Int J Clin Exp Med 2021;14(1):704-710
www.ijcem.com /ISSN:1940-5901/IJCEM0120915

Original Article

Effects of acupuncture combined with auricular point pressing with bean on clinical efficacy, inflammatory factors and sleep quality of patients with cerebral ischemic stroke in a convalescent stage

Jianhua Wei, Tongbo Jiang, Panpan Wang, Min Xu

Department of Rehabilitation, Huai'an Hospital of Traditional Chinese Medicine, Huai'an, Jiangsu, China

Received August 23, 2020; Accepted September 16, 2020; Epub January 15, 2021; Published January 30, 2021

Abstract: Objective: To study the effects of acupuncture at Baihui, Shenting, Sishencong, Sanyinjiao, Zusanli, Neiguan, and Shenmen acupoints combined with auricular point pressing with bean on clinical efficacy, inflammatory factors and sleep quality of patients with cerebral ischemic stroke (CIS) in convalescent stages. Methods: A prospective study was conducted on 80 patients with CIS. Control group (n = 40) received a conventional treatment regimen, while the observation group (n = 40) received additional acupuncture combined with auricular point pressing in addition to treatment in the control group, once a day for 30 min each time for 14 d. Clinical efficacy, inflammatory factors, cognitive function and sleep quality of both groups were observed before and after treatment. Results: The total effective rate of the observation group was higher compared with that of the control group ($P < 0.05$). The improvements of inflammatory factors, mini-mental state examination, Montreal Cognitive Assessment and sleep quality in the observation group were better compared with those in the control group ($P < 0.05$). Conclusion: Acupuncture combined with auricular point pressing with bean in the treatment of CIS can improve clinical efficacy, reduce inflammation, improve cognitive function and sleep quality.

Keywords: Acupuncture, auricular point pressing with bean, cerebral ischemic stroke, clinical efficacy, inflammatory factors, sleep quality

Introduction

Cerebral ischemic stroke (CIS) is the main type of cerebrovascular diseases, and it accounts for more than 80% of cerebrovascular diseases. It is mainly due to the decrease of cerebral blood supply caused by stenosis or occlusion of cerebral arteries for various reasons. CIS has become the second leading cause of death in China, often presenting with an acute onset, and most patients are over 60 years old [1-3]. Inflammation is an important factor leading to the occurrence and development of CIS. Inflammation can induce oxidative stress, which is also an important factor in promoting thrombosis and aggravating nerve function damage [4]. Inflammation leads to tissue ischemia and hypoxia, which leads to vascular endothelial injury and vascular remodeling [5]. Therefore, the continuous inflammatory state during the convalescence period is not conducive to the recovery of patients' nerve function, and whether the inflammatory factors can be effectively cleared becomes an important factor affecting the recovery of patients [6]. With the development of modern technology, great progress has been made in the early diagnosis and related treatment, and the mortality rate of CIS presents a downward trend. However, the high disablement of CIS and lifelong physical disorders in some patients are also important reasons for the decline in the quality of life [7, 8]. After stroke, insomnia often occurs due to nerve damage and the incidence is as high as 59.7%, which also affects patients' quality of life [9]. Early rehabilitation training is advocated for patients with CIS in convalescent stages, but the overall efficacy is poor [10]. Acupuncture and auricular point pressing with bean (APPB) have a long history in China and have the effect

of reconciling Yin and Yang, Qi and blood, and dredging meridians, and acupuncture can improve the clinical efficacy in convalescent CIS [11]. Acupuncture combined with APPB has a significant effect on improving insomnia after stroke [12]. At present, there is no clinical report on effects of acupuncture combined with APPB on the clinical efficacy, inflammatory factors and sleep quality in the treatment of CIS. Therefore, this study was conducted.

Materials and methods

Clinical data

A prospective study was conducted on 80 patients with CIS admitted to the Department of Neurology of Huai'an Hospital of Traditional Chinese Medicine from January 2017 to June 2020. The patients were randomly divided into two groups, with 40 cases in each group. The control group received conventional treatment regimen, while the observation group received acupuncture combined with APPB in addition to treatment of the control group. This study was approved by the Ethics Committee of Huai'an Hospital of Traditional Chinese Medicine, and all patients or their family members signed the informed consent.

Inclusion criteria

(1) Patients who met the CIS diagnostic criteria [13]; (2) Patients aged 18-76 years old; (3) Patients diagnosed with CIS for the first time; (4) Patients with a National Institutes of Health Stroke Scale (NIHSS) score of 5-15 at the time of admission [14]; (5) Patients in convalescence period, that is, 2 weeks to 6 months after the occurrence of CIS.

