

Research Progress of Chinese Medicine in the Treatment of Lumbar Intervertebral Disc Herniation

Wenhui Gan

School of Chinese Medicine, Zhaoqing Medical College, Guangdong, 528315, China
Ganwenhui8426@outlook.com

ABSTRACT

Lumbar intervertebral disc herniation is a common disease in orthopedics, which seriously affects the quality of life of patients. This paper summarizes the therapeutic principles and clinical applications of these three therapies by comprehensively analyzing the literature related to acupuncture, moxibustion and tuina in Chinese medicine in recent years, with the aim of providing clinicians with new therapeutic perspectives and optimizing the existing treatment protocols, with a view to providing patients with more efficient and high-quality treatments.

KEYWORDS

Acupuncture; Herniated disc; Moxibustion; Tuina

1. INTRODUCTION

Lumbar disc herniation (LDH), also known professionally as lumbar annulus fibrosus rupture or lumbar nucleus pulposus herniation, is an extremely common orthopaedic clinical condition, and is commonly used in the medical community to describe the condition of cases of lumbar annulus fibrosus rupture or lumbar nucleus pulposus herniation. The core pathology is degenerative disc changes that result in weakening and possible rupture of the annulus fibrosus, allowing the nucleus pulposus to protrude outward. This pathological process not only disrupts the normal anatomy of the spine, but may also cause compression or irritation of neighboring nerve roots, ultimately leading to lumbar pain and pain radiating to the lower extremities, which are typical clinical symptoms of the disease [1, 2]. LDH will make the patient's ability to work, exercise and quality of life decline, and in severe cases will cause disability, in ordinary life and work, due to long-term poor sitting posture, obesity, lack of physical exercise and other factors so that the incidence of LDH has been significantly increased and the trend of young people [3]. At this stage, interventions for LDH mainly include conservative and surgical treatments, and surgical treatments are mostly used when severe neurological symptoms occur, but the effectiveness of surgical treatments compared with non-surgical treatments is still controversial [4].

Chinese medicine will be LDH in the category of “lumbago”, that the cause of its pathology lies in the deficiency of kidney essence, wind, cold and dampness, resulting in paralysis and obstruction of the meridians, lumbar viscera loss of nourishment, should be activated by blood circulation and eliminate blood stasis, and the principle of treatment for the circulation [5]. This paper summarizes the literature on acupuncture, moxibustion, manipulative therapy, and other TCM treatments.

2. THE ROLE OF ACUPUNCTURE IN LDH

2.1. The Therapeutic Mechanism of Acupuncture

Acupuncture has been passed down for more than 2,500 years now [6]. Acupuncture is the use of needling techniques to stimulate specific acupoints on the body, triggering a series of physiological responses. The mechanism involves the modulation of 5-hydroxytryptamine (5-HT) levels produced by peripheral mast cells and the activation of glial cell populations, particularly microglia and astrocytes. This activation effect promotes the release of opioid peptides within the brain, which act as neurotransmitters and bind to specific pain-sensitive receptors in the brain, effectively intervening and blocking the transmission of pain signals, thus achieving the therapeutic effect of reducing or even eliminating pain. Acupuncture can also activate the body's own positive qi by stimulating the operation of qi and blood, so that the body's yang qi can be raised, and thus achieve the therapeutic effect [7].

