

Efficacy of spreading moxibustion combined with oral administration and external use of traditional Chinese medicine in treating lumbar disc herniation.

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Abstract

This study aimed to investigate the efficacy of spreading moxibustion combined with oral administration and external use of Traditional Chinese Medicine (SM-TCM) in treating Lumbar Disc Herniation (LDH). One hundred and eight LDH patients were randomly divided into 3 groups, which received acupuncture (25 cases), SM-TCM (37 cases), and Traction combined with Western medicine (T-WM) group (36 cases), respectively. The overall treatment efficacy was evaluated. The Visual Analogue Scale (VAS) score and Japanese Orthopaedic Association (JOA) score were measured. CT examination was performed on the lesion parts of lumbar vertebra. Results showed that, the effective rate in SM-TCM group was significantly higher than other two groups ($P<0.05$). After treatment, the VAS score in SM-TCM group was significantly lower than other two groups ($P<0.05$), and the JOA score in SM-TCM was significantly higher than other two groups ($P<0.05$). The height and area of herniated intervertebral disc tissue displayed by CT in SM-TCM group were significantly lower than those in acupuncture and T-WM groups ($P<0.05$). Compared with acupuncture and T-WM, SM-TCM can obtain better treatment efficacy in treatment of LDH.

Keywords: Spreading moxibustion, Traditional Chinese medicine, Lumbar disc herniation.

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Introduction

Lumbar Disc Herniation (LDH) is a syndrome due to the stimulation or compression of cauda equina nerve, blood vessels and nerve roots caused by lumbar intervertebral disc degeneration, nucleus pulposus herniation and annulus rupture [1]. The leading factors of LDH include chronic strain, aging, trauma, etc. [2]. LDH is the main cause of low back pain, which seriously affects the work, study and life quality of patients [3]. The treatments of LDH in Western medicine mainly include surgery, traction and drug treatment [4-6]. The surgery can thoroughly eliminate the symptom, but it is prone to the sequelae. The traction treatment often cannot obtain the satisfactory outcome. The drug treatment will lead to the recurrence of disease and is easy to result in adverse reactions. In Traditional Chinese Medicine (TCM), acupuncture and oral administration of TCM are often used to treat LDH, and have obtained treatment efficacy in different degrees [7,8]. Spreading Moxibustion (SM) is also a treatment method in TCM. In this method, the Chinese medicinal herbs were spread on the specific acupoint of patients. When igniting the herbs, the activate ingredients permeate into the body to act with the target site, thus mitigating the lesion [9]. SM is successfully applied to treating bronchial asthma, rheumatoid arthritis, ankylosing spondylitis, chronic gastritis, chronic diarrhoea, etc. [9-13]. This study investigated the efficacy of spreading

moxibustion combined with oral administration and external use of TCM (SM-TCM) in treating LDH, and discussed the possible mechanism. The objective was to provide a reference for the clinical application of SM-TCM.

Materials and Methods

Subjects

One hundred and eight LDH patients receiving treatment from March 2014 to May 2016 were enrolled in this study. There were 77 males and 36 females. The age of patients was 22-62 y old, with mean age of 44.82 ± 6.23 y. The disease course was 4-12 months, with mean age of 7.71 ± 2.03 months. There were 71 cases of lateral LDH and 37 cases of central LDH. The inclusion criteria were as follows: lumbar stiffness; lumbar lordosis disappearance; scoliosis; the straight leg raising test presented positive; waist activity asymmetry; tenderness of spinous process in lumbar intervertebral disc herniation; CT showed lumbar scoliosis and physiological proneness change. The exclusion criteria were as follows: the lumbago-leg pain caused by allergic constitution; lumbar spinal stenosis; lumbar spondylolisthesis, cauda equina tumors and other diseases; serious heart disease; cerebrovascular diseases.

