Advances in modern Chinese medicine treatment of cervical spondylotic radiculopathy

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Abstract

Objective: On the basis of a brief description of the current research status of modern Chinese medicine on the name, etiology, pathogenesis and classification of cervical spondylotic radiculopathy, this paper summarizes the research progress of modern Chinese medicine treatment of cervical spondylotic radiculopathy from the perspective of modern Chinese medicine treatment. This article mainly summarizes the following aspects: modern Chinese medicine for internal and external use; Chinese medicine acupuncture with filiform needle, electro-acupuncture and warm moxibustion; Chinese medicine massage and acupoint therapy; moxibustion, cupping, scraping and other comprehensive treatment; and Chinese medicine comprehensive therapy. The purpose of this article is to provide references for modern Chinese medicine treatment of cervical spondylotic radiculopathy.

1. Introduction

Cervical Spondylotic Radicular Disease (CSR) is the most common type of cervical spondylosis in clinic. It is mainly caused by nerve root stimulation and compression in cervical spinal canal or cervical vertebral junction caused by cervical intervertebral disc lesions, cervical segmental lesions, cervical hyperostoeogy and cervical osteophyte\(^1\). Unilateral lesions and single nerve root are the most common diseases in CSR clinic, but the incidence of bilateral lesions and multiple nerve roots is also increasing, and often accompanied by pain symptoms. The TCM classics did not mention the name of CSR, but mostly elaborated its similar name, and explained its etiology and pathogenesis by discussing the relationship between cervical vertebral vein and five Zang-organs and six Fu organs. In recent years, based on the discussion of CSR in traditional Chinese medicine, modern Chinese medicine has studied the name, etiology and classification of CSR. On this basis, modern Chinese medicine diagnosis and treatment methods are used to treat CSR. This paper systematically summarizes the literature on modern Chinese medicine treatment of CSR as follows.

2. Cognitive progress of CSR in modern Chinese medicine

2.1. Cognition of disease names in modern Chinese medicine

Although the classics of traditional Chinese medicine do not mention cervical spondylosis, nor do they mention the classification of cervical spondylosis, the classics of traditional Chinese medicine and the classics of modern Chinese medicine have many descriptions of CSR, such as “arthralgia”, “neck strength”, “cervical cramp” and so on. They are the elaboration of CSR disease name...
and symptoms in modern Chinese medicine. Among the similar names of CSR in classical Chinese medical books, "Bi" occurs more frequently and has a higher similarity with CSR symptoms described in modern Chinese medical books[2]. Cervical vertebra is the most important part of the body, and it is also the junction of the bladder meridian of the foot sun and the Du meridian. It has the function of connecting all lungs and organs of the body, connecting the white veins of limbs and leading the spirit of the body. External pathogens invade the meridians of the cervical vertebra, the Du meridian and the nerve root, and then injure the essence of the brain marrow. It is the occurrence of arthralgia in the cervical vertebra and which is the basis of the disease[3]. Therefore, modern Chinese medicine often describes CSR in terms of shoulder and back pain, cervical soreness and back pain, which establishes the principles of meridian dialectical treatment, meridian and tendon disease treatment, acupoint massage and acupoint acupuncture.

2.2. Pathogenesis cognition of modern Chinese medicine

2.2.1. Invasion of exogenous pathogens

Based on the description of the pathogenesis of CSR in traditional Chinese medical books, modern literature describes the pathogenesis of CSR from three aspects: wind, dampness and cold. Fan Qian[4] believed that CSR was mostly caused by wind, dampness and cold, among which wind-induced prolongation, cold-induced stagnation of Qi and wet-induced dystrophy were the distinct descriptions of the causes of CSR exogenous invasion. As wind, dampness and cold intersect, and continue to invade the cervical spine, so that cervical blood circulation is blocked, menstrual blockade, nutrient disorder, can appear in the cervical spinal canal or cervical vertebral junction nerve root stimulation and compression and form CSR.