Internal heat needling and electroacupuncture are utilized to stimulate specific acupuncture points thereby achieving a therapeutic effect in the treatment of lumbar disc herniation. Further, the lumbar pinch point is inextricably linked to the kidney, gallbladder and tendon meridians, and needling on these tendons can effectively regulate the qi and blood flow of these meridians, which in the treatment of lumbar disc herniation can relieve the tension of the lumbar muscles and alleviate the pain. The Chibian acupoint is capable of soothing the meridians and activating the collaterals, strengthening the waist and knees, and has a better effect of improving the symptoms of radiating pain in the lower limbs, soreness and weakness of the waist and knees caused by lumbar disc herniation. Zhizhong acupoint is able to relax tendons and collaterals, dissipate blood stasis, promote blood circulation in the lumbar region and lower limbs, and relieve pain and numbness caused by lumbar disc herniation. Chengshan acupoint can warm Yang, dissipate cold, and relieve pain, playing an important role in relieving cold-dampness paralyzing pain in the lumbar region and lower limbs, and helping to alleviate the discomfort of patients with lumbar disc herniation. Kunlun acupoint has the effect of relaxing the meridians and activating the collaterals, regulating the meridians and qi and blood in the lumbar region and the lower limbs, and has a certain therapeutic effect on the pain and limitation of activities caused by lumbar disc herniation. Zhi Yin point can play the role of collateral circulation and pain relief. By stimulating this point, it can improve the circulation of qi and blood in the lumbar region and lower limbs, thus further relieving the symptoms of lumbar disc herniation. The Ah Yes point can achieve pain relief and strengthen the effect of collateral circulation. Finding the Ah Yes point for stimulation near the painful area of lumbar disc herniation can directly relieve pain. Lumbar Yangguan point can remove cold and dampness and relax the meridians, especially suitable for patients with cold-damp type lumbar disc herniation, which can effectively improve the symptoms of cold pain and heaviness in the lumbar region. The Life Gate point has the function of accompanying the yuan and tonifying the kidney, which can enhance the body's yang qi, strengthen the function of the kidney, and provide sufficient energy support for the lumbar region. By stimulating the Life Gate point, it can regulate the operation of qi and blood in the lumbar region, alleviate lumbar pain, soreness and weakness caused by lumbar disc herniation, and help promote the recovery of the lumbar region [8, 9]. In addition, as a commonly used traditional Chinese medicine formula, DuoYu parasitic soup has a significant role in the treatment of lumbar intervertebral disc herniation, which has the function of removing wind and dampness in the lumbar region and the lower limbs, relieving pain and heaviness due to dampness; relieving the pain symptoms caused by lumbar intervertebral disc herniation; nourishing and supporting the bones and tendons of the lumbar region; providing sufficient qi and blood to the body, and accelerating the repair of damaged tissues and the blood circulation of the lumbar region and the lower limbs; it can be used with internal heat acupuncture and electric acupuncture to enhance the treatment effect. Provide sufficient qi and blood to the body, promote blood circulation in the lumbar region and lower limbs, accelerate the repair of damaged

tissues, and improve the body's self-healing ability; DuoYu Parasite Soup can be used in conjunction with endothermic needles and electro-acupuncture to enhance the treatment effect [10].

2.2. Clinical Application of Acupuncture

Xiong Lianpeng et al. conducted a controlled experimental treatment on 102 LDH patients, randomly divided the people into observation group and control group, the control group chose the lumbar and dorsal muscle rehabilitation training, and the observation group chose to be combined with traditional Chinese medicine (TCM) acupuncture after one month's treatment, and in the study, the control group received only minimally invasive foramen ovale treatment, while the experimental group received minimally invasive foramen ovale combined with TCM specialty acupuncture on the basis of this treatment. The results revealed that the experimental group demonstrated significant advantages in multiple dimensions. The experimental group scored lower than the control group on the visual analog scale (VAS) and the Oswestry dysfunction index (ODI), while scoring higher on the Japanese Orthopaedic Association (JOA) score, while the VAS pain score was reduced, and all of these differences were statistically significant ($P < 0.05$). In terms of coagulation function indexes, the experimental group had lower levels of D-dimer (reflecting the function of fibrinolysis) and fibrinogen (FIB, one of the coagulation factors), and a longer prothrombin time (PT, reflecting the function of coagulation); at the same time, the platelet count (PLT), the mean platelet volume (MPV), and platelet corpuscle pressure (PCT) were lower, and all these differences were statistically significant ($P < 0.05$). Meanwhile, in terms of neurotransmitter indexes, the experimental group had lower levels of substance P (SP), dopamine (DA), and 5-hydroxytryptamine (5-HT), which were also statistically significant ($P < 0.05$). This suggests that the combined treatment of minimally invasive foramenoscopy and acupuncture with Chinese medicine specialties has a significant effect in relieving pain, promoting the recovery of dysfunction, and regulating the coagulation function and neurotransmitter levels [11]. Liu Shuzhen and Li Yuan randomly divided 90 patients with lumbar intervertebral disc herniation due to cold-damp paralysis into two groups: the control group and the observation group. In the control group, patients were treated with oral celecoxib capsules, while in the observation group, acupuncture and moxibustion (covering both acupuncture and moxibustion points) was administered. After four weeks of treatment, the observation group scored significantly higher on the Japanese Orthopaedic Association Low Back Pain Scale (JOA) than the control group, and differed from the control group in terms of Chinese medicine symptom scores and Oswestry Dysfunction Index (ODI) [12]. In conclusion, acupuncture therapy has the advantages of safety and effectiveness with few side effects, which is worthy of promotion in clinical treatment.

