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Research Progress Concerning the Treatment of Ischemic Stroke with Tongqiao Huoxue Decoction

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Abstract: ***Ischemic stroke (IS) primarily occurs due to the blockage of cerebral arteries, which impedes blood circulation and leads to impaired neurological functions. This may result in sequelae such as vascular dementia, post-stroke cognitive impairment, hemiplegia, and dysphagia. Conventional treatments for IS often include Western medication, interventional therapy, acupuncture, and rehabilitation. However, these approaches have certain limitations. Combining them with Tongqiao Huoxue Decoction (TQHXD) has been shown to enhance clinical efficacy, playing a significant role in the acute, recovery, and sequelae stages of IS. During the acute phase, TQHXD is often used alongside interventional therapy and conventional Western medicine to help stabilize the condition. In the recovery and sequelae stages, it is frequently combined with acupuncture and rehabilitation therapies to improve cognitive function, alleviate negative emotions, and promote the recovery of limb and swallowing functions.***

Keywords: Tongqiao Huoxue Decoction, Ischemic stroke, Review**.**

1. TQHXD Combined with Conventional Western Medicine for IS

The efficacy of conventional Western medicine alone in treating IS is often suboptimal. Recent studies have shown that combining TQHXD with Western medicine can facilitate patient recovery. Li et al. [1] conducted a meta-analysis and systematic review of clinical research data and found that the combination of TQHXD with Western drugs (tissue plasminogen activator, antiplatelet agents, statins, and edaravone) improved neurological deficits and activities of daily living in IS patients, with good clinical efficacy and safety. Chen Xin et al. [2] demonstrated that the combination of TQHXD with butylphthalide upregulates VEGF in patients with acute ischemic stroke (AIS), promoting angiogenesis, improving collateral circulation, and enhancing neurocognitive function. Jin Zhenglong et al. [3] reported that TQHXD combined with butylphthalide restored cerebral blood circulation and alleviated subjective symptoms in elderly patients with chronic cerebral hypoperfusion (CCH). The mechanism was associated with reduced levels of inflammatory factors such as S100β and HMGB1. Mei Qianqian et al. [4] applied TQHXD and butylphthalide in treating vascular dementia after cerebral infarction, observing attenuated inflammatory responses, upregulated levels of neuro-related factors, and reduced severity of dementia. Shi Lei et al. [5] found that treatment with urinastatin and modified TQHXD in AIS patients improved cerebral oxygen metabolism indicators, motor function, and autonomic nerve function recovery.

2. TQHXD Combined with Interventional Therapy for IS

Endovascular mechanical thrombectomy and thrombolytic therapy are two forms of interventional treatment and are important methods for managing AIS. While endovascular mechanical thrombectomy offers certain advantages for AIS, it carries risks of vascular endothelial injury and thrombus recurrence. Thrombolytic therapy is widely used for acute cerebral infarction but has strict time window limitations, and its neuroprotective effects when used alone are not significant. Related studies indicate that combining interventional therapy with TQHXD helps to further enhance efficacy. Zheng Yingying et al. [6] observed that in patients with wind-phlegm-stasis obstruction pattern after stroke intervention therapy, those treated with TQHXD showed significantly better coagulation function, reduced inflammatory response, and further recovery of neurological function compared to the control group. Yue Jiaojiao et al. [7] demonstrated that modified TQHXD combined with Solitaire AB stent thrombectomy effectively improved NIHSS and ADL scores, vascular endothelial function, and long-term outcomes in AIS patients. Studies have shown that the drug components and effects of alteplase and modified TQHXD complement and promote each other. Compared to intravenous thrombolytic drugs alone, their combination in treating AIS can better improve neurological function and increase treatment success rates [8]. Wang Lei et al. [9] found that after applying modified TQHXD to acute cerebral infarction patients receiving intravenous thrombolysis, the Chinese medicine group showed significant reductions in Hcy and LP(a) levels and alleviated clinical symptoms.

3. TQHXD Combined with Acupuncture for IS

The combination of TQHXD and acupuncture can promote cerebral blood circulation, facilitate the improvement of limb and swallowing functions, and possesses unique advantages and clinical application value during the recovery and sequelae stages of IS. Some specific acupuncture techniques are suitable for IS patients with particular patterns, and adding TQHXD can also enhance efficacy.

3.1 General Treatment

Hu Wei et al. [10] used TQHXD combined with acupuncture to treat patients in the recovery phase of cerebral infarction. The results showed that the study group exhibited enhanced cerebral circulatory function and better recovery of neurological and limb function compared to the control group.