2.2.2. Weakness of Qi and blood

Qi and blood are the source of nutrition for the body, and are the basis of the operation of organs and meridians. However, the body's Qi and blood need to be sublimated to absorb, play the role of transpiration of qi, removing blood stasis and dredging collaterals, and vice versa, the weakness of Qi and blood will lead to the multiplication of disease[5]. Cheng Bo[6] et al considered that the weakness of Qi and blood is its important cause and pathogenesis. For example, deficiency of Qi and blood and abnormality are the keys to stimulation and compression of nerve roots in cervical spinal canal or cervical junction, and are the precursors of CSR formation. Nutrition absorption disorders occur due to the weakness of Qi and blood, resulting in nerve root stimulation and compression, thus causing shoulder and back pain and cervical soreness. Symptoms such as backache are the theoretical basis of modern Chinese medicine treatment for CSR.

2.2.3. Meridian obstruction

Traditional medicine holds that the meridians in the human body can play the role of coordinating Ying and Wei, balancing Yin and Yang, dredging collaterals, Qi and blood, and can also play the role of promoting tendons, bones and joints. In the course of meridian circulation, Yang meridian usually circulates in the neck. If there are disorders and paralysis of meridians, it will lead to disorders of Qi and blood in the neck, Yin and yang. Over time, it will lead to unfavorable cervical joints. This is often described in the etiology and pathogenesis of CSR in modern Chinese medicine[7].

2.3. Cognition of classification of modern Chinese medicine

According to the etiology and pathogenesis of CSR and the experience of clinical diagnosis and treatment of CSR in modern Chinese medicine, the classification of CSR has been deeply studied in modern Chinese medicine. According to many years' experiences of CSR clinical dialectical diagnosis and treatment, Chinese physician Liu Bailing[8] and others divided CSR into three types: rheumatic cold type based on exogenous pathogenic invasion, Qi stagnation and blood stasis type based on the etiology of Qi and blood weakness and liver and kidney deficiency type based on the etiology of visceral dysfunction. A large number of TCM scholars[9,10] also apply this CSR typing method. In addition, according to the etiology of meridian paralysis, some scholars believe that meridian paralysis is also an important classification of CSR[11]. The scholar Liu Shaohua[12] thinks that CSR is more in line with the name of "spasm" in ancient medical books, so referring to the classification of spasm in Practical Chinese Medicine Internal Medicine, CSR can be divided into pathogenic obstruction of meridians, blood stasis internal obstruction and Phlegm-Turbid Qi stagnation.

3. Advances in modern TCM treatment of CSR

3.1. Advances in modern Chinese medicine

Traditional Chinese medicine (TCM) is an important part of modern TCM clinical treatment of CSR. It has the advantage of lasting curative effect and can integrate prevention, rehabilitation and treatment of CSR.
3.1.1. Oral administration of traditional Chinese medicine

Oral administration of traditional Chinese medicine (TCM) has always been an important way of clinical treatment of CSR, and it is also one of the most widely used means in clinical treatment of CSR. As far as the clinical treatment of CSR is concerned, modern Chinese medicine doctors have achieved certain curative effect in treating CSR by taking traditional Chinese medicine orally. Yu Lin[13] et al. based on the principle of traditional Chinese medicine and taking promoting blood circulation and dredging collaterals, invigorating kidney and strengthening lung as the treatment principle, made up 80 cases of CSR patients with traditional Chinese medicine prescriptions. The total effective rate was 95.00% through oral administration of traditional Chinese medicine prescriptions for three months. Wang Qing[14] complied with the ancient prescription of Gegen Decoction for Zhongjing cervical spondylosis, and added Guizhi to treat CSR. Forty-nine patients with CSR were cured in 38 cases. In addition, Wu Xiansun[15], Cui Kebin[16] and so on also validated the effect of Zhongjing Gegen Decoction in the clinical treatment of CSR. Wang Dahai[17] and others used Qiang Huo Shujin Decoction to treat 109 patients with CSR, Li Zhongqiao[18] and others used self-made Shunec Decoction to treat 80 patients with wind-cold obstruction collateral type CSR, Sun Xixia[19] and other selected Jiawei Shaoyao Decoction and Qiang Huo Shengshi Decoction to treat 56 patients with rheumatic-cold type CSR. The clinical effect was satisfactory, and the effective rate was more than 90%.