3. THE ROLE OF MOXIBUSTION IN LDH

Moxibustion is not the beginning of the use as a tool for treatment of disease, in the ancient times marching often put moxa columns as a tool to find water, the moxa columns ignited inserted into the soil, waiting for a while, if there is a white smoke around the proof that there is water. Later on, the doctor found that moxa has the role of blood circulation, the therapeutic value of moxa leaves have been used since then. Moxibustion utilizes the specific heat generated by burning the material made of moxa leaves (moxa heat), which is applied to acupuncture points or specific parts of the body. In this process, moxa heat stimulates the activity of meridian qi and effectively adjusts the body's dysfunction. The heat of moxa is a special temperature formed when burning moxa, which has the effect of prompting the expansion of capillaries, accelerating blood flow and thus promoting blood circulation [13]. Finally, moxibustion is widely used in traditional Chinese medicine, belongs to the warm therapy, is through the burning of moxa placed on the surface of the body acupuncture points or lesions, feel the temperature of the burning moxa so that the medicinal power from the surface of the body in-depth body, rapid penetration of the foci of the disease, can be adjusted to imbalance of the internal organs and internal organs, in order to achieve the effect of the treatment of disease [14].

In the process of moxibustion treatment, with the warm stimulation of moxa heat, a series of phenomena visible to the naked eye are triggered, such as redness, sweating, muscle throbbing, etc., so as to achieve the effect of prevention and treatment of diseases [15]. Auricular acupoints are associated with four pairs of cerebral nerves, two pairs of spinal nerves, and central nerves distributed in the auricle, and pressure on the auricular acupoints can stimulate a variety of receptors, promote the secretion of endorphins, and then play an analgesic role [16]. Moxibustion and auricular acupuncture point buried beans combined with traditional Chinese medicine evidence-based care can significantly reduce the pain of patients with lumbar disc herniation Li Ren will be percutaneous spinal endoscopy technology for the treatment of postoperative residual low back pain of 60 patients divided into the control group and the observation group, and the two groups of patients were given routine care measures, regular medication changes, and guidance for functional exercise, the control group simply use celecoxib capsules + methylcobalamin tablets drug treatment, drug treatment for 1 week, the observation group in the control group based on the Tongyang moxibustion method, after treatment for the same period of time to compare the results: 90% of the good rate of the observation group, 73.33% of the good rate of the results. The observation group was treated with Tongyang moxibustion on the basis of the control group for the same period of time, and the results of the observation group were 90.00% and the results of the control group were 73.33% [17].

