

LASER-ACUPUNCTURE IN NURSING CARE FOR HYPERTENSIVE INDIVIDUALS IN PRIMARY CARE: CASE REPORT

LASER-ACUPUNTURA NO CUIDADO DE ENFERMAGEM A PESSOAS HIPERTENSAS NA ATENÇÃO PRIMÁRIA: RELATO DE CASOS

ACUPUNTURA LÁSER EN LA ATENCIÓN DE ENFERMERÍA AL PACIENTE HIPERTENSO: INFORME DE CASOS

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ABSTRACT

Objective: To present the results obtained with the use of laser-acupuncture as a technology applied to nursing care for hypertensive individuals under medication treatment and with difficulties in controlling blood pressure. **Method:** Case reports accompanied by nurses in primary health care, articulated research project approved by the Research Ethics Committee. **Results:** Blood pressure control was observed in patients submitted to the proposed technique with a significant reduction in systolic and diastolic blood pressure levels between the first and last interventions. **Conclusion:** Laser-acupuncture helped in the acute control of the blood pressure of the study participants, announcing itself as a therapeutic possibility within the scope of nursing care for hypertensive individuals.

Keywords: Hypertension; Acupuncture; Nursing.

RESUMO

Objetivo: apresentar os resultados obtidos com o uso da laser-acupuntura como tecnologia aplicada ao cuidado de enfermagem a pessoas hipertensas em tratamento medicamentoso e com dificuldades para o controle da pressão arterial. **Método:** relato de casos clínicos acompanhados por enfermeiros no âmbito da atenção primária à saúde, articulados a projeto de investigação aprovado por Comitê de Ética em Pesquisa. **Resultados:** observou-se controle da pressão arterial nas pacientes submetidas à técnica proposta, com redução significativa dos níveis tensionais sistólicos e diastólicos entre a primeira e última intervenção. **Conclusão:** a laser-acupuntura auxiliou no controle agudo da pressão arterial das participantes do estudo, anunciando-se como possibilidade terapêutica no âmbito do cuidado de enfermagem às pessoas hipertensas.

Palavras-chave: Hipertensão Arterial; Acupuntura; Enfermagem.

RESUMEN

Objetivo: Presentar los resultados de la acupuntura láser como tecnología aplicada en la atención de enfermería al paciente hipertenso en tratamiento medicamentoso y con dificultades para controlar la presión arterial. **Método:** Informe de casos clínicos acompañados por enfermeros en la atención primaria de la salud, articulados a un proyecto de investigación aprobado por el Comité de Ética en Investigación. **Resultados:** se observó el control de la presión arterial en las pacientes sometidas a la técnica propuesta, con reducción significativa de los niveles tensionales sistólicos y diastólicos entre la primera y la última intervención. **Conclusión:** la acupuntura láser ayudó en el control agudo de la presión arterial de las participantes del estudio y se revela como alternativa terapéutica en la atención de enfermería al paciente hipertenso.

Palabras clave: Hipertensión; Acupuntura; Enfermería.

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INTRODUCTION

The treatment developed by nurses in primary care settings plays a fundamental role in the successful treatment of systemic hypertension (SHT). Among the recommended strategies for monitoring the adherence and response to treatment is the nursing consultation (NC), a private activity of the nurse, which is based on the investigation of risk factors and the identification of real and potential problems, establishing goals to be met for the maintenance of good health and lasting treatment.¹⁻³

In NC's, in addition to gauging blood pressure (BP) and anthropometric measurements that help monitor and follow up on patients, there must be educational actions in healthcare that aim to protect the life of the hypertensive individual. These actions must allude to the importance of healthy habits, regular use of prescribed medication and the implementation of practices that promote healthy and sustainable living, following the example of integrative and complementary healthcare practices (ICHPs), among which acupuncture (AP) is prominent.¹⁻⁴

A millenary practice of Traditional Chinese Medicine (TCM), AP aims to harmonize energies in order to achieve and maintain good health by means of stimulating specific points on the body named acupuncture points.^{5,6} It can be performed with metallic needles of very fine caliber (traditional acupuncture), which are not considered very invasive, or even by the association of those needles with electrical stimulation (electroacupuncture). Another non-invasive method uses a low intensity laser applied to the skin in the area of acupuncture points (laser-acupuncture).^{5,7}

Laser acupuncture (LA) is especially efficacious when compared with other methods of AP. Its main advantages lie in the fact that it is a fast treatment, considering the amount of time a patient undergoes therapy, and that it is very low risk with regard to local infection. In addition, it is considered the alternative for cases of individuals with a phobia of needles, serious hematological disorders or in anticoagulant therapy, since it involves only the entry of light energy on acupuncture points without perforating the tissue.^{7,8}

