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Efficacy Analysis of Zhuang Medicine Moxibustion in Treating Lumbar Disc Herniation (Degenerative/Protrusion Types)

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Abstract

Objective: To explore the therapeutic effect of Zhuang medicine moxibustion in treating lumbar disc herniation (degenerative/protrusion types). **Methods:** A total of 90 patients who met the inclusion and exclusion criteria for lumbar disc herniation (degenerative/protrusion types) and were treated in the Department of Pain Management at Guangxi International Zhuang Medical Hospital from August 2023 to August 2024 were selected as the study subjects. They were randomly divided into three groups: Group A (Celecoxib group, 30 cases), Group B (Zhuang medicine moxibustion group, 30 cases), and Group C (Zhuang medicine moxibustion combined with Celecoxib group, 30 cases), with a treatment duration of one week. The clinical efficacy of the three groups was evaluated by observing the changes in visual analog scale (VAS) scores, Japanese Orthopaedic Association (JOA) lumbar function scale scores, traditional Chinese medicine (TCM) syndrome scores, and serum inflammatory factors [interleukin (IL)-6 and tumor necrosis factor (TNF)-α] levels before and after treatment. The improvement in pain and lumbar function was assessed, and adverse reactions during treatment were recorded. **Results:** The total effective rate of Group C was higher than that of Groups A and B ($P < 0.05$). After treatment, the VAS and TCM syndrome scores of all three groups decreased, and the JOA scores increased compared to before treatment. Group C showed better improvement than Groups A and B, with statistically significant differences ($P < 0.05$). **Conclusion:** Zhuang medicine moxibustion is effective in relieving pain and improving lumbar function in patients with lumbar disc herniation (degenerative/protrusion types). It significantly regulates inflammatory mediators, achieving better pain relief and lumbar function improvement, with high safety, and is worthy of clinical promotion and application.

Keywords

Lumbar Disc Herniation; Zhuang Medicine Moxibustion; Pain; Lumbar Function

Lumbar intervertebral disc herniation (LDH) is a clinical condition characterized mainly by lumbogluteal pain and radiating pain in the lower limbs. It is one of the most common causes of low back and leg pain in outpatient clinics, predominantly affecting individuals aged 20-50 years [1]. In recent years, the incidence of LDH has shown a rising trend, becoming one of the significant diseases affecting modern health [2]. In Western medicine, the treatment of LDH is mainly divided into conservative treatment and surgical treatment. Western conservative treatment mainly

involves oral non-steroidal drugs, which have some adverse reactions [3]; surgical and minimally invasive treatments can easily cause nerve root injuries [4]. Chinese medicine treatment for LDH mainly includes oral Chinese herbal medicine and external treatments such as acupuncture, massage, and moxibustion, which can effectively alleviate symptoms with fewer adverse reactions [5]. In Zhuang medicine, LDH falls under the category of meridian and tendon diseases. It is often caused by blockage of the fire pathway, with the nucleus pulposus protruding and stimulating or compressing the spinal cord and nerve roots, leading to low back pain, sciatic pain in the lower limbs, and reduced skin sensation. The Zhuang medicine incense moxibustion therapy uses specially made incense sticks from aromatic Zhuang medicinal materials, applied to the relevant areas for burning or warming. The medicinal and thermal effects help alleviate symptoms, thus treating and preventing diseases [6]. The Zhuang medicine incense moxibustion therapy has effects such as aromatic warming, promoting blood circulation and removing stasis, regulating Qi, relieving pain, and clearing the meridians and fire pathways [6]. Studies have shown that Zhuang medicine incense moxibustion therapy is effective for treating neck, shoulder, back, and leg pain, though clinical data needs further improvement [6]. Therefore, this study uses 90 patients diagnosed with LDH from our hospital as research subjects to explore the clinical efficacy of Zhuang medicine incense moxibustion therapy for LDH, reported as follows:

1. Data and Methods

1.1 General Data

From August 2023 to August 2024, 90 patients meeting the inclusion and exclusion criteria for lumbar intervertebral disc herniation (degenerative/protrusive type) were selected from the Pain Department of Guangxi International Zhuang Medicine Hospital for inpatient (or outpatient) treatment. They were randomly divided into three groups: Group A (Celecoxib group, 30 cases), Group B (Zhuang Medicine Incense Moxibustion group, 30 cases), and Group C (Zhuang Medicine Incense Moxibustion combined with Celecoxib group, 30 cases). In Group A, there were 13 males and 17 females, with a mean age of 46.52 ± 5.62 years and a mean disease duration of 2.16 ± 0.34 years. In Group B, there were 15 males and 15 females, with a mean age of 45.16 ± 5.95 years and a mean disease duration of 2.12 ± 0.41 years. In Group C, there were 12 males and 18 females, with a mean age of 45.05 ± 6.92 years and a mean disease duration of 2.15 ± 0.46 years. There were no statistically significant differences in demographic and baseline characteristics among the three groups ($P > 0.05$), indicating comparability.