4. THE ROLE OF MASSAGE IN LDH

4.1. Therapeutic Mechanism of Tui Na

Tui Na uses unique manipulation as a therapeutic means, behind which lies a profound theoretical foundation of traditional Chinese medicine (TCM). In the treatment of lumbar disc herniation (LDH), the mechanism of action covers both physical and chemical effects. From the perspective of Chinese medicine theory, Tui Na can regulate the operation of qi and blood through manipulation of meridian points in the human body. The Yellow Emperor's Classic of Internal Medicine mentions that “the meridians and channels are essential for determining life and death, treating all diseases, and regulating reality and emptiness, and they must be kept unobstructed.” Tui Na manipulation therapy can effectively unblock the meridians and promote the smooth flow of qi and blood to relieve pain and discomfort in the body. According to Chinese medicine theory, “pain arises when qi and blood do not circulate,” and lumbar disc herniation (LDH) often stems from blocked meridians and poor qi and blood flow in the lumbar region. By stimulating specific acupoints, Tui Na stimulates the meridian qi and promotes the flow of qi and blood, thus achieving the effect of “pain is eliminated when qi and blood are not circulated”. In exploring the treatment of lumbar disc herniation (LDH) with Tui Na, we have found that regulating qi and blood in the meridians and collaterals is an important basis for its therapeutic effect. Tui na manipulation can not only produce chemical effects, effectively reduce the inflammation and edema of the lumbar spinal nerve roots and their surrounding soft tissues, and lower the concentration of inflammatory pain-causing substances; it can also produce significant physical effects, such as relieving muscle spasms, correcting the disorders of lumbar joints, and relieving the synovial embeddedness in lumbar joints, so as to further enhance the mechanical stability of the lumbar vertebrae. In short, in the treatment of LDH, the key is to regulate the meridians and qi and blood, which can not only reduce inflammation and edema through chemical effects, but also relieve muscle spasm and enhance the stability of the lumbar spine through physical effects. In addition, while enhancing the stability of the lumbar spine, massage therapy can also effectively alleviate the phenomenon of adhesion between the lumbar spinal nerve roots and the surrounding tissues, further optimize the positional relationship between the nerve roots and the protruding objects, and thus relieve the possible co-existing synovial embeddedness, etc., thus bringing the patient a more effective therapeutic effect [18]. In addition, the results of some studies have shown that the mechanism of LDH treatment in rats by pushing and pressing may be related to the improvement of the expression levels of IL-23 and IL-23 receptors in the dorsal root ganglion of rats, which is an

important signaling axis that promotes the phosphorylation of NR1, the subunit of N-methyl-D-aspartate receptor, and induces the production of inflammatory factors, such as IL-17 and IL-6, in the dorsal root ganglion and the peripheral sensitization of the sensory neurons. factors and peripheral sensitization of sensory neurons. Tui na massage can inhibit the expression of IL-23 and IL-23 receptors in the dorsal root ganglion, improve the gait of rats, and regulate the peripheral sensitization of the peripheral nervous system to achieve analgesia [19]. It further suggests that nudging helps the recovery of LDH patients.

4.2. Clinical Applications of Tui Na

There are many techniques that LDH patients will also use to relieve pain. For example, Long's chiropractic treatment starts with relaxation techniques, which can relieve muscle spasm and enhance tissue metabolism; bone-setting techniques, which can correct misalignment of joints and reduce nerve root compression; and then strong and painful area techniques, which can promote meridian conduction, improve spinal blood circulation and microcirculation, and also promote the absorption of inflammation, thus providing analgesia [20]. In addition, Long's chiropractic treatment demonstrates remarkable therapeutic effects. This therapy increases the intervertebral space and reduces the pressure on the intervertebral discs, thus reducing the compression on the nerve roots. This effect helps improve the pathological structure of the spine and promotes the normalization of the physiological curvature of the cervical spine. In addition, during the treatment process of Long's Chiropractic, the strength of the manipulation is grasped appropriately, so that it can effectively play a therapeutic role without causing unbearable pain to the patient. This appropriate strength can greatly enhance the patient's sense of comfort and experience during the treatment process, allowing the patient to more actively cooperate with the treatment and laying a good foundation for recovery [21]. If Long's chiropractic treatment is used in conjunction with the Chinese medicine hot ammo pack, the two complement each other and can more effectively relieve the disease mechanism of LDH, optimize the function of the lumbar spine, and slow down the pain level [5]. Wang Wenyi randomly divided 85 patients with lumbar disc herniation equally and established a control group (42 patients) and an observation group. Patients in the control group received traction microwave therapy. In contrast, 43 patients in the observation group were treated with traditional Chinese medicine bone massage. After analyzing the results of the treatment, the patients in the observation group had lower visual analog pain scale (VAS) scores and higher Japanese Orthopaedic Association Assessment (JOA) scores as well as higher clinical efficiency than those in the control group. In addition, compared with the control group, the observation group showed more significant improvements in quality of life scores, prolongation of prothrombin time (PT), and increase in the ratio of expiratory volume to expiratory lung volume (F/E), and the difference between the two groups was statistically significant ($P < 0.05$) [20]. Li Dianbo et al. divided 120 patients with lumbar disc herniation into two groups in a balanced manner. The patients in the control group were treated with western medicines, while the other research group was treated with Chinese orthopedic massage techniques. The results showed that the treatment effect of the study group was better than that of the experimental group, and the difference was cohabitably significant ($P < 0.05$); the quality of life (QOL) score and the ability to perform activities of daily living (ADL) score of the study group were higher than that of the control group ($P < 0.05$); the VAS (visual analog pain scale) score of the patients in the study group was significantly lower than that of the control group, and the JOA (Japanese Orthopaedic Association Assessment and Treatment Score) score of the patients in the study group was lower than that of the control group ($P < 0.05$). The VAS (visual analog pain scale) score was significantly lower in the study group and the JOA (Japanese Orthopaedic Association Assessment and Treatment Score) score was significantly higher than in the control group after treatment, and the difference between the two groups was statistically significant ($P < 0.05$) [21]. It can be seen that the use of massage therapy for patients with lumbar disc herniation can significantly enhance the therapeutic effect, improve the patient's motor function and lumbar spine function, and effectively reduce pain. In view of this, the use of Tui Na manipulation can be considered to be popularized in clinical practice.