In Brazil, AP was incorporated as a multidisciplinary practice into the Unified Health System (SUS) by means of the National Policy of Integrative and Complementary Healthcare Practices that, in a transversal way, corroborates actions of healthcare in different lines of care, with an eye towards integrality.^{9,10} It is a technology of intervention in healthcare that can be performed by nurses in their normal professional settings, in an autonomous and unrestricted manner, with technical knowledge in the area, through a recognized specialist certificate, as stated in Resolution no. 326/2008, of the Federal Nursing Council.¹⁰ Or, indeed, it can be recommended by their peers, who may recognize the therapeutic potential of the technology at the time of the NC.

Clinical research and evaluative studies emphasize AP as a safe complementary therapy that produces efficacious results in the control of arterial pressure. However, there are still studies in their early stages that relate the application of AP to nursing care.¹⁰

That being said, the present study deals with clinical cases studied by nurses in primary care settings, with the objective of presenting the results obtained with the use of LA as a technology applied to the nursing care of hypertensive individuals in medication treatment with difficulties in controlling BP.

DESCRIPTION OF EXPERIENCE

Clinical experience articulated as a research project approved by the Ethics Committee in Research of the Anna Nery/São Francisco de Assis School of Nursing, Decision no. 772.5508. Two adult hypertensive women who showed difficulties in controlling BP were studied, assisted by a multidisciplinary team in a family health unit, in the II metropolitan region of Rio de Janeiro, from August to September 2014. The family health unit offers regular treatments of acupuncture, physical therapy, reiki and yoga.

The two women suffered from stage 2 SHT with low and moderate cardiovascular risk, respectively, 45 and 57 years of age, and had been undergoing medication treatment for more than a year. Good adherence to the medication treatment was observed, whose schemes of usage was the combination of an angiotensin-converting enzyme inhibitor two times a day and a non-thiazide diuretic one time a day. The regular measurements of AP in consultation in the last six months were above 150x90mmHg in the two cases studied.

The body mass index (BMI) of the low cardiovascular risk patient was normal (22.5 kg/m²) and abdominal circumference of 88 cm. The moderate cardiovascular risk patient was overweight (BMI 28.6 kg/m²) and abdominal circumference of 104 cm. Neither patient exercised nor participated in special diet programs.

The technique of LA was performed by an acupuncture nurse within the unit, employing low power infrared laser acupuncture equipment, of gallium arsenide and aluminum (Ga-Al-As), brand *IR-Therapie Cosmotron*, laser model 303, with the following technical specifications: infrared 10 MW of power, with Nogier frequency, wavelength 780 nm, outlet diameter 5 mm.

The use of LA was opted for with an eye to minimizing possible alterations in blood pressure values, in light of the patients' fear of needles.

The intervention protocol employed was composed of the following acupuncture points: Yintang (MCP-3), located in the frontal region between the eyebrows; Shenmen (C7), located on the line of the wrist, ventral flexion fold above the posterior margin of the pisiform bone; Fengchi (VB20), located on the neck, below the occipital, in the depression between the

extremity of the sternocleidomastoid and trapezius muscle; Hegu (IG 4), located between the first and second metacarpal bones, the muscular protrusion produced during abduction of the thumb; Xingjian (F2) located on the top of the foot, between the first and second toes; Quchi (IG 11), located on the external extremity of the flexion fold of the elbow.

The acupuncture points were accessed by superficial touch on a contact area of 5 mm, by a non-invasive accessory device (laser acupuncture pen attached to the emitting module), directed at 45 degrees in the direction of fluency of the meridian in question, with bilateral approach (with the exception of MCP-3, which is a unique acupuncture point). The power used varied from 10 to 160 Hz, between 120 and 240 seconds, according to the location of each acupuncture point. The total time of each intervention lasted 24 minutes per treatment, for six consecutive weeks, with an interval of a week between sessions.

The antisepsis of the skin with 70% alcohol was performed on the areas of the acupuncture points before each LA treatment. The use of gloves and dark protective glasses was observed as individual protection equipment in all procedures and the disinfection of equipment with 70% alcohol was performed before each treatment and at the end of each day.

Patients were instructed to arrive 45 minutes before each intervention so that they could be at rest when their blood pressure was taken. The pre- and post-intervention testing involved the measuring of systolic (SBP) and diastolic blood pressure (DPB) by indirect oscillometric method, using an automatic monitor for the measuring of BP validated by the Association for the Advancement of Medical Instrumentation (AAMI) and the British Hypertension Society (BHS).