1.2 Diagnostic Criteria

1.2.1 Western Medicine Diagnostic Criteria

According to the diagnostic criteria for lumbar disc herniation in the "Clinical Diagnosis and Treatment Guidelines: Orthopedic Volume" by the Chinese Medical Association [7], combined with X-ray examination for diagnosis: (1) Low back pain and sciatica, involving the lateral calf, dorsum of the foot, and toes, with pain aggravated by sneezing, defecation, and coughing, and relieved by rest; (2) Scoliosis, more pronounced on forward bending, restricted spinal mobility, with radiating pain to one lower limb during extension or flexion; (3) Reduced sensation in the anterolateral or posterolateral calf skin, decreased toe muscle strength, reduced or absent Achilles tendon reflex on the affected side, positive straight leg raise test; (4) Significant tenderness on the lateral side of the interspinous ligament at L4-5 or L5-S1, accompanied by radiating pain from the calf to the foot; (5) X-ray examination excluding other osseous diseases.

According to the classification criteria for lumbar disc herniation by the American Academy of Orthopaedic Surgeons (AAOS) and the International Society for the Study of the Lumbar Spine (ISSLS) [8], combined with MRI examination for diagnosis: Degeneration: Degenerative changes occur in the intervertebral disc, but the annulus fibrosus and posterior longitudinal ligament structures have not shown significant rupture or herniation. Bulging: The annulus fibrosus is partially ruptured, but the surface remains intact. The nucleus pulposus bulges locally into the spinal canal due to pressure, but the surface is smooth. This type mostly responds to conservative treatment, which can alleviate or cure the condition.

1.2.2 Traditional Chinese Medicine Diagnostic Criteria

According to the diagnostic criteria for lumbar disc herniation (blood stasis syndrome) in the "Standards for Diagnosis and Efficacy of Traditional Chinese Medicine Diseases and Syndromes" released by the National Administration of Traditional Chinese Medicine in 2017 [9]: (1) History of lumbar trauma, chronic strain, or exposure to cold and dampness. Most patients have a history of chronic low back pain before the onset. (2) Commonly occurs in young

and middle-aged adults. (3) Low back pain radiating to the buttocks and lower limbs, with pain aggravated by increased abdominal pressure (e.g., coughing, sneezing). (4) Scoliosis, loss of physiological lumbar curvature, paraspinal tenderness at the lesion site with radiation to the lower limbs, and restricted lumbar mobility. (5) Hyperesthesia or hypoesthesia in the affected nerve distribution area of the lower limbs, with muscle atrophy in long-term cases. Positive straight leg raise or Bragard's test weakened or absent knee and Achilles reflexes, and reduced toe dorsiflexion strength. (6) X-ray examination: Scoliosis, loss of physiological lumbar lordosis, possible narrowing of the affected intervertebral disc, and osteophyte formation at adjacent margins. CT examination can show the location and extent of disc herniation. (7) Low back and leg pain resembling stabbing, with a fixed location, worse at night than during the day, lumbar stiffness, limited flexion and rotation, and refusal to press the painful area. Dark purple tongue or with ecchymosis, wiry or tight pulse.

1.3 Inclusion Criteria

(1) Meets the Traditional Chinese Medicine diagnostic criteria for lumbar disc herniation (degenerative/bulging type) [9] and Western medicine diagnostic criteria [7, 8]; (2) Aged between 18 and 60 years, with no gender restrictions; (3) Stable vital signs, normal mental status, and clear consciousness; (4) Signed informed consent, voluntarily participating in the study, and able to actively cooperate.