Grouping and treatment

Patients were randomly divided into acupuncture, SM-TCM, and Traction combined with Western Medicine (T-WM) group, with 25, 37 and 36 cases, respectively. In SM-TCM group, the spreading moxibustion with external use of TCM was performed at the area from first 1-5 lumbar vertebrae extending to the right and left Jiaji points and Back-shu points. The SM powder included artificial musk, clematis, cinnamon and Baisunwan prescription. The treatment was conducted once every two days, five times for a treatment course. At the same time, the oral administration of TCM Baisunwan prescription with addition and reduction was performed, 10 d for a treatment course. The ingredients of Baisunwan prescription was as follows: Psoralen, 75 g; Rhizoma drynariae, 60 g; Eucommia, 30 g; *Achyranthes* root, 30 g; Radix dipsaci, 30 g; *Cistanche*, 30 g; *Angelica*, 30 g; Caulis spatholobi, 90 g; *pseudoginseng*, 15 g; Lynx stone, 10 g; Amber dragon, 10 g; Black beans 15 g; Black soya bean, 30 g. The ingredients of addition and reduction were as follows: Plusscorpia, 30 g; Woodlouse, 30 g; Sea horse, 30 g; Dried human placenta, 30 g (for hyperosteoarthritis, pangolin, 10 g; Deglued antler powder, 10 g; White mustard, 10 g; Pepperbox 10 g; clematis, 15 g; for osteoporosis, tortoise, 30 g; Antler glue, 30 g). The decoction was prepared using 400 ml of water. The oral administration was conducted 2 times a day, 10 d for a treatment course. In acupuncture group, the acupuncture was performed at the conventional points including lumbar Jiaji, Huantiao, Zhibian, Weizhong, Yanglingquan, Chengshan, Zusanli, Xuanzhong, Shugu and Zulinqi, once a day, 10 times for a treatment course. In T-WM group, the lumbar traction was performed for 20 min per time, once a day. The traction power was 1/2 of the body weight. In addition, the diclofenac sodium enteric-coated tablets were orally administered, 50 mg per time, 3 times a day, 10 d for a treatment course.

Evaluation of overall treatment efficacy

After 1 y from treatment, the overall treatment efficacy was evaluated according to the standards of the diagnostic criteria of TCM syndrome issued by the State Administration of traditional Chinese medicine in 1994 [14]. The details were as follows: (i) Cure: The low back pain and other symptoms disappeared; The straight leg raising test presented negative; The patients could return to normal work; (ii) Markedly effective: The low back pain and other symptoms basically disappeared; The straight leg raising test results was close to 70 degrees; The patients could basically return to normal work; (iii) Effective: Partial the symptoms disappeared; The activity was slightly limited; The straight leg raising test presented improvement compared with before; The patients could complete the easy work; (iv) Invalid: The symptoms and signs were not improved; The patients could not work.

Clinical observation indexes

Before and after treatment, the Visual Analogue Scale (VAS) score and Japanese Orthopaedic Association (JOA) score of patients were observed [15,16]. The VAS scores were scaled as

0-10 points, with a gradient change. 0 point presented no pain, and 10 points presented the most intense pain. The JOA scoring involved four parts including subjective symptoms, clinical signs, daily activities and bladder function of patients. Each part consisted several items with different scores (Subjective symptoms: 3 items, a total of 9 points; Clinical signs: 3 items, a total of 6 points; Daily activities: 7 items, a total of 14 points; Bladder function: related to compression of cauda equina by lumbar disc central herniation, a total of negative 6 points).

CT examination

Before and after treatment, CT examination was performed on the lesion parts of the lumbar vertebra. The height and area of herniated intervertebral disc tissue were measured.

Statistical analysis

All statistical analysis was carried out using SPSS22.0 software (SPSS Inc., Chicago, IL, USA). The enumeration data were presented as number and rate, and were compared using χ^2 test. The measurement data were presented as mean \pm SD, and were compared using t-test. $P < 0.05$ was considered as statistically significant.

Results

General information of patients

General information of patients was shown in Table 1. There was no significant difference of age, gender, disease course or LDH type among three groups ($P > 0.05$).

Table 1. General information of patients.

Group	Acupuncture	SM-TCM	T-WM	P
n	35	37	36	>0.05
Age (y)	46.23 \pm 6.15	43.72 \pm 5.32	44.04 \pm 7.02	>0.05
Gender (male/female, n)	43033	43065	43034	>0.05
Disease course (months)	8.27 \pm 1.08	7.34 \pm 2.12	7.63 \pm 1.56	>0.05
LDH type (n)				>0.05
Lateral	22	24	25	
Central	13	13	11	

SM-TCM: Spreading moxibustion combined with oral administration and external use of traditional Chinese medicine; T-WM: Traction combined with Western medicine; LDH: Lumbar Disc Herniation.

