

Progress of Clinical Research on the Treatment of Spinal Disorders by the Tongdu Method

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Abstract

Spinal disorders are diseases caused by congenital, degenerative, postural errors, trauma, and external evils that result in lesions of bones, discs, ligaments, and muscles, thus compressing the nerves. Spine-related diseases include scoliosis, intervertebral disc herniation, intervertebral stenosis, spinal fracture, ankylosing spondylitis, spinal cord injury, spinal tumour, etc., which seriously affect people's daily life. This paper summarises the relevant studies on the treatment of spinal diseases by Tongzhu therapy. The mechanism of action of Tongzhu therapy in treating spinal diseases is closely related to the control of inflammatory factors, the improvement of local microcirculation, analgesia, and the promotion of nerve repair. This paper describes the application and modern mechanism of Tongzhu therapy in the treatment of spinal diseases, which will provide a direction for future research on Tongzhu therapy.

Keywords

Tongdu, Spine, Mechanism, Clinical Application

1. The Relationship between the Chiropractic Chakra and the Spine

With the aging of the world's population, the incidence of spinal disorders has increased significantly [1]. In the Chinese medicine system, the spine is involved in a wide range of categories, such as "paralysis", "spasm" and so on, mainly to local pain, stiffness and numbness, limited movement, muscle tension and other symptoms. However, the Governor and the spine have an inseparable relationship. Some scholars believe that the Governor line in the spine, the distribution of spinal nerves and the distribution of the circulation of the Governor is similar

[2]. “Huangdi Neijing Lingshu Jizhu” records, “vertebrae also, in the spine of the intersection of the joints of the bones, the pulse of the Governor also follow” [3]. This indicates that the dushi vein has a close connection with the spine.

2. Main Etiology and Mechanism of Spinal Diseases

The etiology of spinal diseases is related to deficiency of the kidney and the governor, wind-cold-dampness paralysis and phlegm-dampness stagnation. Deficiency of kidney qi, lack of source of qi and blood biochemistry, lack of vital energy, then the veins are not nourished. Wind-cold-dampness paralysis of the evil guest in the veins, resulting in qi and blood is not smooth, in the long run, the stagnation of qi and blood stasis, dushi vein disorders, triggering paralysis and pain, so the basic principle of treatment of the disease is to benefit the kidney and pass the dushi, help the yang to strengthen the dushi, and activate the blood to pass the dushi.

3. The Mechanism of Tongdu Therapy

Tongdu therapy is a special therapy for the treatment of spinal diseases. Tongdu therapy mainly includes Tongdu moxibustion, Tongdu acupuncture, Tongdu massage and so on. From the physiological function of the Dudu vein, the Dudu vein can warm the internal organs and spread the fire. Dudu line circulates in the middle of the back, back Yang can contact the hand and foot of the three sun meridians and three sun meridians, so that the yang meridian gas are met in the dudu line of the great vertebrae point, the body’s internal organs through the back of the foot of the sun meridian and the dudu line of the pulse gas communication. Therefore, Tongdu Therapy has the effect of benefiting the kidneys and helping the yang to strengthen the dukes.

3.1. Inhibition of Inflammatory Factors

Studies have shown that Tongdu therapy has an inhibitory effect on inflammatory factors. Liang Yueguang [4] and others found that Tongdu and Shenxin moxibustion can improve the motor function of rats with spinal cord injury and inhibit the expression of HMGB1, IL-1 β , IL-18, NF- κ B in the spinal cord tissues, when spinal cord nerves are damaged, the NF- κ B signalling pathway is activated, which causes related inflammatory reactions, The expression of HMGB1, IL-1 β , IL-18, and NF- κ B in the Tongduzhongshen moxibustion group (selected acupoints of Baihui, Daxi, Zhiyang, and Zhimen, each acupoint was used for 5 min once a day for 7 d) was significantly reduced, so moxibustion of acupoints of the dongdu can inhibit inflammatory factors in the spinal cord. Lu *et al.* [5] found that in the treatment of ankylosing spondylitis by tonifying the kidney and strengthening the dukkha, tonifying the kidney and strengthening the dukkha inhibited the inflammatory indexes such as blood sedimentation, C-reactive protein, IgG, IgA and IgM, and that ankylosing spondylitis, which mainly infringes on the spine, has a significant increase in the levels of serum ESR, CRP,