Spastic hemiplegia, seen in most stroke patients, mainly manifests as limb dysfunction, severely affecting quality of life. Li Qingzhe et al. [11] found that in patients with post-stroke spastic hemiplegia treated by needling Jiaji points combined with oral warm TQHXD, the observation group showed a more significant reduction in muscle tone compared to using TQHXD alone. While acupuncture has some effect on dysphagia after stroke, it is unsatisfactory for some patients. Reports indicate that adjunctive application of TQHXD based on acupuncture helps enhance swallowing function [12]. Acupuncture and heat-sensitive moxibustion can improve limb function by transmitting stimulation to the thalamus. Lu Ying et al. [13] observed that TQHXD combined with acupuncture and heat-sensitive moxibustion for stroke treatment likely achieved significant efficacy by regulating NGF, BDNF, NSE levels, and promoting cerebral blood circulation.

3.2 Pattern-Based Treatment

The “Xingnao Kaiqiao” (Awakening the Brain and Opening the Orifices) acupuncture method and the “Tongdu Tiaoshen” (Unblocking the Governor Vessel and Regulating the Spirit) acupuncture method are applied to IS patients with phlegm-stasis intermingling pattern and qi deficiency with blood stasis pattern, respectively. Combining them with TQHXD yields superior results. The Xingnao Kaiqiao acupuncture method, created by Academician Shi Xuemin, has the function of harmonizing yin and yang, regulating qi, and unblocking collaterals, and is widely used in treating AIS. Mao Sufang et al. [14] treated IS patients with TQHXD combined with the Xingnao Kaiqiao acupuncture method. The results showed that serum S100B, GFAP, and NSE levels decreased more in the experimental group than in the control group, and the mechanism might be related to improved cerebral blood circulation. TQHXD combined with Xingxiang Powder can be used to treat AIS with phlegm-stasis intermingling pattern. Cui Na et al. [15] found that after treating AIS patients with phlegm-stasis intermingling pattern using TQHXD combined with Xingxiang Powder and Xingnao Kaiqiao acupuncture, the observation group showed decreased S100β and NSE, increased BDNF, and improved efficacy by reversing apoptosis and accelerating collateral circulation formation. The Tongdu Tiaoshen acupuncture method can unblock meridians, open orifices, and activate blood, showing good results in treating stroke and other diseases. Hu Huihui et al. [16] demonstrated that after applying the Tongdu Tiaoshen acupuncture method and TQHXD to IS hemiplegia patients with qi deficiency and blood stasis pattern, the combination group had lower levels of UCH-L1, MAP, and NSE compared to using either acupuncture or Chinese medicine alone, indicating that combined acupuncture and herbal medicine is more conducive to patient recovery.

4. TQHXD Combined with Rehabilitation for IS

IS patients often experience impaired limb function, dysphagia, deep vein thrombosis, declined cognitive ability, and increased negative emotions. Clinical rehabilitation therapy alone has limited effects, and adding TQHXD can further alleviate the condition. Liu Xue et al. [17] applied TCM rehabilitation combined with TQHXD to treat stroke patients, resulting in corrected hemorheological indicators and a total clinical effective rate of 93.75%. Zhao Guirong et al. [18] found that in elderly stroke patients with vascular dementia and blood stasis obstructing the interior pattern, the combined use of rehabilitation training and TQHXD reduced vascular endothelial active substances, increased cerebral blood flow perfusion, and resulted in better recovery in the observation group compared to the control group. Ke Hongping et al. [19] applied TQHXD to cerebral infarction patients, confirming that the combination of Chinese medicine with limb functional exercise and emotional care intervention helped improve motor ability and negative emotions. Xu Dong et al. [20] showed that rehabilitation training combined with TQHXD in treating post-stroke dysphagia promoted blood circulation, improved hemorheology, and offered superior therapeutic effects. Zhu E et al. [21] used targeted drug penetration with TQHXD and meridian-based massage for stroke patients, resulting in improved hypercoagulable state and reduced incidence of deep vein thrombosis. Repetitive transcranial magnetic stimulation (rTMS) is a common rehabilitation treatment for post-stroke cognitive impairment (PSCI) but has side effects like headache. Niu Yulian et al. [22] found that PSCI patients treated with rTMS combined with TQHXD showed greater improvement in cerebral blood flow parameters and cognitive behavioral abilities compared to rTMS treatment alone. TQHXD can protect nerve cells damaged by glutamate, promote cell proliferation activity, and reduce cell membrane permeability, indicating potential value in treating post-stroke depression (PSD) [23]. Virtual Reality (VR) technology, as an emerging rehabilitation therapy, can improve cognitive and functional impairments. Li Mengying et al. [24] applied TQHXD combined with VR to treat patients with PSCI complicated by depression. The results showed that CysC, Hcy, and ET-1 levels decreased more in the observation group, and the recovery of mood and higher brain functions was better than in the control group.