The results obtained in each intervention were registered in an Excel spreadsheet, in order to interpret the results. The gradual and constant reduction of SBP and DPB was observed in both cases.

The low cardiovascular risk patient obtained a reduction in SBP from 160 mmHg (1st treatment) to 139 mmHg (6th treatment), a reduction that was also observed in DPB, from 102 mmHg (1st treatment) to 83 mmHg (6th treatment). As the planned interventions progressed week by week, reductions were verified, which varied from 15 mmHg (1st treatment) to 1 mmHg (6th treatment) in SBP and from 7 mmHg (1st treatment) to 2 mmHg (6th treatment) in DPB.

It should be noted that during the period of the interventions with LA no alterations in the consumption of medications of continual use were observed, nor could any increase or decrease in dosage act as a confusing element in the interpretation of the results.

DISCUSSION

The observed reduction in SBP and DPB of both participants between the first and the last intervention with LA, conserving measurements below 140x90 mmHg, is compatible

with the blood pressure goal recommended by the Brazilian Society of Cardiology (BSC).¹ This result indicates a tendency to control BP by means of the technique applied and requires studies of efficaciousness in order to confirm it.

It is known that the response of peripheral vascular resistance to anti-hypertensive medications plays a fundamental role in SHT.^{1,2,11} It is believed that the release of endogenous substances, interpreted in light of TCM as Qi (energy), capable of producing the circulation of XUE (blood), can have a direct effect on this process. Studies show that this homeostatic mechanism, arising from BP in association with medication treatment, is related with the equilibrium of the activity of rennin-angiotensin-aldosterone, with better plasmatic release of catecholamine and neurotransmitters such as noradrenaline, serotonin and endorphins.¹¹⁻¹⁴

Nevertheless, the clinical experience related here is directed only at the behavior of BP in hypertensive women under study, based on measurements of SBP and DPB prior to and subsequent to intervention with LA. It can be inferred that the serum dosage of the mentioned substances may confirm the abovementioned hypothesis.

Another relevant aspect involved with SHT is the physiopathological behavior of elevation in BP. This phenomenon depends on the increase of systolic debt, on the elevation of peripheral resistance, but, in contrast to SBP, DPB lowers with the rigidity of the great veins.^{1,2,13}

In this way, the possibility of the occurrence of isolated systolic hypertension or a positive sign of Osler (indicative of the hardening of vessels) was analyzed, which could suggest the tendency of a greater decrease in SBP when compared to DBP. However, these occurrences were not made evident.

Adopting the habit of regular physical activity, as well as changes in eating habits, contributes significantly to the reduction of blood pressure levels.^{1,2,4} But it is worth bearing in mind that such practices were not related by the patients; further, both maintained BMI and abdominal circumference unchanged throughout the period of the interventions.

In both participants, neither hypotension nor post-exposure lipothymia was verified, nor events related to the potential risk of performing the technique. Another effect perceived and related by the participants was the improvement of sleep patterns and levels of anxiety. These effects are closely related with acupuncture points MCP-3 (Yintang) and C7 (Shenmen) used in the intervention. These acupuncture points possess a relaxing action and control of emotions, which certainly collaborate for the obtainment of these results.

CONCLUSION

The necessity of weekly attendance at the family health unit and the results obtained with intervention by LA aided

in the acute control of blood pressure and contributed significantly to the adhesion of the women participants of the clinical experience related here to the necessary changes in lifestyle and monitoring of treatment of the disease.

Notwithstanding, it is appropriate to highlight that the results found here may not yet be generalized. Studies of greater statistical and clinical significance, capable of not only confirming the effects, efficacy and safety of the technique in the reduction of BP, but also of impacting the progression of cardiovascular complications and/or damage in target organs, are necessary. Also, in addition, their contributions to the practice of nursing are of importance.

The use of AP, including the method of LA, as in the cases under study here, is emerging as a therapeutic possibility in the setting of nursing care. Because it is a practice based on a holistic approach, AP centers its attention on human responses and not on the disease, which establishes connections with the expertise of nursing and its theoretical-philosophical foundations.

