
Analysis of the Impact of TCM Syndrome Differentiation on the Treatment of Hypertensive and Cerebrovascular Diseases

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Abstract: *Objective:* To explore the effect of TCM syndrome differentiation on the treatment of hypertensive and cerebrovascular diseases. *Methods:* 80 patients with hypertensive cerebrovascular disease were selected as subjects and randomly divided into a control group ($n = 40$, treated with Nao'an Capsules) and an observation group ($n = 40$, treated with TCM syndrome differentiation based on Nao'an Capsules). The clinical efficacy, blood pressure, blood lipid levels, cerebral blood flow, and cerebrovascular function scores of the two groups were evaluated. *Results:* The clinical efficacy of the observation group was better than that of the control group, $P < 0.05$. The blood pressure and blood lipid levels of the observation group were lower than those of the control group, $P < 0.05$. The cerebral blood flow and cerebrovascular function scores of the observation group were better than those of the control group, $P < 0.05$. *Conclusion:* The effect of TCM syndrome differentiation treatment on patients with hypertensive and cerebrovascular disease is significant.

Keywords: Hypertension; Cerebrovascular disease; TCM syndrome differentiation; Blood pressure level; Blood lipid level; Cerebrovascular function

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1. Introduction

Patients with hypertensive cerebrovascular disease often present with severe headaches or projectile vomiting. Some patients are irritable and excited, and some suffer from epileptic seizures or paroxysmal dyspnea. The treatment principle for this disease is to continuously monitor blood pressure levels, administer antihypertensive drugs to patients as soon as possible, quickly relieve the patient's condition, prevent continued damage to target organs, improve target organ function, reduce the incidence of cardiovascular events, and actively improve patient prognosis^[1]. Currently, there are many drugs for the treatment of hypertensive cerebrovascular disease. Conventional treatment generally emphasizes symptomatic treatment, which can usually effectively control the patient's condition, but has a poor effect on regulating the function of the patient's internal organs. In recent years, traditional Chinese medicine treatment has been recommended clinically. Traditional Chinese medicine syndrome differentiation treatment emphasizes drug administration according to the patient's syndrome type, using individualized treatment plans to regulate the patient's disordered qi, help the patient restore the function of the organs, try to save the damaged target organ function, and have a good effect on improving the patient's prognosis^[2]. This study analyzed the clinical conditions of 80 patients with hypertensive cerebrovascular disease and

summarized the clinical experience in TCM syndrome differentiation and treatment.

2. Materials and methods

2.1. General information

80 patients with hypertensive cerebrovascular disease who were treated from January 2022 to April 2023 were selected as subjects and randomly divided into a control group ($n = 40$, treated with Nao'an Capsules) and an observation group ($n = 40$, treated with TCM syndrome differentiation on the basis of Nao'an Capsules). In the control group, there were 21 males and 19 females; age ranged from 48 to 75 years old, with an average age of (60.36 ± 8.72) years old; typical symptoms: 24 cases with severe headache, 19 cases with projectile vomiting, 20 cases with restlessness and excitement, 9 cases with epileptic seizures, and 16 cases with paroxysmal dyspnea; weight 50–78 kg, with an average of (64.01 ± 3.56) kg. There were 20 males and 20 females in the observation group; age ranged from 46 to 75 years old, with an average of (60.42 ± 8.59) years; typical symptoms: 26 cases with severe headache, 20 cases with projectile vomiting, 17 cases with restlessness and excitement, 7 cases with epileptic seizures, and 18 cases with paroxysmal dyspnea; weight ranged from 50 to 80 cases, with an average of (64.04 ± 3.59) kg. Comparison of baseline data between the two groups, $P > 0.05$.

Inclusion criteria: (1) The condition meets the diagnostic criteria in the “National Guidelines for the Prevention, Treatment and Management of Primary Hypertension 2020 Edition”^[3]. (2) Be accompanied by family members to the hospital for diagnosis and treatment. (3) There are no missing items in the medical records. (4) Can cooperate with follow-up visits as required.

Exclusion criteria: (1) History of cerebrovascular disease. (2) There is renal failure. (3) Combined with malignant tumors. (4) Transfer to hospital for treatment midway.