3.1.2. External use of Chinese medicines

At present, based on the treatment of CSR by syndrome differentiation, TCM has also extended to the external use of TCM to treat CSR, and the clinical research proves that the ability to improve the clinical symptoms of some CSR patients to a certain extent. Yin Tao[20] and other traditional Chinese medicines such as Qianghuo, turmeric, red peony were placed on the pillow, and 38 patients with CSR were treated with external application of traditional Chinese medicine. The long-term (1 year) treatment efficiency was as high as 87.5%. Yang Yanyang[21] and other self-made warming meridian ointment plus meter-shaped cervical vertebra health exercises in the treatment of CSR patients with rheumatic cold type showed that the effective rate of external combined oral administration group (96.7%) was significantly higher than that of Gegen Decoction oral administration group (83.43%). Xu Jia[22] et al. will contain Chinese herbal medicine such as Qianghuo, Fangfeng, Angelica sinensis for the treatment of CSR, with definite long-term effect.

3.2. Advances in acupuncture therapy of modern Chinese medicine

Acupuncture has been widely used in CSR treatment. Acupuncture at acupoints such as Jiaji can relieve the spasm of compressed nerve roots, further improve the microcirculation of cervical spine, promote metabolism and reduce inflammatory reaction[23]. At present, there are many acupuncture therapies, such as electro-acupuncture, filiform needle, warm needle and so on, which are widely used in the treatment of CSR.

3.2.1. Millineedle therapy

The effect of filiform needle therapy on improving cervical blood circulation, enhancing inflammation absorption and relieving the tension of lesion tissue in CSR patients is remarkable. Liu Gongwang[24] et al. treated CSR by needling three big Tian points (Tianrong, Tianfeng and Tianding points) on the affected side. The treatment was accompanied by syndrome-type dialectical matching points (wind-cold-dampness type needling Quchi and Fengmen points; qi stagnation and blood stasis type needling Xuehai points; migraine needling Taiyang meridian points; back paralysis needling shoulder front, shoulder Zhenzhen and shoulder middle). Tang Changhua[25] et al. compared and analyzed the curative effect of different depths of filiform needle on CSR. Neck Jiaji acupoint was taken as the main point, supplemented by the affected side Fengchi acupoint, Quchi acupoint and Hegu acupoint. According to the X-ray film of the diseased vertebral body, cervical Jiaji acupoint with more serious lesions was selected. In the experimental group, 30 3.0 inch filiform needle was inserted vertically at 1-2 inch depth, while in the control group, 30 The depth of 0.5-1 inch was vertically inserted into the needle. The results showed that the effect of the depth of acupuncture in the experimental group was more remarkable. Yang Ruiping[26] and others used cervical three needles combined with Uygur medicine acupoint application to treat 120 patients with CSR. The effective rate was 94.8% when Tianzhu, Bailao, Dayan and He’s abdominal acupuncture points were selected.

3.2.2. Electro–acupuncture therapy

Electro-acupuncture can improve the blood supply of the lesion by stimulating Jiaji point, which can promote metabolism and reduce inflammatory reaction. It has significant effect in alleviating pain and avoiding muscle atrophy. Because electroacupuncture is a combination of filiform needle therapy and bioelectric effect, it has not only the regulating effect of filiform needle, but also the
physiological effect of bioelectric stimulation, so it is widely used in clinical treatment of CSR. Zhou Xianghong[27] et al. treated CSR patients by electro-acupuncture at Jiagji and Houxi points. Jiagji points were selected at the affected nerve root segment (C5-C6). If the greater occipital neuralgia, the cervical Jiagji points (C2-C4) would be added. If the pain strings the limbs, the cervical Jiagji points (C6-C7) would be added. Huang Zheng[28] and others improved the accuracy of the location of cervical Jiagji point by means of imaging. 78 patients with CSR were treated with Huatuo Brand Electro-Acupuncture Therapeutic Apparatus. After three courses of acupuncture (12 times), the clinical effective rate was 89.4%.