5. Summary

This article provides a systematic review of the clinical research progress on TQHXD combined with conventional Western medicine, interventional therapy, acupuncture, and rehabilitation for treating IS. Evidence from literature published in the past five years indicates that the combined application of TQHXD with modern medical approaches demonstrates significant synergistic advantages across the acute, recovery, and sequelae stages of IS.During the acute stage, the combination of TQHXD with interventional therapies (such as thrombectomy and thrombolysis) and conventional Western medicine (e.g., Butylphthalide and Edaravone) contributes to stabilizing the patient’s condition. The underlying mechanisms are closely associated with protecting vascular endothelium, mitigating inflammatory responses (e.g., downregulating S100β and HMGB1), promoting angiogenesis (e.g., upregulating VEGF), and improving cerebral oxygen metabolism. In the recovery and sequelae stages, the integration of TQHXD with acupuncture (e.g., Xingnao Kaiqiao needling and Tongdu Tiaoshen needling techniques) and rehabilitation methods (including conventional training, rTMS, VR technology, etc.) significantly promotes the recovery of neurological function,

ameliorates cognitive impairment and negative emotions (such as depression), and effectively enhances motor and swallowing functions as well as activities of daily living. The mechanisms of action involve the regulation of various neurotrophic factors (e.g., NGF, BDNF, NSE), suppression of inflammation, and improvement of cerebral blood circulation and hemorheology. In conclusion, as a classic multi-target and multi-effect formula in Traditional Chinese Medicine, TQHXD, through its organic integration with different therapeutic modalities, can compensate for the limitations of single-method treatments. It offers a highly valuable strategy for the comprehensive management of IS, highlighting the promising prospects of integrated Traditional Chinese and Western medicine in the field of stroke rehabilitation.

References

[1] LI Y, CUI R, FAN F, et al. The efficacy and safety of ischemic stroke therapies: an umbrella review[J]. Frontiers in Pharmacology, 2022, 13: 924747.

[2] CHEN Xin, XIONG Ying-qiong, CHENG Shao-min. Tongqiao Huoxue Decoction combined with butylphthalide in the treatment of acute ischemic stroke and its effect on VEGF [J]. Journal of Hainan Medical University, 2021, 27(02): 105-110.

[3] JIN Zheng-long, YU Tao, LIANG Min-ying, et al. Effects of Tongqiao Huoxue Decoction Combined with Butylphthalide on Serum S100β, HMGB1, sICAM-1, CXCL12, and Lp-PLA2 in Elderly Patients with Chronic Cerebral Ischemia [J]. Journal of Chinese Medicinal Materials, 2021, 44(05): 1244-1248.

[4] MEI Qian-qian, DONG Hui, JI Jin-rong. Efficacy of Tongqiao Huoxue Decoction combined with butylphthalide in the treatment of vascular dementia after cerebral infarction and its impact on the severity of dementia and cognitive function in patients [J]. Hainan Medical Journal, 2024, 35(9): 1228-1233.

[5] SHI Lei, SUN Man-yuan. Effect of Modified Tongqiao Huoxue Decoction Combined with Urinary Kallidinogenase on Patients with Acute Ischemic Stroke [J]. Laboratory Medicine and Clinic, 2021, 18(17): 2580-2584.

[6] ZHENG Ying-Ying, LI Zhi-Rong, YU Heng-Wang. Clinical Observation on Flavored Tongqiao Huoxue Decoction for the Treatment of Patients with Wind-phlegm and Blood Stasis Obstruction Syndrome after Interventional Operation for Acute Ischemic Stroke [J]. Journal of Guangzhou University of Traditional Chinese Medicine, 2022, 39(09):2002-2007.

[7] YUE Jiao-jiao, LIU Zhi-hua. Clinical study of modified Tongqiao Huoxue Decoction combined with Solitaire AB stent thrombectomy in the treatment of acute ischemic stroke[J]. China Journal of Traditional Chinese Medicine and Pharmacy, 2021, 36(12): 7498-7501.

[8] LYU Qiang, WANG Sheng, WEI Qing. Clinical Efficacy of Modified Tongqiao Huoxue Decoction Combined with Intravenous Alteplase Thrombolysis in Acute Ischemic Stroke—A Commentary on Safe Application of Therapeutic Drugs in Neurology [J]. World Chinese Medicine, 2024, 19(15): 2373.

[9] WANG Lei, KUAI Yingshu, LI Peng, et al. Effect of Modified Tongqiao Huoxue Decoction on Hcy, Lipoprotein a and Prognosis after Intravenous Thrombolysis in Acute Cerebral Infarction [J]. Chinese Archives of Traditional Chinese Medicine, 2024, 42(08):216-219.