Overall treatment efficacy in three groups

Overall treatment efficacies in three groups were shown in Table 2. The effective rate in SM-TCM group was 94.59%, which was significantly higher than 82.86% in acupuncture group and 80.56% in T-WM group, respectively ($P < 0.05$).

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There was no significant difference of effective rate between acupuncture and T-WM group ($P>0.05$).

Table 2. Overall treatment efficacy in three groups.

Group	Acupuncture	SM-TCM	T-WM
Total (n)	35	37	36
Cure (n)	6	12	5
Markedly effective (n)	10	17	9
Effective (n)	13	6	15
Invalid (n)	6	2	7
Effective rate (%)	82.86 [#]	94.59	80.56 [#]

SM-TCM: Spreading moxibustion combined with oral administration and external use of traditional Chinese medicine; T-WM: Traction combined with Western medicine. [#] $P<0.05$ compared with SM-TCM group.

Adverse reaction

Before and after treatment, all the electrocardiograph findings, blood routine, urine routine and renal function in three groups were normal. No adverse reaction such as infection, illness exacerbation, allergy and fainting occurred during the course of treatment.

VAS scores in three groups

Before treatment, the VAS scores in acupuncture, SM-TCM and T-WM groups were 6.27 ± 2.02 , 5.68 ± 1.45 and 6.02 ± 2.23 , respectively, with no significant difference among three groups ($P>0.05$). After treatment, the VAS scores in three groups were 4.21 ± 0.82 , 2.26 ± 0.73 and 4.71 ± 0.88 , respectively, which were significantly lower than those before treatment, respectively ($P<0.05$). In addition, the VAS score in SM-TCM group after treatment was significantly lower than that in acupuncture and T-WM group, respectively ($P<0.05$), with no significant difference between acupuncture and T-WM group ($P>0.05$) (Table 3).

Table 3. VAS scores in three groups.

Group	Acupuncture	SM-TCM	T-WM
Before treatment	6.27 ± 2.02	5.68 ± 1.45	6.02 ± 2.23

Table 5. Height and area of herniated intervertebral disc tissue displayed by CT.

Group		Acupuncture	SM-TCM	T-WM
Height (mm)	Before treatment	7.11 ± 2.01	7.16 ± 1.99	7.15 ± 3.02
	After treatment	6.87 ± 1.56	$6.08 \pm 2.05^{*#}$	6.98 ± 1.99
Area (mm ²)	Before treatment	119.34 ± 30.12	120.59 ± 35.48	118.79 ± 30.09
	After treatment	111.29 ± 23.61	$106.33 \pm 24.59^{*#}$	112.62 ± 26.14

SM-TCM: Spreading moxibustion combined with oral administration and external use of traditional Chinese medicine; T-WM: Traction combined with Western medicine. ^{*} $P<0.05$ compared with before treatment; [#] $P<0.05$ compared with acupuncture group.

After treatment	$4.21 \pm 0.82^{*#}$	$2.26 \pm 0.73^{*}$	$4.71 \pm 0.88^{*#}$
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VAS: Visual Analogue Scale; SM-TCM: Spreading moxibustion combined with oral administration and external use of traditional Chinese medicine; T-WM: Traction combined with Western medicine. ^{*} $P<0.05$ compared with before treatment; [#] $P<0.05$ compared with SM-TCM group.

JOA score in three groups

Table 4 shows that, before treatment, the JOA scores in acupuncture, SM-TCM and T-WM groups were 12.23 ± 2.56 , 12.32 ± 2.72 and 13.05 ± 2.03 , respectively, with no significant difference among three groups ($P>0.05$). After treatment, the JOA scores in three groups were 20.67 ± 4.51 , 27.27 ± 3.72 and 21.92 ± 4.23 , respectively, which were significantly higher than those before treatment, respectively ($P<0.05$). The JOA score in SM-TCM group after treatment was significantly higher than that in acupuncture and T-WM groups, respectively ($P<0.05$). There was no significant difference between acupuncture and T-WM group ($P>0.05$).

Table 4. JOA scores in three groups.

