

Clinical Observation of Electroacupuncture Combined with Irbesartan Tablets in the Treatment of Essential Hypertension (Hyperactive Liver Yang Syndrome)

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Abstract

Objective: In this study, electroacupuncture was used to treat grade 1 primary hypertension (syndrome of hyperactive liver Yang) patients as the research object, and the scores of TCM symptoms, blood pressure and efficacy were compared before and after treatment. By observing the influence of electrotherapy on TCM symptom score, blood pressure value and curative effect judgment of primary hypertension patients (syndrome of hyperactive liver Yang) of grade 1, the experience is summarized to provide more theoretical basis for clinical practice. **Methods:** 60 patients with essential hypertension (syndrome of hyperactive liver Yang) were randomly divided into two groups, 30 patients in control group were treated with irbesartan tablets. The treatment group was treated with electroacupuncture combined with irbesartan tablets. Syndrome score and clinical efficacy were compared before and after treatment. **Results:** The improvement effect and treatment effect of TCM symptom in the treatment group were better than those in the control group ($P < 0.05$). **Conclusion:** Electroacupuncture combined with Irbesartan tablets is effective in the treatment of essential hypertension (hyperactive liver Yang syndrome).

Keywords

Electroacupuncture, Irbesartan tablet, Essential hypertension, Hyperactive syndrome of liver Yang

1. Introduction

At present, the number of hypertension patients in the world has already exceeded 1 billion, and it is expected that by 2025, the number of hypertension patients in the world will reach about 29.2%, and about 1.56 billion adults will suffer from hypertension, 60% more than in 2000 [1]. According to the World Health Organization's world Health Statistics 2021: Monitoring health for the Sustainable Development Goals, 33% of women with high blood pressure are more likely to take hypertension medication than only 19% of men. Among those taking the drugs, blood pressure control was 12% in women and 6% in men, half the rate [2]. A study compared the outcomes and adverse events in patients with ACE inhibitors and ARBs have found that there is currently little clinical justification for the use of ACE inhibitors for hypertension and so-called convincing indications from a risk-benefit perspective in patients with hypertension and in patients with obvious indications [3]. Irbesartan has been found to re-

duce hypertensive kidney damage by inhibiting the chemotaxis of Th22 cells and the accumulation and inflammation of Th22 cells [4]. Therefore, this study intends to explore the clinical efficacy of electroacupuncture combined with Irbesartan tablets in the treatment of essential hypertension (hyperactive liver Yang syndrome), and provide a more green and healthy treatment plan for the treatment of hypertension.

2. Data and Methods

2.1 The general information

The study was approved by the ethics Committee of Ruikang Clinical College of Guangxi University of Traditional Chinese Medicine. Sixty patients with essential hypertension (syndrome of hyperactivity of liver Yang) were enrolled from January 2020 to December 2021 and randomly divided into 2 groups. A total of 60 patients were collected in this study, including 19 males and 11 females in the control group, aged 29-65 years, with an average of (51.17 ± 10.71) years, with a course of disease ranging from 0.1 to 30 years, with an average of 7.99 ± 7.19 years. In the treatment group, there were 17 males and 13 females, aged from 19 to 65 years, with an average of (46.07 ± 12.75) years, and the disease course ranged from 0.5 to 10 years, with an average of 4.38 ± 2.89 years. Gender, age and course of disease were comparable between the two groups ($P > 0.05$).

2.2 Inclusion and exclusion criteria

2.2.1 Inclusion criteria

- (1) Meet the western diagnostic criteria for hypertension [5]; Grade 2 hypertension group was selected as the main observation object.
- (2) It conforms to the diagnostic criteria of Traditional Chinese medicine [6], belongs to the hyperactive witness of irascibility.
- (3) Persons aged between 18 and 65 who have signed informed consent;
- (4) After two weeks of withdrawal of hypertension drugs not used in this study or without medication.

2.2.2 Exclusion criteria

- (1) Under the age of 18 or over 65; Pregnant or lactating women;
- (2) Patients with secondary hypertension, severe hypertension or acute hypertension;
- (3) Patients with serious primary diseases of heart, brain, liver, kidney and hematopoietic system, psychiatric patients and patients with bleeding tendency;
- (4) Participating in other clinical trials.

2.3 Methods

2.3.1 Treatment

Control group: (1) Health education: According to the Guidelines for Hypertension Education in China [7], correct bad living habits such as giving up smoking, controlling alcohol consumption, reasonable diet, insisting on a certain amount of exercise and adjusting emotions. (2) Take antihypertensive drugs regularly. Irbesartan tablet (National Drug Approval J20080061 Ambovir) 0.15g, qd; Continuous treatment for 28 days.