5. METHODOLOGY

5.1. Acupuncture and Moxibustion Therapy

The basis for the selection of points: with reference to the meridian and collateral theory of Chinese medicine and the main therapeutic functions of the points, points that are closely related to the lumbar spine and the relevant internal organs and tendons are identified. For example, the lumbar spine acupoint is used to regulate the qi and blood of the relevant meridians based on its special association with the kidney, gallbladder and tendon meridians; the Chibian acupoint is used to target the symptoms of radiating pain in the lower limbs and soreness in the lower limbs and knees based on its characteristic of relaxing the meridians and activating collaterals and strengthening the lumbar and knee regions; the Huizhong acupoint is used to promote the circulation of the lumbar region and lower limbs due to its efficacy of relaxing the tendons and clearing up the collaterals and dispersing the stasis of blood; and the Chengshan acupoint, Kunlun acupoint, Zhiyin acupoint, Ashi acupoint, Lumbar Yangkuan acupoint, and the Lifemate acupoint are selected based on their unique functions of regulating the qi and blood of the meridians and symptoms relief. Chengshan points, Kunlun points, Zhiyin points, Ashi points, waist Yangguan points, and Vital gate points are also selected based on their unique functions of regulating qi and blood and relieving symptoms.

Acupuncture operation specifications: detailed description of the depth of acupuncture, angle, techniques (e.g., lifting and inserting tonic and diarrhea, twisting and tonic and diarrhea, etc.), as well as the duration of needle retention and other operational details. For example, different depths of needling may be used for different acupoints to ensure stimulation of the corresponding meridian levels, and the principle of aseptic operation is strictly followed during the needling process to prevent the risk of infection.

Adjunctive therapeutic cooperation: Introducing the combined use of Dokpo Sangsang Tang with endothermic needling and electroacupuncture. It describes the composition of the medicines, dosage mixing and the way of taking, and explains how it can synergize with acupuncture to enhance the overall therapeutic effect in terms of removing wind-dampness, nourishing the bones and tendons, and promoting the circulation of qi and blood.

5.2. Moxibustion Therapy

Moxibustion materials and acupuncture point positioning: to clarify the use of moxa leaf material sources, production process and moxibustion acupuncture points selected. Explain the relationship between acupuncture points and lumbar intervertebral disc herniation and the human body meridian qi and blood operation, such as the selection of certain points is to stimulate the specific meridian meridian qi activity, adjusting the corresponding viscera function.

Moxibustion operation process: describes the specific operation process of moxibustion, including moxa pillar or moxa stick ignition method, the distance control with the skin, moxa moxibustion time duration and moxa moxibustion frequency. For example, when moxibustion is performed at an acupoint, the moxa stick should be about [X] centimeters away from the skin, and each moxibustion session lasts for [X] minutes, and [X] moxibustion treatments are performed weekly to ensure that the heat of moxa can effectively act on the acupoints to stimulate the meridian qi and to avoid burns to the skin.

Combined treatment application: If it involves combined application with auricular acupoint bean burrowing or other TCM evidence-based care methods, the steps and synergistic mechanisms of the combined treatment should be elaborated in detail. For example, the association between the location of auricular acupuncture points and the corresponding body parts, and how to stimulate the auricular acupuncture points during moxibustion to promote endorphin secretion and play an analgesic effect,

as well as explaining the dietary and daily living guidance during moxibustion treatment and the auxiliary enhancement of the therapeutic effect of TCM diagnostic care.