3.2.3. Warm acupuncture and moxibustion therapy

It is also widely used in the clinical treatment of CSR. Warm acupuncture and moxibustion can be carried out according to the needs of the lesion site of cervical vertebra and along the nerve roots of the lesion to the meridians. Jiren Haoyer[29] et al. adopted the combination of dialectics and disease differentiation, selected (C4-C7) cervical Jiagji point and tenderness point points for warm acupuncture and moxibustion. Acupoints were added or subtracted according to the changes of the condition. After three courses of treatment, 40 CSR patients'clinical symptoms were alleviated. Yu Fengwen[30] et al. treated 47 patients with CSR by warm needling and sparrow pecking. First, wrist bone points and Yanglingguan points were warmed, then neck Jiagji points were warmed and moxibusted. The results showed that 34 cases were markedly effective and 10 cases were effective.

3.3. Advances in massage therapy of modern Chinese medicine

Cervical massage technology can dredge channels and collaterals, promote blood circulation and remove blood stasis, relax tendons and relieve pain by stimulating specific acupoints on the body surface. TCM massage technology has a long history. It can adjust the dislocation caused by facet joint disorder in cervical spine by manipulation. It can also relieve nerve root compression caused by facet joint dislocation in cervical spine immediately, and has an immediate effect on CSR treatment. Chen Daoliang[31] relaxed the superficial muscles with the traditional one-finger Zen push method, and then dredged the meridians with the plucking method. At last, he used shaking method, pulling method and rolling method to repair the dislocation of cervical joint. Then he selected Fengchi, Fengfu, Bailao and other acupoints to massage and dredge the meridians. The effective rate of clinical treatment of CSR for three months was 94.8%. Su Guodong[32] believes that massage with kneading method can have a good analgesic effect on CSR. Huang Fuguo[33] et al. used the “three-step and five-method” massage technique to treat 104 patients with CSR. The massage technique highlighted the repair of prominent nucleus pulposus and the correction of cervical spine. After four courses of treatment, 98 patients'condition was effectively alleviated. Zhang Shihong[34] isorecumbent chiropractic massage technique has great advantages in restoring the dynamic and static balance of cervical spine, which can effectively alleviate the clinical symptoms of CSR patients. In addition, many scholars[35,36] have discussed the mechanism of TCM massage technology in treating CSR. Firstly, by improving cervical intervertebral space and enlarging intervertebral pore, we can dredge channels and collaterals, prevent spondylolisthesis and relieve nerve compression. Secondly, by eliminating adverse reactions such as inflammation and edema, we can release nerve roots and nerve roots. The adhesion of soft tissue can relieve spasm and improve blood circulation. Thirdly, the disorder of cervical facet joint and the dislocation of cervical facet joint can be corrected by manipulative reduction so as to loosen tissue connection and relieve nerve compression.

3.4. Advances in other treatments of modern Chinese medicine

In addition to the above modern TCM treatment programs, moxibustion, cupping, scraping and other modern TCM therapies are also widely used in CSR clinical treatment.

3.4.1. Moxibustion therapy

Moxibustion therapy has the advantages of simple operation, easy learning and low cost. It is welcomed by TCM scholars and CSR patients. Xie Jianzhou[37] et al. used heat-sensitive moxibustion therapy to treat 39 patients, with 28 cases of marked clinical effect, which improved the clinical symptoms of CSR patients. Ding Binxia[38] et al. used moxibustion-assisted massage therapy to treat 104 CSR patients. Compared with simple massage therapy, the clinical effective rate increased by 18.4% in three months, suggesting that moxibustion-assisted therapy has the advantage of good long-term effect.

3.4.2. Cupping therapy

Cupping therapy is a common method in modern Chinese medicine for cervical spondylitis. Mao Guihua[39] and others have studied the clinical effect of cupping therapy in CSR. The results show that all three cupping therapies can alleviate clinical symptoms, but the cupping therapy with herbal medicine, heat permeability
and cupping is the best one. Yao B[40] et al. used blood cupping and reinforcing manipulation therapy to treat 80 CSR patients. The clinical effective rate was 87.5%.