REFERENCES

1. Malachias MVB, Souza WKSB, Plavnik FL, Rodrigues CIS, Brandão AA, Neves MFT, *et al.* 7ª Diretriz Brasileira de Hipertensão Arterial. *Arq Bras Cardiol.* 2016[cited 2017 July 06];107(3):1-83. Available from: http://publicacoes.cardiol.br/2014/diretrizes/2016/05_HIPERTENSAO_ARTERIAL.pdf
2. Ministério da Saúde (MS). Secretaria de Vigilância em Saúde. Departamento de Análise de Situação de Saúde. Estratégias para o cuidado da pessoa com doença crônica: hipertensão arterial sistêmica. Brasília: MS; 2013.
3. Felipe GF, Abreu RNDC, Moreira TMM. Aspectos contemplados na consulta de enfermagem ao paciente com hipertensão atendido no Programa Saúde da Família. *Rev Esc Enferm USP.* 2008[cited 2017 July 06];42(4):620-7. Available from: <http://www.scielo.br/pdf/reeusp/v42n4/v42n4a01>
4. Branco CSN, Mendes RS, Oliveira SKP, Pamplona YDAP. Consulta de enfermagem ao paciente com hipertensão na estratégia saúde da família. *Rev Enferm Contemp.* 2013[cited 2017 July 06];2(1):196-208. Available from: <https://www5.bahiana.edu.br/index.php/enfermagem/article/viewFile/232/228>
5. Pereira RDM, Alvim NAT. Aspectos Teórico-filosóficos da Medicina Tradicional Chinesa: acupuntura, suas formas diagnósticas e relações com o cuidado de enfermagem. *Rev Enferm UFPE on line.* 2013[cited 2017 July 06];7(1):279-88. Available from: <https://periodicos.ufpe.br/revistas/revistaenfermagem/article/viewFile/10231/10825>
6. Pereira RDM, Alvim NAT. Acupuntura como tecnologia para intervenção aos diagnósticos de enfermagem. *Rev enferm UFPE on line.* 2016[cited 2017 July 06];10(4):1286-91. Available from: http://www.revista.ufpe.br/revistaenfermagem/index.php/revista/article/view/8829/pdf_9981
7. Valente C, Gomara FL, Neto PLM, de Souza RC. Aplicação do Laser na acupuntura. *Cad. Naturol. Terap. Complem.* 2015[cited 2017 July 06];4(6):47-54. Available from: <http://portaldeperiodicos.unisul.br/index.php/CNTC/article/view/2133>
8. Marques, CVP. Acupuntura a laser no tratamento da dor em criança com anemia falciforme. Relato de caso. *Rev. dor [Internet].* 2014 Mar[cited 2017 July 06];15(1):70-73. Available from: http://www.scielo.br/scielo.php?script=sci_arttext&pid=S1806-00132014000100070&lng=en <http://dx.doi.org/10.5935/1806-0013.20140016>.
9. Ministério da Saúde (BR). Secretaria de Atenção à saúde. PNPIC: Política Nacional de Práticas Integrativas e Complementares. [Internet] Brasília (DF): Ministério da Saúde; 2006[cited 2017 July 06]. 92p. Available from: <http://bvsms.saude.gov.br/bvs/publicacoes/pnpic.pdf>
10. Pereira RDM, Alvim NAT, Pereira CD, Junior SCG. Acupuntura na hipertensão arterial sistêmica e suas contribuições sobre diagnósticos de enfermagem. *Esc Anna Nery Rev Enferm.* 2017[cited 2017 July 06];21(1):e20170024. Available from: http://www.scielo.br/scielo.php?script=sci_arttext&pid=S1414-81452017000100223&lng=en.
11. Zhao XF, Hu HT, Li JS, Shang HC, Zheng HZ, Niu JF, *et al.* Is acupuncture effective for hypertension? A Systematic Review and Meta-Analysis. *PLoS ONE.* 2015[cited 2017 July 06];10(7):1-21. Available from: [10.1371/journal.pone.0127019](https://doi.org/10.1371/journal.pone.0127019).
12. Lai X, Wang J, Nabar NR, Pan S, Tang C, Huang Y. Proteomic response to acupuncture treatment in spontaneously hypertensive rats. *PLoS ONE.* 2012[cited 2017 July 06];7(9):1-13. Available from: [10.1371/journal.pone.0044216](https://doi.org/10.1371/journal.pone.0044216).
13. Cevik C, Iseri SO. The effect of acupuncture on high blood pressure of patients using antihypertensive drugs. *Acupunct Electrother Res.* 2013[cited 2017 July 06];38(1):1-15. Available from: <https://www.ncbi.nlm.nih.gov/pubmed/23724695>
14. Park JM, Shin AS, Park SU, Sohn IS, Jung WS, Moon SK. Acupuncture for essential hypertension. The acute effect of acupuncture on endothelial dysfunction in patients with hypertension: a pilot, randomized, double-blind, placebo-controlled crossover trial. *J Altern Complement Med.* 2012[cited 2017 July 06];16(8):883-8. Available from: http://www.scielo.br/scielo.php?script=sci_arttext&pid=S1414-81452017000100223