

Clinical Study of Naoxintong Combined with Aspirin in the Treatment of Senile Ischemic Cerebrovascular Disease

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Abstract: In this study, 68 elderly patients with ischemic cerebrovascular disease (ICD) were randomly selected from June 2023 to June 2024, and were divided into group A (34 cases, conventional treatment + aspirin) and group B (34 cases, combined with Naoxintong on the basis of group A) by double-blind method, and the therapeutic effects of the two groups were compared. After treatment, the hemorheological indexes and NIHSS scores in group B were lower than those in group A ($P < 0.05$), the effective rate in group B was higher than that in group A ($P < 0.05$), and the incidence of adverse reactions in group B was higher than that in group A ($P > 0.05$). ICD patients treated with Naoxintong and aspirin can better improve hemorheology and neurological function, and the effect is significant and safe.

Keywords: Naoxintong; Aspirin; Senile; Ischemic cerebrovascular disease; Curative effect

1. Introduction

Ischemic cerebrovascular disease (ICD) is a kind of disease with high incidence in cerebrovascular sites, mainly in elderly patients, and the older the age, the greater the scope and degree of cerebrovascular disease, and the further aggravation of insufficient blood supply to the brain, which induces a series of symptoms such as dizziness, numbness of limbs, hemiplegia, etc., seriously reducing the quality of life of patients and increasing mortality [1]. There are many kinds of drugs used to treat ICD patients in clinic, among which aspirin is widely used, which has the effect of anti-platelet aggregation, can effectively prevent thrombosis, inhibit the disease and improve the symptoms of ICD [2]. However, some elderly ICD patients treated with aspirin are not ideal, and prone to adverse drug reactions [3]. In order to improve the efficacy and safety of ICD therapy in elderly patients, it is recommended to use aspirin in combination with other drugs. With the development of traditional Chinese medicine, Naoxintong and other Chinese patent medicines have been used in the treatment of ICD in recent years, and have shown unique advantages. Naoxintong is made of Radix Astragali and Radix Salviae Miltiorrhizae, which have the functions of supplementing qi, activating blood circulation, removing blood stasis and dredging collaterals. After being taken by elderly ICD patients, Naoxintong can dilate cerebral vessels, increase cerebral blood supply, further improve clinical signs and symptoms and promote the recovery of neurological function [4]. The purpose of this study was to analyze the effect of Naoxintong combined with aspirin on ICD patients, and to evaluate the effect of combined medication on improving hemorheology, neurological function, efficacy and adverse reactions, so as to provide a reference for clinical optimization of ICD treatment. This study will help to reveal the synergistic mechanism of Chinese and Western medicine in the treatment of ICD, and provide a theoretical basis and practical reference for future research. Through this study, we hope to provide a safer and more effective treatment for elderly patients with ICD. Elaborated as follows.

2. Data and Methods

2.1 General information

Sixty-eight elderly ICD patients were randomly selected from June 2023 to June 2024 and divided into two groups by double-blind method. Group a (34 cases) was 65-82 years old, with an average of (73.15 ± 6.58) years old, and the weight was 45.35-89.63 kg, with an average of (62.75 ± 6.34) kg,

male/female (20/14); In group B (n = 34), the mean age was (75.65 ± 7.23) years and the mean weight was (60.47 ± 6.18) kg (male/female, 18/16). Comparison of general data ($P > 0.05$).

Inclusion criteria: age ≥ 65 years old and ICD diagnostic criteria, diagnosed as ICD by imaging examination, stable vital signs, voluntary participation and informed consent of patients and their families, signed informed documents.

Exclusion criteria: Coagulation dysfunction, severe bleeding tendency, hypersensitivity to the study drug, cognitive dysfunction, severe mental illness, history of thrombolysis and antiplatelet aggregation therapy in the past month, pregnant women, etc.

2.2 Method

2.2.1 Group A

Group A was treated with conventional therapy and aspirin. Oral administration of flunarizine hydrochloride capsules (1 capsule/time, twice a day) and aspirin (0.1g/time, once a day). Patients with hyperlipidemia, diabetes and hypertension were treated with statins, hypoglycemic drugs and antihypertensive drugs according to the actual situation; patients with coronary heart disease were treated with oral metoprolol tartrate tablets (50mg/time, twice a day) and isosorbide mononitrate (60mg/time, once a day). The curative effect was observed after one month of treatment.

2.2.2 Group B

Group B was combined with Naioxintong on the basis of group A. 4 capsules/time, 3 times/d. The curative effect was observed after one month of treatment.