2.2. Method

Control group: While providing routine symptomatic treatment, the patients were instructed to take Nao'an capsules (Manufacturer: Shanghai Xianghe Pharmaceutical Co., Ltd.; Approval number: National Drug Approval No. Z31020420; Specification: 0.4 g), 5 capsules each time, 3 times a day. If the condition is severe, increase the dosage to 7 capsules each time. Observe changes in the patient's condition and adjust the medication plan in a timely manner. Observe the efficacy after 4 weeks of medication.

Observation group: On the basis of the above treatments, TCM syndrome differentiation treatment was performed: 40 patients in this group were divided into: (1) kidney deficiency syndrome ($n = 14$), (2) Yin deficiency syndrome ($n = 9$), (3) liver-fire syndrome ($n = 10$), and (4) phlegm turbidity syndrome ($n = 7$). Body medicine: (1) Use 30 g of raw astragalus, 10 g of Dilong, 30 g of epimedium, 12 g of Chuanxiong, 30 g of Alisma, 15 g of loranth, 15 g of Ligustrum lucidum, 15 g of Polygonatum, 15 g of *Achyranthes bidentata*, 15 g of fried *Eucommia ulmoides*, and 15 g of Chinese angelica; (2) Use 3 pieces of *Millet spatholobus* 0 g, *Radix pseudostellariae* 15 g, *Rehmannia glutinosa* 12 g, Antler Gum 9 g, *Cornus officinalis* 15 g, *Ligusticum chuanxiong* 15 g, *Lycium barbarum* 15 g, Chinese yam 15 g, Cuscuta 15 g, tortoise shell 15 g; (3) Recipe uses 12 g skullcap, 30 g *Prunella vulgaris*, 12 g gardenia, 3 chrysanthemums 0 g, peony bark 15 g, Uncaria 30 g, Bupleurum 15 g, *Cyperus cyperus* 15 g; (4) Use 30 g *Codonopsis pilosula*, 10 g raw licorice, 30 g *Codonopsis pilosula*, 10 g Poria, 12 jujubes, 10 g *Gastrodia elata*, 15 g ginger, 15 g tangerine peel, 15 g raw pinellia. Observe the efficacy after 4 weeks of medication.

2.3. Observation indicators

- (1) Use the “National Guidelines for the Prevention, Treatment and Management of Primary Hypertension 2020 Edition” and the efficacy evaluation standards in the study of scholar Wen Xinghua^[4] as well as the National Institutes of Health Stroke Scale (NIHSS) and other data as references to evaluate the efficacy. Evaluation criteria: Markedly effective: severe headache, projectile vomiting, restlessness, excitement and other clinical symptoms Symptoms and manifestations completely disappear or basically disappear, and the NIHSS score is reduced by

46%–90%; effective: the above clinical symptoms and manifestations are significantly improved, and the NIHSS score is reduced by 18%–45%; ineffective: the condition improvement does not meet the above-mentioned markedly effective or effective standards; the total effective rate is equal to the sum of the significant rate and the effective rate.

(2) Blood pressure and blood lipid levels

Take 3 mL of fasting cubital venous blood from the patient in the morning to detect the patient's triglycerides (normal reference range is 0.56–1.7 mmol/L), total cholesterol (normal reference range is 3.0–5.20 mmol/L), and high-density lipoprotein cholesterol (normal reference range is: 1.16–1.4 for adult men) 2 mmol/L; adult women 1.29–1.55 mmol/L) and high-density lipoprotein cholesterol (normal reference range is 2.07–3.10 mmol/L), as well as diastolic blood pressure (normal reference range is 60–89 mmHg), systolic blood pressure (normal reference range is 90–119 mmHg).

(3) Cerebral blood flow and cerebrovascular function score

Use a color Doppler ultrasound detector to detect cerebral blood flow indicators of the patient's middle cerebral artery, basilar artery and cerebrovascular average flow, and use NIHSS to evaluate the patient's cerebrovascular function.

2.4. Statistical methods

Use SPSS 26.0 to test measurement data and count data, expressed as mean \pm standard deviation (SD), (n, %), corresponding to *t* test and chi-square test; $P < 0.05$, the difference is statistically significant.

3. Result

3.1. Clinical efficacy

The clinical efficacy of the observation group was better than that of the control group, $P < 0.05$. See **Table 1**.