Treatment group: (1) On the basis of health education and taking Irbesartan tablets, electroacupuncture was added for treatment, and acupoint prescriptions were selected as baihui, Shuangfengchi, Hegu, Taichong, Quchi, Sanyinjiao and Taixi. (2) Operation method: The patient was placed in supine position, and the needle application site was fully exposed. Acupuncture points were positioned according to the above standards. After the acupuncture points were disinfected with Maokang skin disinfectant, disposable acupuncture needles (Yunlong brand specification: 0.25mm×40mm) were selected. Needling Baihui (0.5 inch flat needling), Fengchi (0.8 inch oblique needling towards the tip of the nose), Quchi (1 inch straight needling), Hegu (1 inch straight needling), Taichong (0.8 inch straight needling), Sanyinjiao (1 inch straight needling), Taixi (1 inch straight needling). After acupuncture into the above points, Hegu, Quchi, Taichong line twirling purging method, Sanyinjiao, Taixi line twirling filling method, after gas two two are connected to a group of electroacupuncture therapy instrument (Qingdao Xincheng G6805-I type), continuous wave, frequency 60 times/min, current intensity from 0 to gradually increase, with patient tolerance as the degree. After receiving the power, the needle was left for 30min. The patients were treated once a day, 6 days a week, and rested on Sunday. 2 weeks is a course of treatment. Patients in this group received 2 courses of treatment for a total of 28 days.

2.3.2 Observational index

(1) Determination of blood pressure efficacy: According to the Routine Diagnosis and Treatment of TCM Diseases and Syndromes [8] to evaluate the effect of blood pressure. Significant effect: (1) Diastolic blood pressure decreased by 10mmHg or more and reached the normal range; (2) Diastolic blood pressure has decreased by 20mmHg or more although it has not decreased to normal. Effective: (1) diastolic blood pressure decreased less than 10mmHg, but has reached the normal range; (2) Diastolic blood pressure decreased 10-19 MMHG compared with before treatment, but did not reach the normal range; (3) systolic blood pressure decreased more than 30mmHg. One of them is required.

Invalid: failure to meet the above criteria.

Total efficiency = significant efficiency + efficient.

(2) Syndrome score: The efficacy of syndrome score is determined by referring to syndrome Combined with TCM Syndrome Theory [9].

Efficacy index (R) = (pre-treatment points - post-treatment points)/pre-treatment points x100%

(1) Significant effect: the clinical symptoms and signs were significantly improved, $R \geq 70\%$.

(2) Effective: clinical symptoms and signs were improved, $30\% \leq R < 70\%$.

(3) Invalid: no significant improvement or even aggravation of clinical symptoms and signs ($R < 30\%$).

Total efficiency = significant efficiency + efficient.

2.3.3 Statistical method

Statistical software SPSS 26.0 was used for statistical analysis. The measurement data were statistically described by mean±standard deviation ($\bar{X} \pm S$), and rank sum test was used for grade data. The test level was $\alpha=0.05$, $P < 0.05$, indicating that the difference was statistically significant.

3. Consequence

3.1 Syndrome integral comparison

There was statistical significance between the two groups of syndrome scores before and after treatment ($P=0.007 < 0.05$), and there was significant difference between the two groups of syndrome scores before and after treatment ($P < 0.001$), as shown in Table 1.

Table 1. Comparison of Syndrome score before and after treatment (score)

group	Before treatment ($\bar{X} \pm S$)	After treatment ($\bar{X} \pm S$)	T value	P value
control group	19.80±6.46	13.03±5.33	7.703	< 0.001
treatment group	19.57±5.57	9.73±3.21	12.473	< 0.001
T value	0.022	2.844		
P value	0.983	0.006		

3.2 Comparison of syndrome efficacy

The total effective rate of the two groups was statistically significant ($P=0.008 < 0.05$), indicating that the treatment group was better than the control group in improving the syndrome (see Table 2).

Table 2. Comparison of curative effect of syndrome integral after treatment (N/%)

group	NNT	curative effect				ORR	Z	P
		Invalid	Effective	Significant effect				
control group	30	7(23.3%)	21(70.0%)	2(6.7%)	23(76.7%)	2.653	0.008	
treatment group	30	1(3.3%)	23(76.7%)	6(20.0%)	29(96.7%)			

3.3 Blood pressure effect

3.3.1 Systolic blood pressure effect

After treatment, there was statistical significance in systolic blood pressure between the two groups ($P=0.020 < 0.05$). There was a statistical difference in systolic blood pressure between the two groups before and after treatment ($P < 0.001$), as shown in Table 3.