1.4 Exclusion Criteria

(1) Combined with lumbar tuberculosis, congenital malformations, spinal cord tumors, compression fractures, etc.; (2) Combined with severe primary diseases such as cardiopulmonary insufficiency, liver, kidney, cerebrovascular diseases, etc.; (3) Pregnant or lactating women or patients with a tendency to bleed; (4) Patients with local skin ulceration, injury, or infectious diseases; (5) Patients who have received other related treatments that may affect the efficacy observation of this study. (6) Patients who have undergone surgical treatment for lumbar disc herniation; (7) Patients allergic to moxibustion drugs.

1.5 Dropout and Exclusion Criteria

(1) Participants who did not complete the treatment plan of this study and withdrew midway. (2) Patients who experienced adverse events or adverse reactions (such as allergies) during the treatment period. (3) Participants with poor compliance during the experiment, affecting the efficacy evaluation. (4) Participants or their families actively requested to discontinue during the treatment period.

1.6 Sample Size Estimation

Sample size calculation basis and formula: Based on previous related literature reports [10-12], the estimated efficacy rate of Group A (Celecoxib group) is about 63.30%, the estimated efficacy rate of Group B (Zhuang Medicine Moxibustion group) is about 83.30%, the estimated efficacy rate of Group C (Zhuang Medicine Moxibustion combined with Celecoxib group) is about 96.67%. From the perspective of efficacy, according to statistical requirements, with a two-sided test, taking $\alpha=0.05$ and $\beta=0.2$ (test power, that is, Power=1-β=80%), according to the calculation formula: $n=2\lambda/(2\sin^{-1}\sqrt{(Pmax)} - 2\sin^{-1}\sqrt{(Pmin)})^2$, n is the sample size required for each group, Pmax and Pmin are the maximum and minimum rates, respectively, λ is the critical value when the degree of freedom v=k-1, which can be obtained by consulting the λ value table, randomly assigned in a 1:1:1 ratio, Pmax=0.9375, Pmin=0.6330, v=3-1=2, $\alpha=0.05$, $\beta=0.2$, consulting the table yields $\lambda_{0.05,2}=9.63$, substituting the values into the formula gives: n=22.05=23, with a dropout rate of 20%, Considering the actual situation, the preliminary estimated total number of participants is 90, with 30 in each group.

1.7 Treatment Methods

1.7.1 Group A

Administer Celecoxib capsules (Celebrex, National Drug Approval Number J20120068, 0.2g per capsule, Pfizer Inc.) 0.2g per dose, once daily, orally, for 1 week.

1.7.2 Group B

Administer Zhuang Medicine Moxibustion (Zhuang Medicine Moxibustion sticks, specifications: 70mm×250mm, produced and provided by Guangxi Jingdu Trading Co., Ltd. Shelf life: 5 years, stored in a cool, dry place) for treatment, Acupoint selection method: Refer to "Cold hands, hot back, swelling in plum, withered muscles, pain along

the meridians, only itching disease grabs the eldest son, all diseases moxibustion does not leave the hometown" [13], Acupoints: Select the Huatuo Jiaji points on the upper and lower sides of the diseased intervertebral disc, Huantiao, Weizhong, Yanglingquan, Ashi points, and the affected side's Geshu, Ciliao, Yinmen, Chengshan points. Operation method: (1) Prepare the fire source. Generally, an alcohol lamp is used to ignite the incense moxa. (2) Reasonably select acupoints and formulate prescriptions, ensuring accurate acupoint selection. (3) Choose an appropriate position to fully expose the acupoints, ensuring comfort. (4) Generally, three methods of incense moxibustion are used. Mild moxibustion: When performing moxibustion, ignite one end of the incense moxa stick, aim at the area to be moxibusted, and bake at a distance of 2-3 cm from the skin, ensuring that the moxibusted area feels warm but not painful. Generally, each acupoint is treated for 2-3 minutes until the skin becomes red. Pecking moxibustion: When performing moxibustion, the ignited end of the incense moxa stick does not need to be fixed at a specific distance from the skin of the moxibusted area. Instead, it moves up and down like a bird pecking, ensuring that the moxibusted area feels warm but not painful. Generally, each acupoint is treated for 2-3 minutes until the skin becomes red. Rotating moxibustion: When performing moxibustion, the ignited end of the incense moxa stick is kept 2-3 cm away from the skin of the moxibusted area, but the position is not fixed. Instead, it moves evenly left and right or rotates repeatedly with the moxibusted area as the center. The standard is local skin redness and warmth at the acupoint without a burning sensation. Mild moxibustion, pecking moxibustion, and rotating moxibustion are performed sequentially. After moxibustion, place the ignited end of the incense moxa stick into an extinguisher for future use. Perform incense moxibustion once daily, each session lasting about 10-15 minutes, for continuous treatment of 7 days.