Table 1. Clinical efficacy (n, %)

| Group | n | Effective | Valid | Invalid | Always efficient |
|-------------------|----|-----------|-----------|----------|------------------|
| Observation group | 40 | 26 (65.0) | 13 (32.5) | 1 (2.5) | 39 (97.5) |
| Control group | 40 | 15 (37.5) | 20 (50.0) | 8 (20.0) | 32 (80.0) |
| χ^2 | - | | | | 6.135 |
| <i>P</i> | - | | | | 0.013 |

3.2. Blood pressure and blood lipid levels

The blood pressure and blood lipid levels of the observation group were lower than those of the control group, $P < 0.05$. See **Table 2**.

Table 2. Blood pressure and blood lipid levels (mean \pm SD)

| Group | n | Blood pressure level (mmHg) | | Blood lipid level (mmol/L) | | | |
|-------------------|----|-----------------------------|-------------------------|----------------------------|-----------------|-----------------|-----------------|
| | | Diastolic blood pressure | Systolic blood pressure | Total cholesterol | Triacylglycerol | HDL cholesterol | LDL cholesterol |
| Observation group | 40 | 87.05 \pm 0.16 | 102.37 \pm 1.05 | 3.97 \pm 0.24 | 1.06 \pm 0.35 | 1.24 \pm 0.05 | 2.30 \pm 0.21 |
| Control group | 40 | 90.17 \pm 1.29 | 108.43 \pm 2.29 | 4.85 \pm 0.31 | 1.62 \pm 0.25 | 1.46 \pm 0.12 | 2.79 \pm 0.14 |
| <i>t</i> | - | 15.180 | 15.214 | 14.196 | 8.234 | 10.703 | 12.279 |
| <i>P</i> | - | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |

3.3. Cerebral blood flow and cerebrovascular function scores

The cerebral blood flow and cerebrovascular function scores of the observation group were better than those of the control group, $P < 0.05$. See **Table 3**.

Table 3. Cerebral blood flow and cerebrovascular function scores (mean \pm SD)

| Group | n | Middle cerebral artery (cm/s) | basilar artery (cm/s) | Average cerebral blood flow (cm/s) | Cerebrovascular function score (points) |
|-------------------|----|-------------------------------|-----------------------|------------------------------------|---|
| Observation group | 40 | 89.17 \pm 10.50 | 58.35 \pm 9.23 | 14.54 \pm 0.70 | 8.25 \pm 3.42 |
| Control group | 40 | 83.39 \pm 8.04 | 53.27 \pm 10.02 | 11.92 \pm 1.36 | 11.09 \pm 2.45 |
| <i>t</i> | - | 2.764 | 2.358 | 10.833 | 4.270 |
| <i>P</i> | - | 0.000 | 0.010 | 0.000 | 0.000 |

4. Discussion

Hypertension is a disease that affects the systemic circulatory system and organs. The condition is related to the patient's genetics, age, diet, lifestyle, etc. If the patient's blood pressure level fluctuates greatly for a long time, it will lead to cerebral arteriosclerosis, cerebral ischemic stroke, cerebral hemorrhage and other cerebrovascular diseases, which poses a great threat to the patient's life safety, high disability rate, and quite high mortality rate [5]. Hypertensive cerebrovascular disease is very harmful to human life and health. It is generally believed that high blood pressure increases the risk of cerebral atherosclerosis in patients, resulting in varying degrees of abnormal changes in arterial blood vessels, hardening of blood vessel walls and reduced elasticity. As the thickness of blood vessel walls continues to increase, the blood supply to the patient's brain is insufficient, resulting in a significantly increased risk of cerebrovascular disease. Most patients suddenly develop cerebrovascular disease without knowing it, such as cerebral infarction and cerebral hemorrhage, which damages the brain and neurological functions of patients, and the mortality rate of patients is significantly increased [6].

The general treatment of hypertensive cerebrovascular disease mainly involves medication to lower blood pressure and regulate lipids, treat the patient's condition symptomatically, strengthen the improvement and elimination of clinical symptoms, control the patient's condition in a short period of time, prevent sustained damage to target organs, and reduce the damage to the patient's brain function caused by the condition. Patients in the observation group of this study were treated with traditional Chinese medicine syndrome differentiation on the basis of conventional symptomatic treatment. The total effective rate was 97.5%. The patients' blood pressure and blood lipid levels dropped significantly. Diastolic blood pressure, systolic blood pressure, and total cholesterol, triacylglycerol, high-density lipoprotein cholesterol and low-density lipoprotein. The cholesterol level was lower than that of the control group, and the average flow of the middle cerebral artery, basilar artery, and cerebral blood vessels was significantly improved. This is similar to the research results of Tan Wei and other scholars [7], indicating that the cerebral blood flow of patients is fully increased, which can reduce the patient's neurological damage and improve the cerebrovascular function.