2.3 Index observation

(1) Hemorheological indexes: 5ml of fasting venous blood was collected, the plasma sample was placed in the instrument, and the plasma viscosity was calculated by measuring the flow time or flow distance at different rotational speeds with a rotary viscometer; the whole blood low-shear specific viscosity was calculated by measuring the flow time and flow distance at a certain shear rate with a hemorheometer; Blood samples are processed by centrifugation using a hemocytometer or microcentrifuge to measure the volume ratio of red blood cells in the sample, i.e., hematocrit; by immunoturbidimetry, the blood sample is mixed with a specific reagent, and the fibrinogen content is calculated by measuring the clotting time or turbidity of the sample under specific conditions. (2) NIHSS score: The level of consciousness (0-5 points), language disorder (0-9 points), visual field (0-3 points), facial paralysis (0-3 points) and total score (0-42 points) in the NIHSS scale were used to evaluate the neurological deficit of patients, and the better the recovery of neurological function, the lower the score. Total score: 0 (no stroke manifestations), 1-4 (mild), 5-15 (moderate), 16-20 (moderate-severe), 21-42 (severe). (3) Effective rate = markedly effective rate + effective rate. Clinical signs and symptoms and signs, laboratory test indicators: return to normal as markedly effective, significantly improved as effective, no change as ineffective. Incidence of adverse reactions = (rash + fatigue + nausea and vomiting)/total number of cases $\times 100\%$.

2.4 Statistical analysis

SPSS26.0 processing data, ($\bar{x} \pm s$) and (%) represented the measurement and enumeration data, which were tested by t value and χ^2 respectively, and ($P < 0.05$) were statistically significant.

3. Results

3.1 Comparison of hemorheological indexes

The hemorheological indexes of the two groups before treatment were compared ($P > 0.05$), and those of group B after treatment were lower than those of group A ($P < 0.05$), as shown in Table 1.

Table 1: Comparison of hemorheological indexes [$\bar{x} \pm s$]

Grouping	Number of cases	Plasma viscosity (mPa/s)		Whole blood low shear specific viscosity (mPa/s)		Hematocrit (%)		Fibrinogen, G/L	
		Before treatment	After treatment	Before treatment	After treatment	Before treatment	After treatment	Before treatment	After treatment
Group B	34	1.65±0.31	1.38±0.23*	9.23±1.15	8.02±0.79*	43.69±4.23	40.14±2.15*	3.95±0.68	3.15±0.23*
Group A	34	1.62±0.34	1.51±0.26	9.31±1.12	8.85±0.94	43.53±4.26	42.98±2.04	3.91±0.69	3.53±0.28*
T-value	-	0.380	2.183	0.290	3.941	0.155	5.587	0.240	6.114
P value	-	0.705	0.032	0.772	0.000	0.877	0.000	0.810	0.000

Note: Compared with this group before treatment *, P < 0.05.

3.2 Comparison of NIHSS scores

Before treatment, the NIHSS scores of the two groups were compared (P > 0.05), and after treatment, the NIHSS scores of group B were lower than those of group A (P < 0.05), as shown in Table 2.

Table 2: Comparison of NIHSS scores [$\bar{x} \pm s$ (points)]

Grouping	Number of cases	Level of consciousness (5 points)		Language barrier (9 points)		Field of vision (3 points)		Facial paralysis (3 points)		Total (42 points)	
		Before treatment	After treatment	Before treatment	After treatment	Before treatment	After treatment	Before treatment	After treatment	Before treatment	After treatment
Group B	34	3.56±0.84	0.67±0.21*	7.26±0.94	1.56±0.38*	2.03±0.48	0.51±0.16*	2.05±0.42	0.54±0.18*	34.26±3.48	16.35±1.14*
Group A	34	3.52±0.86	1.34±0.58*	7.29±0.92	2.28±0.51*	2.06±0.47	1.08±0.35*	2.09±0.41	1.12±0.43*	34.05±3.52	18.81±2.26*
T-value	-	0.194	6.333	0.132	6.601	0.260	8.636	0.397	7.255	0.247	5.666
P value	-	0.846	0.000	0.894	0.000	0.795	0.000	0.692	0.000	0.805	0.000

Note: Compared with this group before treatment *, P < 0.05.

3.3 Comparison of effective rate and incidence of adverse reactions

The effective rate in group B was higher than that in group A (P < 0.05), and the incidence of adverse reactions in group B was higher than that in group A (P > 0.05), as shown in Table 3.

Table 3: Comparison of effective rate and incidence of adverse reactions [n (%)]

Grouping	Number of cases	Effective rate of treatment				Incidence of adverse reactions			
		Remarkable effect	Valid	Not valid	Efficient	Rash	fatigue	Nausea and vomiting	Incidence
Group B	34	24(70.59)	10(29.41)	1(2.94)	33(97.06)	1(2.94)	1(2.94)	1(2.94)	3(8.82)
Group A	34	15(44.12)	12(35.29)	7(20.59)	27(79.41)	0(0.00)	1(2.94)	1(2.94)	2(5.88)
X ² value	-	-	-	-	5.100	-	-	-	0.215
P value	-	-	-	-	0.023	-	-	-	0.642