and RF at the time of its onset. Hou Haikun [6] *et al.* treated cold-damp paralytic obstruction type ankylosing spondylitis by warming the Yang Tongdu acupuncture method, and the results showed that warming the Yang Tongdu method has the effect of reducing inflammation, regulating the dukedong vein, and invigorating yang qi, and the treatment group in this study had a significantly lower serum ESR, CRP, and RF levels after treatment. Hou Yixiang *et al.* [7] applied the method of Tongduzhongshen acupuncture combined with acupoint injection for the treatment of ankylosing spondylitis, and the acupoints taken by Tongduzhongshen acupuncture were Baihui, Daxi vertebrae, lumbar yangguan, and Vital gate, and the CRP level of the experimental group decreased significantly compared with that of the control group after the treatment.

3.2. Improve Local Microcirculation

The Directing Vessel is called the “General Outline of Yang Vessel” and the “Sea of Yang Vessel”, which has the role of controlling Yang Qi, regulating the Qi and blood of Yang meridians, and dominating the functional activities of Yang Qi in the human body. Shen Lin *et al.* [8] took rabbits as the research object, and found that Tongdu Xiexue Tang has inhibitory effect on platelet aggregation function of rabbits, and can reduce or eliminate the pain and claudication symptoms of lumbar spinal stenosis patients. Tongdu Xiuzhu Tang can prevent platelet aggregation and anti-thrombosis, accelerate local blood circulation and increase perfusion, accelerate the absorption and dissipation of inflammatory factors, so as to alleviate neuropathic pain. Huang Wei *et al.* [9] applied the spine-adjusting and directional acupuncture method (selecting the cervical directional A-shi point and the cervical pinch point) to treat nerve root cervical spondylosis, and the soreness, numbness, and distension produced by acupuncture could spread to the periphery, eliminating the inflammation of the local tissues, and promoting the local blood circulation. Guo Meiyan *et al.* [10] believe that acupuncture point of the dui chi has a certain effect on neuronal bladder caused by spinal cord injury, the core mechanism of the disease is kidney yang deficiency, the dui chi is the sea of yang veins, regulating the yang qi of the whole body, acupuncture point of the dui chi in order to tonify the kidney yang, and then dredge the local qi and blood to achieve the effect of soothing the tendons and activating the blood.

3.3. Analgesia

Tongdu therapy is also widely used in the treatment of pain, Professor Bao Yuan-yuan is a national famous old Chinese medicine practitioner with more than 50 years of experience, especially good at treating spinal pain [11]. Gao Shan *et al.* [12] found that acupuncture pinch spine points can prompt the expression of extracellular signal-regulated kinases and natural killer cell receptor proteins in the dorsal horn of the spinal cord, thereby increasing the pain threshold. Pain generation is closely related to NPY, 5-HT, and SP. NPY is mainly found in the

sympathetic nervous system, which can enhance neurogenic and inflammatory pain, and is highly expressed in lumbar intervertebral disc herniation [13]. 5-HT can directly stimulate sensory nerve endings and increase the pain threshold [14]. SP secretes a large amount of histamine, which produces a strong analgesic effect on the pain centre. Zhang Huisen *et al.* [15] found that the NPY, 5-HT, and SP of the study group were lower than those of the control group after treatment, indicating that acupuncture by Shu Jing Tong Zhu method can effectively reduce the pain of patients with lumbar intervertebral disc herniation.

3.4. Promoting Nerve Repair

Tongdu therapy can promote neuronal repair of spinal cord injury, and studies have shown that [16], warm kidney Tongdu Fang can promote microglia activation in the central nervous system to phagocytosis of neuronal fragments, in order to promote neuronal repair and improve axonal injury. In addition, some researchers and scholars have pointed out [17] that acupuncture and moxibustion at the acupuncture points of the Directing Vessel can awaken the spinal cord neurons, restore the excitability and conduction function of neurons, and promote neural repair in the damaged parts of the spinal cord. It was found [18] that electroacupuncture of the directing vein can improve the motor function of spinal cord injury (SCI) rats to promote the repair of neurons in the SCI region.