[10] HU Wei, ZHANG Yong, HE Jia. Analysis of the Effect of Acupuncture Combined with Tongqiao Huoxue Decoction in Patients during the Recovery Period of Cerebral Infarction [J]. Guizhou Medical Journal, 2023, 47(8): 1263-1264.

[11] LI Qingzhe, LIU Jun, MENG Zihui. Research of Tongqiao Huoxue Decoction Combined with Jiaji (EX-B2) in Treatment of Spastic Hemiplegia After Stroke [J]. Journal of Liaoning University of Traditional Chinese Medicine, 2021, 23(03): 127-130.

[12] ZHANG Wu-jun, ZHAO Chao. Study on the Effects of Tongqiao Huoxue Decoction Combined with Acupuncture on Neurological Function and Daily Living Ability in Patients with Dysphagia after Cerebral Infarction [J]. Guizhou Medical Journal, 2023, 47(3): 387-388.

[13] LU Ying, ZHENG Yun. Effects of Acupuncture Combined with Heat-Sensitive Moxibustion and Tongqiao Huoxue Decoction on Limb Function and Neurotransmitter Levels in Post-Stroke Patients [J]. Modern Journal of Integrated Traditional Chinese and Western Medicine, 2023, 32(11): 1569-1572+1576.

[14] MAO Sufang, WU Yu, CHEN Jingjing. Clinical Study on Tongqiao Huoxue Tang Combined with Brain-Awakening and Orifices-Opening Acupuncture for Ischemic Stroke [J]. New Chinese Medicine, 2022, 54(14):40-44.

[15] Cui Na, Tong Jiaxin, Zhu Xiaotong, et al. Observation on the Curative Effect of Tongqiao Huoxue Decoction and Xingxiang Powder Combined with Xingnao Kaiqiao Acupuncture on Patients with Acute Cerebral Infarction (Phlegm and Blood Stasis Syndrome) [J]. Journal of Emergency in Traditional Chinese Medicine, 2022, 31(1): 105-108.

[16] HU Huihui, LIU Yanguan, LI Yuyang. Clinical study on Tongqiao Huoxue Decoction combined with tongdu tiaoshen acupuncture in treating hemiplegia after ischemic stroke of qi deficiency and blood stasis type [J]. China Medical Herald, 2024, 21(04): 148-152.

[17] LIU Xue, JI Jing-jun. Effects of Tongqiao Huoxue Decoction combined with TCM rehabilitation on neurological function recovery in stroke patients [J]. Journal of Hubei University of Chinese Medicine, 2022, 24(6): 21-24.

[18] ZHAO Guirong, YU Cunjuan, ZHANG Yisong, et al. Efficacy of Using Tongqiao Huoxue Decoction Combined with Rehabilitation Training in the Treatment of Senile Patients with Vascular Dementia after Stroke and Its Effect on Vascular Endothelial Active Substances [J]. Journal of Sichuan of Traditional Chinese Medicine, 2021, 39(3): 145-148.

[19] KE Hong-ping, KE Le. Implementation Value of Limb Functional Exercise Combined with Emotional Care in the Flexible Treatment of Cerebral Infarction with Tongqiao Huoxue Decoction [J]. Journal of Shenyang Pharmaceutical University, 2021, 38(S1): 110+112.

[20] XU Dong, HU Xiao-bo. Effects of Tongqiao Huoxue Decoction Combined with Rehabilitation Training on Neurological Function and Daily Living Ability in

Patients with Dysphagia after Cerebral Infarction. Journal of Chinese Physician，2022，24(01):112-115.
[21] ZHU E, YANG Ying. Preventive Effect of Tongqiao Huoxue Tang Jiawei Fang Directed Drug Permeabilization Combined with Meridian Massage on the Deep Vein Thrombosis of Lower Extremities in Stroke Patients [J]. Guiding Journal of Traditional Chinese Medicine and Pharmacy, 2022, 28(10):77-80.
[22] NIU Yulian, WU Haiwei, ZHI Yingchuan. Effect of Tongqiao Huoxue Decoction combined with rTMS on the cerebral blood flow parameters in PSCI patients [J]. Jilin Journal of Chinese Medicine, 2022, 42(05):554-557.
[23] ZHANG M, BAI X. Shugan jieyu capsule in post-stroke depression treatment: from molecules to systems[J]. Frontiers in Pharmacology, 2022, 13: 821270.
[24] LI Meng-ying, HE Hui-juan, WANG Ling, et al. Clinical Study on Tongqiao Huoxue Decoction Combined with Virtual Reality Training for Patients with Post-Stroke Cognitive Impairment and Depression [J]. Journal of Sichuan of Traditional Chinese Medicine, 2024, 42(12): 153-156.