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CLINICAL RESEARCH

The Efficacy of Auricular Point Pressing with Beans Combined with Five Elements of Music Therapy in Chinese Medicine in Patients with LDH and its Effect on Lumbar Spine Function

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Keywords

Auricular point pressing with beans, Five elements of music therapy in Chinese medicine, Lumbar disc herniation, Lumbar spine function, The degree of pain

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Abstract

Objective To explore the efficacy of auricular point pressing with beans combined with the five elements of music therapy in traditional Chinese medicine (TCM) in patients with lumbar disc herniation (LDH) and its effect on lumbar spine function. **Methods** Patients with LDH (n=118) who were treated in our hospital from January 2019 to December 2021 were randomly divided into control group (n=59) and observation group (n=59). The patients of control group adopted emotional care in traditional Chinese medicine combined with five elements of music therapy in traditional Chinese medicine, and the treatment of auricular point pressing with beans was employed in patients of observation group in addition to treatment adopted for patients in control group. Lumbar spine function, Modified Japanese orthopaedic association (M-JOA) pain score, degree of pain, and negative emotion were compared between the two groups. **Results** The excellent and good rate of lumbar spine function recovery in the observation group was evidently higher than that in the control group (P<0.05); after one-month treatment, the scores of M-JOA, numeric rating scale (NRS), hamilton anxiety scale (HAMA), and hamilton depression scale (HAMD) were significantly lower than those before treatment (P<0.05), and those of the observation group were significantly lower than those of the control group (P<0.05); after one-month treatment, the scores of chronic pain self-efficacy scale (CPSS) in the two groups were significantly higher than those before treatment (P<0.05), and those of the observation group were significantly higher than those of the control group (P<0.05). **Conclusion** The combination of auricular point pressing with beans and five elements of music therapy in Chinese medicine has a significant effect on patients with LDH, which can promote the recovery of lumbar spine function, relieve pain in patients, and alleviate their negative emotions.

Introduction

Lumbar disc herniation (LDH) refers to degenerative changes occurring in inner nucleus pulposus, annulus fibrosus, cartilaginous endplates and other places. Exogenous factors cause the rupture of annulus fibrosus, resulting in protrusion of nucleus pulposus from rupture to compress sinus vertebral nerves and nerve root, and pain follows[i]. Clinical manifestations of patients with LDH include flank pain, radiating pain in lower extremity, a long course of disease and relapse of disease. LDH is difficult to be cured and patients with severe LDH may even develop incontinence and other symptoms. As a result, patients with LDH are prone to feeling negative emotions such as anxiety or depression, leading to lower degree of treatment compliance, which exerts negative effects on their mental and physical health[ii]. Therefore, it is of great importance to perform effective mental interventions on patients with LDH so as to promote therapeutic effect and obtain a better prognosis. In traditional Chinese medicine, five tones are associated with five phases (metal, wood, water, fire and earth) respectively, which correspond to five zang-viscera (heart, liver, spleen, lung, kidney) respectively. Zang-fu viscera and meridian are combined with five phases, and they are of the relationships of generation and restriction. In this way, it is believed that treatment with corresponding temperament from five tones can achieve the effect of smoothing emotion and mechanism of "qi" in patients with LDH[iii]. Besides, ears are regarded to be closely associated with zang-fu viscera and meridian. Auricular point pressing with beans, as a new therapy in traditional Chinese medicine based on auricular acupuncture, is conducted via stimulating auricular point to prevent and cure disease[iv]. Since few researches have been performed from the perspective of how the combined five elements of music therapy in Chinese medicine and auricular point pressing with beans cure patients with LDH, this study aims to explore the effect of that combination on lumbar spine function, degree of pain and emotional expression in patients with LDH and provide a theoretical basis for clinical treatment. The results of the investigation were reported as follows.

Materials and methods

General information

One hundred and eighteen patients with LDH who received treatment in our hospital from January 2019 to December 2021 were objects of study and were randomly divided into two groups, observation group (n=59) and control group (n=59). Patients in two groups didn't exhibit statistical significance (P>0.05) with regard to gender, age, course of disease or pathological entity, as shown in Table 1. This study was approved by the Medical Ethics Committee, and the patients were informed and signed the written formed consent.