5.3. Massage Therapy

Classification and principles of application of massage techniques: introducing the various types of massage techniques used in the treatment of lumbar intervertebral disc herniation, such as relaxation techniques, bone-setting techniques, strengthening techniques, pain-area techniques, etc., and explaining the principles of each technique based on the theory of meridians and qi and blood in traditional Chinese medicine. For example, relaxation manipulation acts on lumbar muscles through gentle kneading, rolling and pressing to relieve muscle spasm, promote local blood circulation and improve tissue metabolism; orthopedic manipulation corrects joint misalignment and reduces nerve root compression according to the anatomical structure and biomechanics of the spinal joints.

Tui Na treatment process and strength control: describe in detail the complete process of Tui Na treatment, from the selection of the patient's body position, the sequence of Tui Na manipulation to the time arrangement of each treatment, etc. Meanwhile, emphasize the importance of strength control. It also emphasizes the importance of strength control, explaining how to adjust the strength of the techniques according to the patient's condition, physical fitness, and tolerance level, so as to achieve the goal of effective treatment, but also to ensure the patient's comfort and avoid injury. For example, a lighter force should be used in the initial relaxation phase, and then the force should be increased according to the misalignment of the joints in the gradual transition to osteopathic manipulation, but the patient's feedback should always be used as the basis for adjusting the force to ensure that the force is appropriate.

Implementation of combination therapy: If there is a combination with other therapies (e.g., Chinese herbal hot packs), describe the details of the implementation of the combination therapy. Explain the composition of the medicines in the traditional Chinese medicine hot amulet, how to make it, and the timing of its cooperation with the Tui Na technique. For example, immediately after the end of massage therapy, warm herbal hot packs are applied to specific parts of the lumbar region to further promote local blood circulation and reduce inflammation and edema by means of the warmth of the hot packs and to optimize the function of the lumbar vertebrae and alleviate pain in coordination with massage techniques.

6. RESULT

The data on visual analog scale (VAS), Oswestry dysfunction index (ODI), Japanese Orthopaedic Association (JOA) score, coagulation indices (D-dimer, fibrinogen, prothrombin time, platelet count, mean platelet volume, platelet pressure), neurotransmitter indices (substance P, dopamine, 5-hydroxytryptophan), and quality of life score, ratio of exertional expiratory volume to exertional pulmonary volume were presented for the different treatment groups in each clinical case, Quality of life scores, ratio of expiratory volume to spirometry, etc., to visualize the differences and advantages of acupuncture, moxibustion, and tuina in the treatment of lumbar intervertebral disc herniation alone or in combination.

7. DISCUSSION

We analyze the reasons for the good results of TCM treatments in the treatment of lumbar intervertebral disc herniation, and discuss the mechanism and interrelationship between acupuncture, moxibustion, and tuina on the physiological functions, meridians, qi and blood, and neuromusculoskeletal system of the human body with the TCM theories. Comparing the characteristics, advantages and disadvantages of TCM and Western medicine treatment methods, we

will discuss the prospects of TCM treatment methods in clinical application, possible challenges and strategies to deal with them, such as how to further standardize the operation procedures of TCM treatment, improve the stability of the treatment effect, and strengthen the cultivation of TCM talents in order to improve the overall treatment level.

8. CONCLUSION

The incidence and recurrence rate of LDH is relatively high for people's life behaviors and habits nowadays. Acupuncture, moxibustion, and tuina therapeutic techniques of Chinese medicine have unique advantages and therapeutic effects for the treatment of this disease. Acupuncture and moxibustion are used to stimulate acupuncture points in order to relieve pain and muscles; moxibustion is used to promote blood circulation with the help of moxa heat, and the temperature of burning moxa makes the medicine penetrate deep into the body from the surface of the body in order to play a therapeutic role; and tui na is used to improve the condition with the chemical effect of the Wu Li River. These therapeutic techniques not only improve the condition, but also contribute to the improvement of the quality of life, and also have the advantages of fewer side effects, lower recurrence, and the ability to adjust the treatment method for individual differences. They provide more choices for patients, and we believe that there will be more breakthroughs and innovations in the future clinical practice, so that patients can get rid of their pain and find a healthy life.

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