1.7.3 Group C

In addition to Zhuang medicine incense moxibustion treatment, administer oral celecoxib capsules, following the same method as above.

1.8 Observation Indicators

1.8.1 Pain Intensity Assessment

Pain in the three groups was assessed using a Visual Analog Scale (VAS) before treatment and after 7 days of treatment: A 10 cm horizontal line is drawn on paper, with one end marked 0 representing no pain and the other end marked 10 representing severe pain; the middle portion indicates varying degrees of pain. Clinical efficacy is evaluated as follows: "0-2" points for "excellent", "3-5" points for "good", "6-8" points for "fair", and >"8" points for "poor". Patients are instructed to mark on the scale according to their current level of pain.

1.8.2 Lumbar Function Assessment

Lumbar function in the three groups was assessed using the Japanese Orthopaedic Association (JOA) Lumbar Function Scale before treatment and after 7 days of treatment: This includes bladder function, limitations on daily activities, clinical signs, and subjective symptoms. The total score is 29 points, with 25-29 points being "excellent", 16-24 points being "good", 10-15 points being "fair", and <10 points being "poor". The better the lumbar function, the higher the score.

1.8.3 Traditional Chinese Medicine Syndrome Score

Refer to the diagnostic criteria for lumbar intervertebral disc herniation (blood stasis syndrome) in the "Criteria of Diagnosis and Therapeutic Effect of Diseases and Syndromes in Traditional Chinese Medicine" [9], and evaluate the main symptoms and signs (including stabbing low back pain, pain aggravated by pressure, worse pain at night than during the day, restricted movement, muscle stiffness) before treatment and 7 days after treatment. Scores of 0, 2, 4, and 6 are assigned based on severity, and the total score is the sum of the individual scores. The higher the total score, the more severe the condition.

1.9 Efficacy Evaluation Criteria

Refer to the efficacy evaluation standards for lumbar intervertebral disc herniation in the "Criteria of Diagnosis and Therapeutic Effect of Diseases and Syndromes in Traditional Chinese Medicine" issued by the State Administration of Traditional Chinese Medicine [9], evaluate the efficacy based on the TCM syndrome score after treatment, and commonly use the nimodipine method for efficacy assessment. Nimodipine method calculation: Efficacy index (%) = [(TCM syndrome score before treatment - TCM syndrome score after treatment) ÷ TCM syndrome score before treatment] × 100%. Cure: Disappearance of low back and leg pain, straight leg raise above 70°, able to return to

original work. Improvement: Reduced lower back and leg pain, and improved lumbar mobility. Unhealed: No improvement in symptoms and signs. Total effective rate = significant efficiency rate + effective rate.

1.10 Adverse Reactions

Record the adverse reactions occurring during the treatment in both groups, including local swelling, fever, diarrhea, and headache.

1.11 Statistical Methods

Use SPSS26.0 software for statistical analysis of the data. Measurement data are described by mean ± standard deviation, using a t-test or analysis of variance (ANOVA) for normal distribution and homogeneity of variance; count data are expressed as rates (%), using a chi-square test; rank data are analyzed using a rank-sum test. $P < 0.05$ indicates statistical significance.

2. Results

2.1 Comparison of Clinical Efficacy Among Three Groups of Patients

The total effective rates among the three groups were compared using the chi-square (χ^2) test, and the differences were statistically significant ($P < 0.05$). The total effective rate of Group C was significantly higher than that of Groups A and B ($P < 0.05$). There was no statistically significant difference in the total effective rate between Group A and Group B ($P > 0.05$) (see Table 1).

Table 1. Comparison of Clinical Efficacy Among Three Groups of Patients (n (%))

Group	Number of cases	Clinical cure	Marked effect	Effective	Ineffective	Total effective rate
A	30	8	12	2	8	22(73.33)*
B	30	7	9	3	11	19(66.67)*
C	30	11	15	2	2	28(93.33)
χ^2			——			6.070
P			——			0.048

Notes: Compared with Group C, the clinical efficacy showed a statistically significant difference (*$P < 0.05$).

2.2 Comparison of VAS Scores Before and After Treatment Among Three Groups of Patients

Before treatment, there were no statistically significant differences in VAS scores among the three groups ($P > 0.05$). After treatment, VAS scores decreased in all three groups. The post-treatment VAS scores in Group C were significantly lower than those in Groups A and B ($P < 0.05$). Additionally, the post-treatment VAS score in Group A was significantly lower than that in Group B ($P < 0.05$) (see Table 2).