Table 3. Comparison of systolic blood pressure levels before and after treatment (mmHg)

group	Before treatment ($\bar{X} \pm S$)	After treatment ($\bar{X} \pm S$)	T value	P value
control group	166.33 \pm 14.63	154.40 \pm 14.46	10.691	< 0.001
treatment group	162.40 \pm 16.82	145.47 \pm 14.47	9.287	< 0.001
T value	0.966	2.398		
P value	0.388	0.020		

3.3.2 Diastolic blood pressure effect comparison

After treatment, the difference in diastolic blood pressure between the two groups was statistically significant ($P=0.026 < 0.05$). There was statistical difference in diastolic blood pressure between the two groups before and after treatment (< 0.001). As shown in Table 4.

Table 4. Comparison of diastolic blood pressure before and after treatment (mmHg)

group	Before treatment ($\bar{X} \pm S$)	After treatment ($\bar{X} \pm S$)	T value	P value
control group	105.93 \pm 9.11	95.00 \pm 6.49	9.970	< 0.001
treatment group	105.20 \pm 11.94	89.57 \pm 11.23	9.767	< 0.001
T value	0.268	2.294		
P value	0.790	0.026		

3.3.3 Comparison of blood pressure efficacy

The hypotensive effect of the two groups after diagnosis and treatment was statistically significant ($P=0.024 < 0.05$), indicating that the hypotensive effect of the treatment group was better than that of the control group. As shown in Table 5.

Table 5. Comparison of blood pressure efficacy after treatment (N /%)

group	NNT	curative effect				ORR	Z	P
		Invalid	Effectivtve	Significa-nt effect				
control group	30	6(20.0%)	17(56.7%)	7(23.3%)	23(76.7%)	2.260	0.024	
treatment group	30	14(46.7%)	15(50.0%)	1(3.3%)	29(96.7%)			

3.4 Adverse event comparison

There were no adverse events in both groups during the whole treatment process.

4. Discussion

In traditional Chinese medicine, blood pressure is divided into Yin and Yang. Yin and Yang two deficiency, is a “dizzy” pulse, supplemented by unsteady gait, in the shape of vertigo. Tracing its origin, lies in the wind, phlegm, deficiency, stasis, a lot of external evil, induced internal dampness, so that phlegm and stasis, mutual obstruction, and then qi and blood stagnation, qiao points are not nourishing, qingqi is not born. As the Medical Legend says, “Headache, phlegm, hot wind and moisture, or pain caused by deficiency of qi and blood”, “Three causes extreme one disease syndrome square theory” also has a description: “vertigo involves three reasons, not specifically for the head wind, such as cold, heat and humidity in the three Yang Meridian, all can dizzy, head weight item strong..... belong to extrinsic cause; Anger, worry, dirty gas is not... Also make people dizzy vomiting... belong to internal cause; Or food and drink hunger and satiety, sweet injury, overwork, under the deficiency on the real, extraction of

gold sores, vomiting epistaxis, too much blood, and the woman collapsed... belong to not internal and external cause [10]”.