4. Clinical Application of Tongdu Therapy for Spinal Disorders

4.1. Tongdu Moxibustion Method

Liu Peng Ying [19] used Fuyang Tongdu moxibustion method to treat the clinical effect of cold-dampness lumbago, 60 cases of cold-dampness lumbago patients were selected according to the random method, divided into 30 cases each in the treatment group and the control group. Along the Daxi point to the Lumbar point of the Directing Vessel, and the Da loom to the Xiaosiao point of the first lateral line of the Bladder meridian. The control group was treated with warm acupuncture and moxibustion, and both groups were treated with 10 times as 1 course of treatment. At the end of the treatment, the data study found that the VAS score of the patients in the treatment group was lower than that of the control group, and the JOA score was higher than that of the control group, and the difference was statistically significant ($P < 0.05$). Zeng Denghui [20] applied warm acupuncture with Tongdu, Wen and Kidney method to treat lumbar disc herniation, and 50 patients were divided into the treatment group and the control group according to the random grouping method. The treatment group was treated with warm acupuncture and moxibustion using the Tongdu, Wen and Kidney method. The following points were selected: the large vertebrae, the life gate, the lumbar yangguan, the kidney yu (bilateral), the large intestine yu (bilateral), the lumbar pincer spine point (L3 - 5), the ring jump (affected side), the commission of the middle (affected side), and the yangling spring (affected side).

After routine disinfection of the acupoints, qi was obtained by needling. Warm acupuncture was applied to the acupoints of Daxi, Lumbar Yangguan, and Ren Yu (bilateral) using the method of Tongdu Warming the Kidney. The control group was treated with ordinary warm acupuncture. Acupuncture points and application methods were the same as those of the treatment group, and both groups were treated 5 times/week, with 10 times as a course of treatment for a total of 1 course of treatment, and the total effective rate was 96.0% in the treatment group and 84.0% in the control group by the JOA and VAS scores at the end of the treatment.

4.2. Tongdu Acupuncture Method

Liu Jianbing [21] and others applied the strong kidney Tongdu acupuncture combined with heat sensitive moxibustion in lumbar disc herniation, according to the random allocation method, 110 cases of lumbar disc herniation patients were divided into the control group and the experimental group, 55 cases in each group, the control group was treated with the conventional treatment combined with heat sensitive moxibustion; the experimental group was treated with strong kidney Tongdu acupuncture combined with heat sensitive moxibustion on the basis of the control group. The main points were Ren Yu, Guanyuan, Huizhong and Vital Gate. The supporting points were Huanjiao, Hangzhong, Yanglingquan and Kunlun. The treatment was carried out once a day, 10 times for one course of treatment, and the therapeutic effect was observed after one course of treatment. The results showed that the total effective rate of the experimental group was higher than that of the control group ($P < 0.05$). Liu Liangyu [22] applied “lumbar Yu Tongdu method” combined with conventional acupuncture and conventional acupuncture for the treatment of lumbar intervertebral herniation, 66 patients who met the inclusion criteria were randomly divided into treatment group and control group. The treatment group was randomly divided into 66 patients who met the inclusion criteria into two groups. The treatment group was treated with the “lumbar Yu Tongdu method” combined with conventional acupuncture, and the control group was treated with conventional acupuncture for 3 weeks. The VAS and JOA scores of the two groups were observed before and after the treatment, and the statistical analysis showed that the effective rate of the treatment group was 93.33%, and the effective rate of the conventional group was 86.67%.

4.3. Tongdu Massage Method

He Tingchao [23] and others applied the Tongdu and strong spinal manipulation and acupuncture “commission centre point” to treat lumbar disc herniation. According to the random number table method, 60 patients who met the criteria were divided into the treatment group and the control group, each with 30 cases. In the treatment group, the patients were treated with the combination of Tongduqianguang spinal manipulation and acupuncture at the “Huizhong point”.