Traditional Chinese medicine believes that hypertension belongs to the categories of headache, dizziness, etc. The condition is related to the dysfunction of target organs such as the liver and kidney. For example, patients have insufficient kidney water, liver and kidney yin deficiency, etc., which causes the brain marrow to be empty and malnourished, resulting in a decrease in the ability of cerebral vasoconstriction or dysfunction, resulting in the inability of automatic regulation of cerebral blood flow and greater damage to nerves. Scholars such as Wu Qiudi [8] have pointed out that an increase in red blood cells and an increase in blood viscosity in the human body can also cause a decrease in cerebral blood flow, causing ischemia, hypoxia, and cerebral vascular stenosis, which is also one of the causes of hypertensive cerebrovascular disease.

This study shows that TCM syndrome differentiation treatment has a positive impact on the recovery of patients with hypertensive cerebrovascular disease. Specific analysis:

- (1) This study implemented symptomatic treatment, Nao'an capsule treatment and TCM syndrome differentiation treatment for the patients in the observation group. Symptomatic treatment emphasizes the control of the patient's basic disease, promotes the reduction of the patient's blood pressure level, and regulates the blood lipid level in the patient's body. The purpose is to control the patient's condition aggravation, improve the patient's brain function and nerve damage, and try to avoid poor prognosis^[9].
- (2) Nao'an Capsule is a Chinese patent medicine that is a blood-regulating agent. It is formulated with *Angelica sinensis*, *Chuanxiong* rhizome, safflower and other drugs. It has the effect of promoting blood circulation and removing blood stasis and replenishing Qi and unblocking collaterals. It is mainly effective for patients in the acute and recovery stages of cerebral thrombosis. It has the ability to inhibit diphosphorus. The pharmacological effects of adenosine acid can prevent thrombosis, have an anti-aggregation effect on platelets, play a good protective role in brain cells, actively improve cerebral circulation, further reduce blood viscosity, and reduce cerebral vascular resistance^[10].
- (3) TCM syndrome differentiation treatment is the core thinking of TCM treatment and the basic principle of TCM in understanding and treating diseases. It mainly focuses on syndrome differentiation and treatment for patients, comprehensively analyzes a series of pathological changes in the patient, identifies the cause, nature and location of the patient's disease, analyzes the relationship between evil and righteousness in the patient's body, and provides targeted treatment after confirming the patient's syndrome type.
- (4) In this study, TCM syndrome differentiation is divided into kidney deficiency syndrome, yin deficiency and yang hyperactivity syndrome, excessive liver-fire syndrome, and phlegm congestion syndrome. The treatment emphasizes pertinence and treats patients with the same disease in different ways. The treatment of kidney deficiency syndrome focuses on nourishing Qi and raising Yang, tonifying kidney and Yang, activating blood and Qi, dispelling wind and nourishing Yin, strengthening the spleen and kidneys, etc.; the treatment of Yin deficiency and Yang hyperactivity syndrome focuses on nourishing blood and nourishing the kidneys. Yin, replenishing essence and replenishing marrow, activating blood and replenishing blood, nourishing kidney and replenishing essence, etc.; the treatment of excessive liver-fire syndrome focuses on clearing the liver and purging fire, clearing heat and drying dampness, promoting blood circulation and removing blood stasis, soothing the liver and relieving stagnation, etc.; the treatment of phlegm-turbid syndrome focuses on drying dampness and resolving phlegm, diuresis and dampness, strengthening the spleen and nourishing blood, regulating Qi and replenishing Qi, etc.; treating patients according to the syndrome type can achieve the effect of treating both the symptoms and the root cause.

5. Conclusion

In summary, TCM syndrome differentiation has a positive impact on the treatment of hypertensive cerebrovascular disease. It can significantly improve patients' blood pressure and blood lipid levels, increase cerebral blood flow, reduce cerebrovascular function scores, and improve neurological deficits.

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Disclosure statement

The author declares no conflict of interest.

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