Table 1 Comparison of general information between two groups

groups	cases	gender (case)		age (years)	duration of disease (years)	pathological entity (case)		
		male	female			disc herniations occur at L4/5	disc herniations occur at L5/S1	disc herniations occur at L5/S
observation group	59	31	28	60.44± 4.89	5.04±0.19	23	24	12
control group	59	33	26	60.33± 5.87	5.07±0.20	25	21	13
χ^2/t		0.137		0.111	-0.835		0.323	
P		0.712		0.912	0.405		0.851	

Inclusion criteria

patients were conformed with the clinical diagnosis standard of LDH given by North American Spinal Society (NASS) and *Criteria of Diagnosis and Therapeutic Effect of Diseases and Syndromes in Traditional Chinese Medicine* [v] [vi]; (2) patients diagnosed as LDH with the application of imageological examination such as X-ray examination, computerized tomography (CT) or magnetic resonance imaging (MRI); (3) patients presented with well-documented clinical data, high degree of compliance and no severe intervention contraindication.

Extrusion criteria

patients with operation history in LDH within three months; (2) patients with mental or cognitive disorder; (3) patients with malignant tumor or blood system diseases; (4) patients with lumbar disease.

Treatment

Control group

A combination of emotional care in traditional Chinese medicine and five tone therapy treatment. Emotional care in traditional Chinese medicine: ①Logotherapy: nursing staff enlightened patients with conversations to help them build a good mental state; ②Mind-calming: nursing staff guided patients to sit, lie and stand in a quiet manner, and helped patients to imagine themselves in a favourable environment with the application of pmnayama to relax, which was performed every 30 minutes; ③Empathy and implication: nursing staff helped patients to keep a good state of mind via distracting their attention from their disease; ④Emotional control: nursing staff deliberately stimulated multiple emotions in patients to suppress or alleviate negative emotions. At the same time, *Music for Therapy and Health*, written by Professor Wu Zhen, including *Music of Wood, Music of Fire, Music of Earth, Music of Metal* and *Music of Water*, were selected and played in a continuous loop. Patients received treatment in the afternoon in the physiotherapy room every day, where suitable humidity and light and good ventilation were provided as appropriate. Being told to lie on a comfortable chaise longue with optimal volume in earphone, patients were supposed to relax themselves, keep a steady breath, stay calm and close eyes to enjoy the music. The therapy lasted for 60 minutes, once a day, for a month in total.

Observation group

In addition to treatment mentioned above in control group, patients in observation group also received treatment of auricular point pressing with beans. The pinna of an ear was cleaned and disinfected using alcohol cotton balls (75%). Cowherb seed was stuck to tender acupoints of heart, spleen, kidney, liver and Shenmen with adhesive tape, followed by kneading with thumb and forefinger at the frequency of 30 to 50 kneading per time, three times a day. Adhesive tape was changed every three days and the therapy lasted for one month.

Detection indexes

Lumbar spine function[vii]: clinical symptoms before and one month after treatment of patients from two groups were observed, and recovery of lumbar spine function was evaluated. Excellent: pain in waist and lower extremity disappeared, and waist functioned normally; good: pain was significantly alleviated in waist and lower extremity and waist functioned basically normally; average: pain was partially alleviated in waist and lower extremity, and waist functioned partly normally; poor: there was no obvious alleviation in pain or no recovery on waist function, or pain aggravated. Excellent and good rate = (excellent + good) cases / total cases ×100%. (2) Modified Japanese Orthopaedic Association (M-JOA) score[viii]: severity of wait pain of patients from two groups was evaluated before and after one-month treatment. The higher score in M-JOA, the severer in waist pain. (3) Degree of pain: Numerical Rating Scale (NRS)[ix] and chronic pain self-efficacy scale (CPSS)[x] were applied before and after one-month treatment to evaluate the degree of pain and self-efficacy in patients from two groups. In NRS, numbers from 1 to 10 represents different degrees of

pain. Bigger figures represent severer pain. It is classified as: 0, no pain; 1-3, mild pain; 4-6, moderate pain; 7-10, severe pain. In CPSS, there are three different subscales including 22 items. The higher scores in scale, the higher level of self-efficacy. (4) Negative emotions[xi]: Hamilton anxiety scale (HAMA), Hamilton depression scale (HAMD) were employed before and one-month after treatment to assess the degree of anxiety and depression of patients from two groups, the higher scores, the higher level of anxiety and depression.

Statistical analysis

Statistical analysis was conducted using SPSS 2.0. Enumeration data were compared using χ^2 test. All measurement data were presented as（$\bar{x}\pm s$）. Statically significant differences between two groups were assessed by using independent sample *t* test, and paired sample *t* test was used for comparison of patients at different time in the same group. $P<0.05$ was regraded to indicate a significant variance.

Results

Comparison of lumbar spine function recovery rate between two groups of patients

The excellent and good rate for lumbar spine function recovery in observation group was obviously higher than that in control group ($P<0.05$), as shown in Table 2.

Comparison of M-JOA scores before and after treatment in two groups of patients

Before the treatment, there was no statistical variance between two groups of patients with regard to M-JOA scores ($P>0.05$). After one-month treatment, there was a decrease of M-JOA scores in two groups of patients, and M-JOA scores in observation group were obviously lower than that in control group ($P<0.05$), as shown in Table 3.