This study mainly treated grade 1 primary hypertension patients with hyperactive irascence syndrome. The selected acupoints were mainly shaoyang and Jueyin meridian: Baihui, Shuangfengchi, Hegu, Quchi, Taichong, Sanyinjiao and Taixi. To zi kidney water, flat liver wood. Baihui: located at the top of the top, du Mai point, into the brain, vertigo is located in the brain, the brain is the sea of marrow, so Baihui point on vertigo has the effect of clearing eyes and stopping dizziness. The attending efficacy of Baihui in Compendium of Acupuncture and Moxibustion is summarized as follows: baihui point “Main head wind stroke... Boredom, fear and forgetfulness... Headache and vertigo, all diseases are cured”, “Headache and vertigo are cured...” [11]. Acupuncture at baihui point can inhibit the secretion of circulating markers of vascular endothelial injury [12], Improve vascular endothelial function and maintain stable blood pressure. Taichong: it is the original point of foot Jueyin liver meridian and the injection point of foot Jueyin vein, which has the effect of regulating liver and regulating qi and calming liver and potentiating Yang. “The Golden Mirror of Medicine”: “Tai Chong foot big finger... Arteries know death, can cure epilepsy, throat and heart axils...” And vertigo is mainly located in the liver, so the first choice is to zhujuyin Liver Jing yuan point Taichong to calm the liver Qianyang, reduce phlegm, reverse wind. Yuan Jingyun et al. used electroacupuncture baihui and Taichong to treat spontaneously hypertensive rats, and monitored blood pressure values 1 day before treatment and 6, 12, 18, 24 and 30 days during treatment. They found that systolic blood pressure began to be statistically significant 24 days after treatment, and electroacupuncture had a significant effect on blood pressure reduction 30 days after treatment [13]. Fengchi: located in the head, local acupoint, thinning the head qi machine, but also to calm the liver qianyang. “The Golden Mirror of Medicine”: “Fengchi point, the treatment of lung by wind chill and biased head wind...” And Compendium of Acupuncture and Moxibustion Head-facing door: “Head-wind vertigo: Hegu Fenglong Jie Xi Fengchi holding hands and legs, moxibustion in tiger mouth [11]”. Hegu and Quchi are Yangming meridian points, which can clear Yangming, regulate qi and reduce blood pressure. “Compendium of Acupuncture and Moxibustion”: “Quchi Hegu first needle diarrhea, and in addition to chronic diseases...” “Head wind headache and toothache, find the two points Hegu andSanjian...[11]” Ding Li [14] found that the expression of NF-κBP65 and blood pressure in essential hypertensive rats were decreased by electroacupuncture with medium and high intensity. Among them, Hegu and Taichong are used together as “Siguan Points”. Li Ting et al. [15] found that the total effective rate reached 88.89% after pressing Siguan point 100 times a day for adult prehypertensive patients, which had a good antihypertensive effect compared with the control group (67.44%). Sanyin intersection: Foot Sanyin meridian intersection points can be adjusted to supplement the liver, spleen and kidney, and compatible application to treat its origin. Compendium of Acupuncture and Moxibustion·Observation of form and color [11]: “Where chronic infantile convulsion will be dangerous, cannot be said, moxibustion sanyinjiao first...”. Wang Jin et al. [16] found that acupuncture of Sanyinjiao had a good immediate antihypertensive effect on hypertensive patients with renal insufficiency. Taixi: It is the original point of Zushaoyin kidney meridian, the pulsation point of Zushuoyin kidney meridian, and the qi assembly of kidney. “Pearl in Red Water” cloud: “The kidney, is the life of the human body, the Lord of true qi.” Therefore, acupuncture at Taixi point can tonify kidney qi, nourish kidney essence, further nourish kidney water, contain liver wood, and calm liver Yang to reduce blood pressure [17].

In the treatment of western medicine, the treatment of hypertension is usually dominated by drugs, including angiotensin II receptor antagonist (ARB), calcium channel blocker (CCB), angiotensin converting enzyme inhibitor (ACEI), diuretic, α -receptor blocker, β -receptor blocker [18]. Studies compared the outcomes and adverse events in patients with ACE inhibitors and ARBs have found that there is currently little clinical justification for the use of ACE inhibitors for hypertension and so-called convincing indications from a risk-benefit perspective in patients with hypertension and in patients with obvious indications [3]. Since the outbreak of COVID-19 at the end of 2019, many doctors and scholars believe that ARB drugs are a better choice than ACEI drugs for COVID-19 patients with serious disease risk [19]. According to a large amount of data analysis, adverse reactions are prone to occur in the process of drug treatment for hypertension, and the selection of hypertension drugs is usually based on the following seven conditions: (1) Blood pressure level. (2) Whether there is secondary hypertension. (3) Risk factors of hypertension. (4) Age of patients. (5) Related medical conditions. (6) Terminal organ damage. (7) Pharmacogenomics. The selection of drugs and the later treatment may need to adjust drugs have a certain difficulty, medication is more complex. Patients’ choice of antihypertensive drugs is uncertain, and patients’ participation rate and compliance are low.

The results of this study showed that the total effective rate of both syndrome score and blood pressure level in the treatment group was higher than that in the control group, and the difference was statistically significant ($P <$

0.05), indicating that the effect of electroacupuncture combined with Irbesartan tablet on symptom improvement and blood pressure reduction in the treatment group was better than that of western medicine alone in the control group. But still have deficiencies in this study: (1) affected by the hormone levels, blood pressure and body position changes with the change of ALD, AngII, NE has certain correlation, this study due to personal time with conditions such as funding is limited, only to observe the effects of stand hormone level changes on blood pressure, lack of lie stand level comparison, observation has some limitations. Follow-up studies can be added to the comparative study of hormone levels in supine position before and after treatment. (2) The influence of different waveforms and frequencies of electroacupuncture on blood pressure has not yet been reflected, and patients have different tolerance to electroacupuncture intensity. Whether fixation frequency and different intensities have any influence on blood pressure control needs further study. (3) Essential hypertension is a chronic disease with numerous treatment schemes and different syndrome types. In this study, the clinical efficacy of only one syndrome type was observed. Whether the method adopted is optimal has not been determined, and it can be further compared with other treatment methods in the future.

In conclusion, electroacupuncture combined with Irbesartan tablets can significantly improve the symptoms of patients with primary hypertension with hyperactive irbisartan syndrome, effectively control blood pressure, and no adverse events, which is worthy of promotion.

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