After acupuncture, the patients were given the Tongduqiang spinal manipulation, which was used to dredge the lumbosacral dushi vein, the bladder meridian and the bilateral pinched spine points by pointing, pressing, popping, dialling and kneading, with a total of 5 lines of Tongduqiang. The control group was given conventional Tuina manipulation treatment. After 2 weeks of treatment, changes in lumbar forward flexion mobility and maximum muscle strength, VAS score, ODI score, and SLR angle were compared between the two groups before and after treatment. The maximum lumbar forward flexion activity and muscle strength, VAS score, ODI score and SLR angle of both groups increased compared with those before treatment ($P < 0.05$). The maximum activity of lumbar forward flexion and maximum muscle strength, VAS score, ODI score and SLR angle of the treatment group were better than those of the control group ($P < 0.05$). The combination of Tongduqiang spinal manipulation and acupuncture at the “Huizhong point” can effectively treat lumbar intervertebral disc herniation. Liu Zhentao [24] used the combination of Yi kidney Tongdu tuina and acupuncture to treat ankylosing spondylitis. 60 patients who met the criteria were divided into the treatment group and the control group according to the random number method. The treatment group was treated with the combination of acupuncture and moxibustion, and the selected acupoints were: lumbar Yangguan, Vital Gate, Jiejiao, Kidney Yu, Diaphragm Yu, Taixi, and Huizhong, etc. The acupoints were pressed and kneaded, Gun-method, one-finger Zen push method, flick method, and spinal kneading method. The control group was treated with supervision and moxibustion. At the end of the treatment by analysing the TCM evidence points, occipital-wall distance, thoracic mobility, Schober’s experiment, VAS scores before and after the treatment of the two groups. The total effective rate of the treatment group was 92.86% and the total effective rate of the control group was 81.48%, and the overall efficacy of the treatment group was better than that of the control group ($P < 0.05$).

4.4. Tongdu Prescription

Zhang Shuo [25] *et al.* applied Yi kidney and Tongdu prescription for the treatment of ankylosing spondylitis, and 82 patients who met the criteria were divided into the treatment group and the control group according to the method of random number table. In the treatment group, on the basis of oral celecoxib capsule, the Chinese herbal medicine Yi Kidney Tong Dudu formula was administered orally (20 g of dog’s spine, 15 g each of cypress, Poria cocos, Darutus officinalis, Coix lacryma, Cortex eucommiae, Boneset, Boneset, 12 g of Zelan, 10 g each of Sequeliae, Cortex cynanchum, Cangzhi, Zhi Mou, and Tiger’s Cane, 6 g of Glycyrrhiza glabra). The control group took celecoxib capsules orally, and the course of treatment was 12 weeks in both groups. At the end of the treatment, according to the symptoms and signs scores of the two groups, the TCM evidence scores of the two groups, and the inflammation indexes, the reduction of the treatment group was more obvious ($P < 0.01$).

Wang Gongzhi [26] *et al.* applied tonifying the kidney, activating blood and promoting the governor soup combined with western medicines to treat lumbar disc herniation, 94 patients who met the criteria were divided into the western medicine group and the combined group according to the method of random number table. In the western medicine group, western medicine group was treated with Cilopodium, and in the combined group, Cilopodium was combined with tonifying the kidney, activating blood, and promoting the governor soup (15 g of Cow's Knee, 15 g of Cortex Eucommiae, 10 g of Duhuo, 10 g of Ledebouriella, 15 g of Paeonia lactiflora, 15 g of Sangmangsheng, 20 g of Prepared Land, 5 g of Ephedra, 10 g of Antler slices, 30 g of Chickenshitiao, 10 g of Zhi Mou, 10 g of Cinnamon twig, 10 g of Dry Ginger, and 12 g of White mustard seed). 1 dose was taken daily. (1 dose per day, decocted with water, half an hour after meal, 3 times per day, for 4 weeks). At the end of the treatment, by comparing the scores, the effective rate of the combined group was higher than that of the western medicine group ($P < 0.05$). The value of tonifying the kidney, activating blood and promoting the governor soup combined with western medicine for the treatment of lumbar intervertebral disc herniation is high, and it is worth promoting the application.

5. Summary

In the study of Tongdu method for treating spinal diseases, its mechanism of action has been elucidated from controlling local inflammatory factors, improving local microcirculation, analgesia, and promoting nerve repair. In clinical application, Tongdu moxibustion, Tongdu acupuncture method, Tongdu massage method, Tongdu prescription, etc. have achieved better efficacy in spinal diseases, but in the process of research, due to the small sample size, the representativeness of the small, cannot be more comprehensive description of the problem, to be solved by further research. It is also necessary for researchers to continue to innovate and develop, promote traditional theories and modern science, and enhance the application space and value of Tongdu method in treating spinal diseases.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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