Table 2 Comparison of lumbar spine function recovery between two groups of patients [cases (%)]

groups	cases	excellent	good	average	poor	excellent and good rate
observation group	59	37 (62.71)	20 (33.90)	2 (3.39)	0 (0.00)	57 (96.6)
control group	59	27 (45.76)	13 (22.04)	11(18.64)	8 (13.56)	40 (67.80)
χ^2						16.741
P						0.000

Table 3 Comparison of M-JOA scores before and after treatment in two groups of patients（$\bar{x}\pm s$, scores)

groups	cases	M-JOA scores	
		before treatment	after treatment
observation group	59	17.19±3.34	7.90±2.06*
control group	59	17.65±2.78	13.40±2.87*
t		-0.813	-11.958
P		0.418	0.000

Notice: compared with that before treatment, *$P<0.05$

Comparison between two groups of patients in terms of degree of pain

Before treatment, there was no statistical variance between two groups of patients with regard to NRS

scores and CPSS scores (P>0.05). After one-month treatment, NRS scores of two groups were reduced (P<0.05), and NRS scores of patients in observation group were significantly higher than that in control group (P<0.05). Additionally, after one-month treatment, CPSS scores in two groups of patients were elevated (P<0.05), and CPSS scores in observation group were higher than those in control group (P<0.05), as shown in Table 4.

Comparison between two groups of patients in view of negative emotion

Before treatment, there was no statistical variance between two groups of patients with regard to HAMA scores and HAMD scores (P>0.05). After one-month treatment, HAMA scores and HAMD scores of two groups were reduced (P<0.05), and patients in observation group showed less negative emotion than patients in control group did (P<0.05), as shown in Table 5.

Table 4 Comparison between two groups of patients in terms of degree of pain ($\bar{x}\pm s$, scores)

groups	cases	NRS scores		CPSS scores	
		before treatment	after treatment	before treatment	after treatment
observation group	59	3.12±0.53	2.17±0.30*	69.60±4.04	88.50±5.65*
control group	59	3.17±0.40	2.67±0.31*	70.28±3.88	79.04±7.42*
t		-0.578	-8.903	-0.932	7.791
P		0.564	0.000	0.353	0.000

Notice: compared with that before treatment, *P<0.05

Table 5 Comparison between two groups of patients in view of negative emotion ($\bar{x} \pm s$, scores)

groups	cases	HAMA scores		HAMD scores	
		before treatment	after treatment	before treatment	after treatment
observation group	59	16.46±2.70	7.99±2.28*	13.86±2.42	7.17±1.73*
control group	59	16.11±2.00	9.88±2.47*	14.07±2.12	7.93±1.50*
t		0.800	-4.319	-0.501	-2.549
P		0.425	0.000	0.617	0.012

Notice: compared with that before treatment, *P<0.05

Discussion

There are a wide range of therapeutic methods for LDH, and traditional Chinese medicine excels in flexibility, diversity, long-lasting effects, non-invasiveness and so on. Thus, traditional Chinese medicine is widely applied in conservative therapy for LDH. In traditional Chinese medicine, LDH belongs to the category of “waist pain” “arthralgia syndrome”, the underlying mechanism of which is liver-kidney deficiency. Meridian at waist is stuck with stagnation of damp-phlegm and extravasated blood, which leads to the pain in waist. There are four syndrome in the development of LDH, namely cold-dampness, heat-dampness, extravasated blood and kidney deficiency. It is reported in the “*Waist Pain*” of *Medication in Syndromes*· that “tonifying kidney comes first... At early stage of syndromes, we are supposed to promote flow of “qi” by cleaning stagnation and meridian. At the late stage of syndromes, we should nourish “qi” and blood.” Patients with kidney deficiency were supposed to tonifiy kidney via building a strong waist, which, actually, was associated with cleaning meridian so as to address both symptoms and root causes. As a kind of auricular acupuncture, auricular point pressing with beans achieved the effects of cleaning meridian and relieving pain via pressing concerning auricular points to stimulate zang-fu viscera and meridian. Besides,

patients with LDH were always characterized by long-term pain, movement limitation and negative emotions, which decreased degrees of treatment compliance and recovery of lumbar spine function. Therefore, it is quite important to take appropriate actions to alleviate negative emotions. Wu Shiji from Qing Dynasty said, "Diseases associated with emotion can be alleviated via listening to music, which is even better than taking medicine". Five tone therapy treatment in traditional Chinese medicine influences emotion and mediates zang-fu viscera with the application of music. The positive effect of five tone therapy treatment of traditional Chinese medicine in alleviating anxiety and depression, promoting state of mind, as well as elevating efficiency has been confirmed in a previous study[3]. This study explores influence of the combination of five elements of music therapy in Chinese medicine and auricular point pressing with beans on lumbar spine function, degree of pain and negative emotion, and results showed that the combination exerted a satisfactory effect.