Table 2. Comparison of VAS Scores Among Three Groups of Patients (Mean ± SD)

Group	Number of cases	VAS	
		Before treatment	Days after treatment
Group A	30	6.28±0.45	2.86±0.22*#$
Group B	30	6.58±0.25	3.58±0.29*#
Group C	30	6.63±0.32	1.87±0.25#
F		8.845	342.646
P		<0.001	<0.001

Notes: Compared with Group C after treatment, *$P < 0.05$; Compared with before treatment, #$P < 0.05$; Compared with Group B after treatment, $$P < 0.05$.

2.3 Comparison of JOA Scores Before and After Treatment Among Three Groups of Patients

Before treatment, there were no statistically significant differences in JOA scores among the three groups ($P > 0.05$). After treatment, JOA scores increased in all three groups. However, the post-treatment JOA scores in Group C were significantly higher than those in Groups A and B ($P < 0.05$). Additionally, the post-treatment JOA score in Group A was significantly higher than that in Group B ($P < 0.05$) (see Table 3).

Table 3. Comparison of JOA Scores Among Three Groups of Patients (Mean ± SD)

Group	Number of cases	JOA	
		Before treatment	Days after treatment
A	30	9.93±2.30	19.37±2.30$^{*\#\$}$
B	30	10.20±2.16	17.63±1.94$^{*\#}$
C	30	11.27±1.89	24.03±1.67$^{\#}$
F		3.31	83.4
P		0.041	<0.001

Note: Compared with Group C after treatment, $^{*}P < 0.05$; Compared with before treatment, $^{\#}P < 0.05$; Compared with Group B after treatment, $^{\$}P < 0.05$.

2.4 Comparison of Adverse Reactions Among Three Groups of Patients

The comparison of the total incidence rates of adverse reactions among the three groups showed no statistically significant differences after χ^2 testing ($P > 0.05$) (see Table 4).

Table 4. Comparison of Total Incidence Rates of Adverse Reactions Among Three Groups of Patients (n (%))

Group	Number of cases	Exacerbation of local pain	Pruritus\Erythema and swelling	Gastrointestinal reactions	Allergic reactions	Overall occurrence
A	30	0	0	3	1	4(13.33)
B	30	0	2	0	0	2(6.67)
C	30	0	1	0	0	1(3.33)
χ^2			—			2.169
P			—			0.338

3. Discussion

Lumbar intervertebral disc herniation (LDH) is a degenerative disease caused by various factors leading to disc degeneration, annulus fibrosus rupture, and nucleus pulposus herniation, which irritates or compresses the nerve roots or dura mater, manifesting primarily as low back pain and radiating pain in the lower limbs. In recent years, with the changes in lifestyle and work patterns of modern people, the incidence of LDH has been gradually increasing [14], and the age of onset is polarizing, with more and more cases in middle-aged, elderly, and young people [15, 16], causing a significant burden on society and the economy [17].

Treatment of LDH in Western medicine is mainly divided into conservative and surgical treatments [18, 19]. Conservative treatment mainly involves oral Western medications such as non-steroidal drugs, but the efficacy is often unsatisfactory, there are some adverse reactions [20], and it is prone to recurrence after discontinuation of the medication [21]. Surgical treatment is highly invasive, expensive, and not easily accepted by patients [10]. Minimally invasive treatment has gradually been applied clinically to treat LDH with the advancement of medical technology, effectively relieving nerve root compression symptoms, but it has significant limitations and can easily damage the nerve roots during the operation [22]. Therefore, more and more LDH patients are opting for effective and less adverse traditional Chinese medicine and ethnic medicine treatments.