Group	Acupuncture	SM-TCM	T-WM
Before treatment	12.23 ± 2.56	12.32 ± 2.72	13.05 ± 2.03
After treatment	$20.67 \pm 4.51^{*#}$	$27.27 \pm 3.72^{*}$	$21.92 \pm 4.23^{*#}$

JOA: Japanese Orthopaedic Association; SM-TCM: Spreading moxibustion combined with oral administration and external use of traditional Chinese medicine; T-WM: Traction combined with Western medicine. ^{*} $P<0.05$ compared with before treatment; [#] $P<0.05$ compared with SM-TCM group.

CT findings in three groups

Before treatment, CT displayed that, there was no significant difference of height or area of herniated intervertebral disc tissue in acupuncture, SM-TCM and T-WM groups, respectively ($P>0.05$). After treatment, the height and area of herniated intervertebral disc tissue in SM-TCM group were significantly lower than those before treatment, respectively ($P<0.05$), and were significantly lower than those in acupuncture and T-WM groups, respectively ($P<0.05$). There was no significant difference of each index between before and after treatment in acupuncture and T-WM group, respectively ($P>0.05$) (Table 5).

Discussion

In modern medicine, the basic pathological change of LDH is the fibrous ring degeneration of intervertebral disc. The degenerative lesions, combined with lumbar injury and other factors, result in lumbar intervertebral disc fibrous ring rupture, nucleus pulposus herniation and mechanical damage, leading to nerve root injury [17,18]. At present, the Western medicine treatment is often applied to clinical treatment of LDH. Although it can achieve a certain effect, the long-term effect is not very satisfactory. In addition, the Western medicine treatment is prone to the repeated attacks [19]. TCM believes that, the LDH belongs to the “arthromyodynia”. It is caused by the wind, cold and wet. These three factors invade the human body and block the main and collateral channels, which causes the Qi inactivation and blood stasis, eventually leading to the occurrence of pain [20].

Spreading moxibustion therapy is a moxibustion method in TCM. The operation of spreading moxibustion is often performed at the area from the Dazhui points to Yaoshu points, and the moving trend is like a snake, so this moxibustion is also called as “long-snake moxibustion” [21]. The spreading moxibustion has the advantages of wide covering range, big moxa feet and strong fire, and is not surpassed by other moxibustion methods. This method can coordinate the human body meridian, balance the Yin and Yang, adjust the actual situation, and resist the disease [22]. It is often used as first choice of disease treatment and health care. In addition, the spreading moxibustion therapy cannot only benefit the meridian, but also warm the blood [23]. This study compared the efficacies of acupuncture, SM-TCM and T-WM in treating LDH. Results found that, the effective rate in SM-TCM group was significantly higher than acupuncture group and T-WM group, respectively ($P<0.05$). After treatment, the VAS scores in three groups were significantly lower than those before treatment, respectively ($P<0.05$). In addition, the VAS score in SM-TCM group after treatment was significantly lower than that in acupuncture and T-WM group, respectively ($P<0.05$). The JOA scores in three groups after treatment were significantly higher than those before treatment, respectively ($P<0.05$), and the JOA score in SM-TCM group after treatment was significantly higher than that in acupuncture and T-WM groups, respectively ($P<0.05$). After treatment, the height and area of herniated intervertebral disc tissue in SM-TCM group were significantly lower than those in acupuncture and T-WM groups, respectively ($P<0.05$). This indicates that, SM-TCM has better treatment efficacy for LDH, compared with acupuncture and T-WM.

In conclusion, compared with acupuncture and T-WM, SM-TCM can obtain better treatment efficacy in treatment of LDH. In addition, this strategy has no obvious adverse reaction. It can be popularized for treating LDH. This study still has some limitations. The sample size of this study is relatively small. In next studies, larger sample size will make the results more convincing.