Combination of five elements of music therapy in Chinese medicine and auricular point pressing with beans promoted recovery of lumbar spine function and alleviated pain

It was demonstrated in the present study that the excellent and good rate of lumbar spine function recovery in observation group was obviously higher than that in control group. Compared with that before treatment, both M-JOA scores and NRS scores in two groups of patients were reduced after one-month treatment, and the decrease was more significant in observation group. When compared with those before treatment, CPSS scores were higher in two groups of patients after one-month treatment, and those in observation group in particular. These findings suggested that combination of five elements of music therapy in Chinese medicine and auricular point pressing with beans effectively mitigated clinical syndromes of patients with LDH in view of promoting recovery of lumbar spine function and alleviating pain. Five elements of music therapy in traditional Chinese medicine, 角(jué), 徵(zhǐ), 宫(gōng), 商(shāng), 羽(yǔ), were based on the theory of Yin-yang and five elements, in which "Mi, Sol, Do, Re, La" corresponded to five phases (wood, fire, earth, metal, water) respectively. Sound of "Mi" can disperse liver to regulate "qi", sound of "Sol" relieve stagnation in meridian, sound of "Do" strengthen spleen and harmonize stomach, sound of "Re" moisten lung and resolve depression, and sound of "La" relieve uneasiness for tranquilization. In this way, playing music has potential to regulate zang-fu viscera and cure diseases. Modern research has affirmed that wave of the five tones can resonate with five zang viscera to change natural frequency of five zang viscera[xii], which was termed as "curbing a surplus and supplementing deficiency". At the same time, listening to music can upregulate the threshold of feeling pain and enhance the ability to endure pain for patients so that pain and stress reaction were suppressed, and recovery of lumbar spine function and prognosis was promoted. It is believed in traditional Chinese medicine that pain is caused by stagnation of "qi" and blood flow in waist, and that "meridians all over the body converge in ears". Therefore, stimulation on ears may exert influence on corresponding organs in five zang viscera. In our study, acupoints of heart, spleen, kidney, liver and Shenmen were chosen. Shenmen is associated with tranquilization, and pressing it can relieve emotion, make people calm down, alleviate pain and disperse stagnated liver. Pressing acupoints of heart, spleen and kidney can nourish blood, promote meridian and relieve pain. Pressing acupoint of kidney exerts positive effects on invigorating kidney, strengthening yang, relieving pain and promoting tranquilization. Modern research indicates that in ears, there are quite a few receptors that transmit impulse signals to reticular formation so as to achieve the effect of tranquilization. Besides, pressing with fingers can be replaced by beans. Cowherb seed were stuck by adhesive tape for quite a long time, which had little influence on patients' daily life so that it can be applied in long-term treatment.

Combination of five elements of music therapy in Chinese medicine and auricular point pressing

with beans alleviated anxiety and depression

Patients with LDH tend to feel anxiety and depression, leaving them in a state of stress, making them not suitable for therapy and treatment. Present study indicated that compared with those before treatment, HAMA scores and HAMD scores were reduced after one-month treatment, with an evident reduction in the observation group in particular. These results suggested that combination of five elements of music therapy in Chinese medicine and auricular point pressing with beans effectively mitigated anxiety and depression in patients. Other studies also underlined that listening to five tones affects the secretion and transduction of multiple neurotransmitters in brain. By promoting the release of dopamine, endorphin and other cytokines, patients are induced to be relaxed and pleased. What's more, listening to five tones, by stimulating brain amygdala, hippocampus and other bilateral brain areas, or temporal lobe and other marginal zones, influences activities on core areas concerning emotion control to mitigate anxiety and depression. Furthermore, listening to music suppresses painful feelings and then effectively alleviates negative emotions in patients with LDH. Auricular point pressing with beans relieves anxiety and depression by stimulating auricular point to lessen pain and calm the never. The study conducted by Liao Tao and other people also suggests that combination of five elements of music therapy in Chinese medicine and auricular point pressing with beans exerts positive effects on treating anxiety-driven sleep disturbances and relieving anxiety, which is consistent with present study.

In conclusion, combination of five elements of music therapy in Chinese medicine and auricular point pressing with beans is an effective treatment for patient with LDH and the combination promotes recovery of lumbar spine function and relieve painful feelings, anxiety, depression and other negative emotions.

Declaration of conflict-of-interest

The authors declare no conflict-of-interest.

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