4. Discussion

The occurrence of ICD is related to atherosclerosis, changes in blood composition, hemodynamic changes, thrombus shedding and other factors. Atherosclerosis is the main factor inducing ICD. Cholesterol and lipids deposit on the inner wall of diseased arteries to form plaques, which lead to vascular stenosis or obstruction and affect the blood supply of brain tissue. Increased blood viscosity, increased platelet count, abnormal coagulation function, hemodynamic changes and other factors also affect the occurrence and development of ICD, which lead to decreased cerebral blood flow and increase the risk of ICD attack. Thrombus shedding is easy to embolize cerebral arteries and induce ICD. The location and severity of morbidity in elderly ICD patients affect clinical signs, and the common manifestations are sudden language disorders such as unclear speech, difficulty in understanding other people's words, limb weakness or numbness, headache, dizziness, nausea, blurred vision, unstable gait, mouth deviation, drooling and other symptoms [5]. Severe neurological symptoms such as disturbance of consciousness, hemiplegia and aphasia [6] may also occur in severe cases.

The results of this study showed that before treatment, the hemorheological indexes of the two

groups were compared ($P > 0.05$), and after treatment, the hemorheological indexes of group B were lower than those of group A ($P < 0.05$), which confirmed that ICD patients treated with Naoxintong and aspirin could better improve hemorheology. Aspirin, as a classic antiplatelet drug, can inhibit the activity of cyclooxygenase and reduce the amount of platelet-activating factor produced by the body, thus inhibiting platelet aggregation, preventing thrombosis and improving hemorheology [7]. The main ingredients of Naoxintong, such as *Angelica sinensis*, *Ligusticum wallichii*, *Salvia miltiorrhiza*, *Paonia lactiflora* and *Carthamus tinctorius*, have the effects of benefiting qi and activating blood circulation, relaxing the channels and activating the collaterals, and removing blood stasis. Modern pharmacology has proved that these drugs can inhibit platelet aggregation and coagulation factor synthesis, dissolve fibrin, improve hemorheology, and reduce the activity of endothelial cells, thus playing a role in improving hemorheology [8]. The combination of the two drugs can further improve the effect of anti-platelet aggregation, reduce blood viscosity and improve the function of vascular endothelial cells, thereby improving the effect of hemorheology [9]. Improving hemorheology can not only help to reduce the frequency of transient ischemic attack, but also improve the symptoms of hyperlipidemia, hypertension and diabetes, further stabilize plaque and reduce the incidence of cardiovascular adverse events.

Before treatment, the NIHSS scores of the two groups were compared ($P > 0.05$), and after treatment, the NIHSS scores of group B were lower than those of group a ($P < 0.05$). ICD patients treated with Naoxintong and aspirin could better improve neurological function. Aspirin inhibits cyclooxygenase-1 activity and reduces the amount of thromboxane A₂ produced, thereby inhibiting platelet aggregation and preventing thrombosis and vascular occlusion [10]. Naoxintong can stimulate the body to synthesize and release a large amount of nitric oxide, dilate blood vessels, improve cerebral blood flow, provide sufficient oxygen and nutritional support for damaged brain tissue, and promote the recovery of neurological function [11]. Inflammatory reaction and oxidative stress are involved in the pathological process of ICD. The main components of Naoxintong, such as *Astragalus membranaceus* and *Salvia miltiorrhiza*, have antioxidant and anti-inflammatory effects. They can reduce the amount of inflammatory factors such as tumor necrosis factor and interleukin released by the body, thereby alleviating inflammatory reaction. They can also improve the activity of antioxidant enzymes such as superoxide dismutase and reduce the amount of oxygen free radicals. Protect neurons from oxidative damage [12]. Naoxintong can promote the proliferation and migration of endothelial cells, promote neovascularization in ischemic area, improve local microcirculation, regulate the level of nerve growth factor, promote neuron regeneration and synaptic reconstruction, so as to restore nerve function. Naoxintong can improve mitochondrial function, enhance cellular energy metabolism, contribute to neuronal survival and functional recovery, regulate blood sugar and lipid metabolism, reduce risk factors of cerebrovascular disease, and indirectly promote the recovery of neurological function.

The effective rate in group B was higher than that in group a ($P < 0.05$), and the incidence of adverse reactions in group B was higher than that in group a ($P > 0.05$). The combined use of Naoxintong and aspirin in ICD patients was effective and safe. Combination therapy can protect brain cells more effectively and reduce ischemia-reperfusion injury through multi-way and multi-target mechanism of action, thus improving the effective rate of treatment. Aspirin is effective in the treatment of ICD, but it may also cause adverse reactions such as rash, nausea and vomiting. Naoxintong, as a traditional Chinese medicine preparation, has natural ingredients and less side effects. The combination of the two will not increase the risk of adverse drug reactions.

5. Conclusions

To sum up, ICD patients treated with Naoxintong and aspirin can better improve hemorheology and neurological function, and the effect is significant and safe.

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