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References

1. Wan J, Zhang XS. Pre-operative blood test for antibody to nucleus pulposus may distinguish types of lumbar disc herniation. *Med Hypotheses* 2010; 75: 464-465.
2. Plomp KA, Viðarsdóttir US, Weston DA, Dobney K, Collard M. The ancestral shape hypothesis: an evolutionary explanation for the occurrence of intervertebral disc herniation in humans. *BMC Evol Biol* 2015; 15: 68.
3. Toyone T, Tanaka T, Kato D, Kaneyama R. Low-back pain following surgery for lumbar disc herniation: A prospective study. *J Bone Joint Surg Am* 2004; 86-A: 893-896.
4. Rönnerberg K, Lind B, Zoëga B, Halldin K, Gellerstedt M, Brisby H. Patients' satisfaction with provided care/information and expectations on clinical outcome after lumbar disc herniation surgery. *Spine* 2007; 32: 256-261.
5. Ozturk B, Gunduz OH, Ozoran K, Bostanoglu S. Effect of continuous lumbar traction on the size of herniated disc material in lumbar disc herniation. *Rheumatol Int* 2006; 26: 622-626.
6. Couto JM, Castilho EA, Menezes PR. Chemonucleolysis in lumbar disc herniation: a meta-analysis. *Clinics* 2007; 62: 175-180.
7. Tekin L, Abut MF. Lumbar disc herniation treated with auricular acupuncture: why the (y) wait? *Acupunct Med* 2014; 32: 430-431.
8. Zhong Q. Fifty-six cases of protrusion of lumbar intervertebral disc treated by penetration and oral administration of Chinese decoction plus traction. *J Trad Chin Med* 2000; 20: 273-276.
9. Xie XX, Lei QH. Observation on therapeutic effect of the spreading moxibustion on rheumatoid arthritis. *Chin Acup Moxib* 2008; 28: 730-732.
10. Sha JM, Deng XJ, Shao ZC. Effect on therapeutic effect of inducing the formation of the post-moxibustion sore for bronchial asthma. *Chin Acup Moxib* 2012; 32: 305-308.
11. Du WZ, Zhang JP, He YG. Long snake moxibustion at governor vessel in dog-days for 58 cases of ankylosing spondylitis. *Chin Acup Moxib* 2011; 31: 951-952.
12. Gao X, Yuan J, Li H, Ren S. Clinical research on acupuncture and moxibustion treatment of chronic atrophic gastritis. *J Trad Chin Med* 2007; 27: 87-91.
13. Sun Q, Zhang H, Song G, Xue G. Observation of therapeutic effects of needle warming moxibustion for chronic diarrhoea. *J Acupunct Tuina Sci* 2011; 9: 42-45.
14. Yang C, Yan H. Observation of the efficacy of acupuncture and moxibustion in 62 cases of chronic colitis. *J Trad Chin Med* 1999; 19: 111-114.
15. Kanai A. Treatment of lumbar disk herniation by percutaneous intradiscal high-pressure injection of saline. *Pain Med* 2009; 10: 76-84.

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16. Azimi P, Mohammadi HR, Montazeri A. An outcome measure of functionality and pain in patients with lumbar disc herniation: a validation study of the Japanese Orthopedic Association (JOA) score. *J Orthop Sci* 2012; 17: 341-345.
17. Pan J, Wang Y, Huang Y. Coexistence of intervertebral disc herniation with intradural schwannoma in a lumbar segment: a case report. *World J Surg Oncol* 2016; 14: 113.
18. Zhu Z, Huang P, Chong Y, George SK, Wen B, Han N, Liu Z, Kang L, Lin N. Nucleus pulposus cells derived IGF-1 and MCP-1 enhance osteoclastogenesis and vertebrae disruption in lumbar disc herniation. *Int J Clin Exp Pathol* 2014; 7: 8520-8531.
19. Luo Y, Huang J, Xu L, Zhao W, Hao J, Hu Z. Efficacy of Chinese herbal medicine for lumbar disc herniation: a systematic review of randomized controlled trials. *J Trad Chin Med* 2013; 33: 721-726.
20. Huang C, Wang ET, Wang M, Yi WH. Follow-up of discectomy with transforaminal endoscope through interlaminar approach for lumbar disc herniation. *Chin J Orthopa Trauma* 2011; 24: 806-810.
21. Ma S, Ma J, Pan JN, Zhang XS. Comparative research of lumbar disc herniation treated with acupuncture and snake moxibustion. *Chin Acup Moxib* 2010; 30: 563-566.
22. Li WG, Tu Q, Gu XJ. Effect on content of serum inflammatory cytokines of patients with ankylosing spondylitis in early stage treated by long snake moxibustion at Governor Vessel and functional exercise. *Chin Acup Moxib* 2010; 30: 200-202.
23. Sun YH, Sun YH, Sun LH, Liang YL, Zhao ZS, Zhang HZ, Li XF. Effect of mild-warm moxibustion on microcirculation in the raw surface tissue of chronic refractory wound in skin ulcer rats. *Acupunct Res* 2011; 36: 321-326.

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