 J / point] used for muscle TPs) will.

Treatment of acute humeroscapular periarthritis with laser puncture.

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The humeroscapular periarthritis is a syndrome that contains very precise affections: bursitis, calcified supraespinosus tendinitis, bicipital tendinitis, among others. It is characterized by pain and restriction of joint movements of the shoulder. Treatment with a low power laser can resolve the lesion if done in the early stages of the disease. In this study, we propose the use of laser puncture, because, based on our accumulated experience in the treatment of this disease in the acute phase with acupuncture, we carry out the treatment with the laser in the acute phase.

A prospective study was conducted over a period of 2 years (1997-1999), with 62 patients being selected because they met the "Approaches of Inclusion" for the study. The sample was divided into 2 treatment groups by aleatory allocation. Study group I was treated with laser puncture using a HeNe Cuban laser device at 632.8 nm and a dose of joules / cm², and control group II was treated with acupuncture needles. The conventional medical treatment was suspended. Daily sessions were held Monday through Friday for two weeks for a total of 10 sessions. Both techniques were found to be effective in treating these conditions, and after treatment sessions were completed, significantly improved clinical and radiological symptoms. The patients accepted the laser puncture better because of its painless nature, the shorter duration of use and the absence of bleeding and stress.

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