3.4.3. Scraping therapy

Scraping therapy is a traditional Chinese medicine treatment method based on meridian theory. It uses jade, rhinoceros horn and other tools to absorb pathogenic factors according to the course of meridians. Cao Chunlei[41] et al. treated 66 CSR patients with Meridian Scraping plus blood-letting puncture and cupping, and achieved satisfactory clinical results. Xu Mingshu[42] and others used segmental scraping therapy, that is, the affected nerve root segment (C5-C6), greater occipital neuralgia, increased (C2-C4) segmental scraping; pain strings caused by limbs, increased (C6-C7) segmental scraping, after the first scraping, the pain symptoms of patients were significantly alleviated.

3.5. Advances in comprehensive treatment of modern traditional Chinese medicine

Traditional Chinese medicine (TCM) comprehensive therapy is the most common method in the treatment of CSR. It has an incomparable curative effect advantage compared with simple therapy. Modern TCM used in the treatment of CSR is usually based on comprehensive therapy. Xie Min[43] and others took Gegen Decoction combined with acupuncture and massage to treat CSR, the clinical effective rate was as high as 98%. Zhang Mingyou[44] et al. used acupuncture and massage combined with Jiawei Gegen Decoction to treat 56 patients with CSR. 48 cases were clinically effective and achieved satisfactory clinical results. Dai Chungang[45] et al. used acupuncture and massage technology combined with Gezhi Tongluo prescription to treat CSR patients, that is, first to acupuncture Taixi point, then to find the most painful point massage, and Bushen Dihuang Decoction oral treatment, the clinical effect is satisfactory. Ren Yongfeng[46] et al. used bone-setting massage combined with physiotherapy to treat CSR patients. After one course of treatment, the pain VAS score of patients decreased significantly. Zhang Yang[47] et al. used three-step needle-cupping therapy combined with self-made prescriptions. The three-step needle-cupping therapy was as follows: first, distant balanced needling at Zhongping and Houxi points, then warming needling at Jiaji points of neck, and finally needling and cupping Ashi points. The self-made prescriptions were based on Qiang Huo Shengshi Decoction, and the results showed that the comprehensive treatment had obvious advantages. In addition, acupoint catgut embedding, hook needle release, abdominal needle, cupping, moxibustion and other combined therapies have been applied in the treatment of CSR, and the reported clinical efficacy is good. Yu Jie and Zhu Liguo[48] evaluated the curative effect of CSR on the basis of TCM comprehensive therapy and followed up for a long time. The results showed that they achieved remarkable curative effect. However, compared with the simple modern Chinese medicine therapy, the comprehensive therapy also has complicated treatment steps, a longer course of treatment, and more costs, so it is not easy to be accepted by patients, and has certain application limitations.

4. Prospect of modern TCM treatment for CSR

The modern TCM treatment of CSR has the advantages of low risk, no obvious side effects and contraindications. It is suitable for the concept of modern medical treatment and has good curative effect. Especially, the comprehensive treatment of modern TCM has the incomparable advantages compared with other simple TCM treatment schemes[49]. In recent years, modern Chinese medicine treatment in the clinical application of CSR has a significant effect, many clinicians have constantly issued a variety of treatment options, in order to find the best effect of continuous exploration. As the degenerative lesions of CSR are related to the increasing pressure of people's work and life, the onset of CSR is becoming younger and younger in recent years. Therefore, while we are treating CSR with modern Chinese medicine, we should pay attention to clinical prevention and treatment, that is, more application of prevention than treatment. In addition, the degenerative lesions of CSR are closely related to the age of patients. With the current trend of population aging, the incidence of CSR will inevitably increase. Therefore, in the clinical prevention and treatment of CSR, it is particularly important to give patients appropriate guidance on their living and working habits, which can guide patients to develop good living habits as far as possible and strengthen neck muscle forging, exercise, pay attention to the key parts of the neck, cervical vertebra and other health care, which is the key to the clinical treatment of CSR.

Conflict of interest statement

We declare that we have no conflict of interest.
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