LDH falls under the categories of "yaobi," "bi syndrome," and "lumbago" in traditional Chinese medicine [23]. It is mostly caused by kidney deficiency leading to malnourishment of the lumbar region, invasion of external pathogens,

or lumbar injury, resulting in qi and blood stagnation. According to the TCM differentiation of "deficiency, evil, and stasis," this disease can be classified into three categories and seven types [24]. Blood stasis syndrome is a common pattern of LDH [25], in terms of internal Chinese medicine, Shen Tong Zhu Yu Decoction is often used in clinical practice, achieving certain therapeutic effects [26]. External treatment methods in TCM (such as acupuncture, massage, moxibustion, and topical application of Chinese herbs) can effectively alleviate pain, improve lumbar function, and enhance the quality of life for patients with LDH, with fewer adverse reactions [27]. In Zhuang medicine, lumbar disc herniation (LDH) is called "He Ga Yin," and it falls under the category of meridian and muscle diseases. This condition is influenced by internal and external factors that affect the functions of the "three pathways" and "two routes," leading to desynchronization of the three qi, causing muscle and tendon pathology manifested as post-muscle injury pain, soreness, stiffness, and restricted movement. Zhuang's medical theory emphasizes the importance of the Loong Pathway (circulatory system) and Fire Pathway (nervous system). When the Loong Pathway is obstructed, numbness, weakness, and coldness in the waist and lower limbs occur; When the Fire Pathway is obstructed, it manifests as numb pain or burning pain. Clinically, LDH is mostly due to obstruction of the Fire Pathway, with the protruding nucleus pulposus stimulating or compressing the spinal cord and nerve roots, leading to low back pain, sciatica, and reduced skin sensation in the lower limbs [28]. Ethnic medicine, due to factors such as history, geography, beliefs, language, and customs, is deeply rooted in ethnic minority cultures, enjoying a broad social and popular foundation in ethnic regions through cultural identity. Its diagnostic and preventive healthcare methods are characterized by "simplicity, convenience, affordability, effectiveness, and quickness," featuring high "affordability" and "accessibility," effectively alleviating medical issues in ethnic regions and reducing medical costs. Zhuang medicine's aromatic moxibustion therapy, as one of the distinctive medical techniques of Zhuang medicine, uses specially made aromatic Zhuang medicinal moxibustion sticks. It is a common external treatment method in Zhuang medicine for treating and preventing diseases by applying burning or warming moxibustion at acupoints and specific areas. It has functions such as aromatic warming, promoting blood circulation to remove blood stasis, softening hardness, and dissipating nodules, soothing the liver and relieving depression, regulating qi and relieving pain, and unblocking the dragon and fire paths, and adjusting the qi, grain, and water paths. It exerts its effects through medicinal and thermal forces to relieve symptoms [29]. Studies have shown that Zhuang medicine's aromatic moxibustion therapy has certain efficacy in treating hyperuricemia, ankylosing spondylitis, mammary gland hyperplasia, and other conditions [30, 31].

Clinical research indicates that intervertebral disc degeneration is a fundamental factor in the occurrence of lumbar disc herniation (LDH). There are three main theories regarding the mechanisms of symptom production after lumbar disc herniation: mechanical compression theory, chemical radiculitis theory, and autoimmune theory. Initially, LDH was thought to be merely mechanical compression caused by intervertebral disc degeneration. The current view suggests that inflammation/immunoreaction arising from intervertebral disc degeneration can accelerate disease progression or exacerbate clinical symptoms [32, 33]. After the nucleus pulposus protrudes, it can induce the expression of pro-inflammatory factors, and the compressed nerve roots can stimulate the production of inflammatory mediators, thereby triggering an inflammatory response [34]. Protease activation is an important pathway of inflammatory response. The inflammatory response promotes the secretion of matrix metalloproteinases (MMPs) and activates their expression, leading to the degradation of the extracellular matrix (ECM), loss of collagen components, and ultimately the occurrence and development of LDH [35]. Interleukin-6 (IL-6) and tumor necrosis factor-alpha (TNF-α) as common inflammatory cytokines, their levels are closely related to the occurrence, development of inflammation, and intervertebral disc degeneration [36, 37].

The results of this clinical study indicate that Zhuang medical moxibustion with fragrant herbs can reduce VAS scores and TCM syndrome scores while increasing JOA scores. This suggests that Zhuang medical moxibustion has a significant effect in relieving pain and improving lumbar spine function, with high safety. However, due to the small sample size, lack of longer-term treatment and follow-up, and absence of multicenter studies, the anti-inflammatory mechanisms of Zhuang medical moxibustion therapy for lumbar disc herniation (LDH) have not been further investigated. Nevertheless, the current findings provide evidence supporting the broader clinical application of Zhuang medical moxibustion therapy and lay a clinical foundation for further research.

In summary, Zhuang medicine's aromatic moxibustion has good clinical efficacy in treating lumbar disc herniation, is simple to operate, has few adverse reactions, and is worthy of further research and promotion.

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