Exclusion criteria

(1) Patients who could not tolerate acupuncture and APPB therapy; (2) Patients with history of craniocerebral trauma, epilepsy and cerebrovascular disease; (3) Patients who failed to cooperate in the evaluation of cognitive function; (4) Patients complicated with cardiopulmonary insufficiency; (5) Patients complicated with malignant tumors; (6) Patients with mental illness that affects cognition.

Treatment methods

Both groups of patients were treated according to the treatment plan of convalescent CIS in Guidelines for the Diagnosis and Treatment of Cerebral Infarction (Cerebral Ischemic Stroke) in China with Integrated Traditional Chinese and Western Medicine (2017), which includes monitoring and controlling blood pressure and blood sugar, anti-platelet aggregation with aspirin and anticoagulation with clopidogrel [13]. The control group received conventional treatment regimen.

Acupuncture and APPB were performed during the convalescent stage of CIS. The observation group received acupuncture combined with APPB in addition to treatment of the control group. Acupuncture at Baihui, Shenting, Sishencong, Sanyinjiao, Zusanli, Neiguan and Shenmen acupoints was performed using 1.5-inch filiform needle, and the needling technique of mild reinforcing and attenuating was used. At the same time, the Shenmen acupoint of auricular points was selected, and a cowherb seed was used to press the acupoint, 30 min each time, once a day for consecutive 14 d.

Outcome measures

(1) According to NIHSS standard, the clinical efficacy was evaluated 1 month after intervention of acupuncture and APPB, which was divided into cured, remarkable improvement, improvement and invalid [14]. According to the degree of decline of neurological deficit score before and after treatment, a decrease of 91%-100% was considered as cured, a decrease of 46%-90% as remarkable improvement, a decrease of 18%-45% as improvement, and a decrease ≤ 17% as invalid. The total effective rate = (cured + remarkable improvement + improvement)/total number of cases * 100%.

(2) The mini-mental state examination (MMSE) and the Montreal Cognitive Assessment (MoCA) were used to evaluate cognition before and one month after treatment. The total score of MMSE and MoCA scoring system was 30 points, and the lower the score, the worse the cognitive function [15].

(3) During the convalescent stage, 5 mL of venous blood was collected from each CIS patient at 8 o'clock in the morning within 24 h before the intervention and 14 d after treatment. The levels of inflammatory factors including C-reactive protein (CRP), tumor necrosis factor-α (TNF-α) and interleukin-6 (IL-6) were measured by the serum enzyme-linked immu-

Table 1. Comparison of baseline data (n, x ± sd)

Item	Observation group (n = 39)	Control group (n = 38)	χ^2/t	P
Gender (Male/female)	24/15	21/17	0.312	0.576
Age (year)	67.4±7.3	68.2±8.2	0.652	0.452
Education level (year)	11.23±4.82	11.87±3.97	0.635	0.527
Body mass index (kg/m^2)	23.92±3.89	23.46±4.14	0.503	0.617
Time from onset to the start of intervention (d)	15.32±1.56	15.98±1.87	0.796	0.421
Stroke sites			0.747	0.862
Brainstem	4	3		
Lobe	9	10		
Cerebellum	5	7		
Basal ganglia region	21	18		
Comorbidities				
Hyperlipidaemia			0.364	0.546
Yes	22	24		
No	17	14		
Hypertension			0.106	0.744
Yes	24	22		
No	15	16		
Coronary heart disease			0.312	0.577
Yes	14	16		
No	25	22		
Obesity			0.105	0.746
Yes	14	15		
No	25	23		
Hyperhomocysteinemia			0.333	0.564
Yes	29	26		
No	10	12		
Hyperuricemia			0.173	0.678
Yes	26	27		
No	13	11		

nosorbent assay (ELISA) using the automatic microplate reader (Thermo Company, USA). The kits were purchased from Shanghai Enzyme-Linked Biology Co., LTD., China.

(4) Pittsburgh sleep quality scores (0-21 points) were compared before and after treatment. The lower the score is, the better the sleep quality [16].

Statistical analysis

SPSS 17.0 statistical software was used for statistical analysis. Continuous variables in accordance with a normal distribution and homogeneity of variance were expressed as mean ± standard deviation (x ± sd) and compared using t test. Inter-group comparison at the same time point was performed using independent sample t test. Paired sample t-test was used for before-after comparison within the same group. The enumeration data were expressed as n (%) and compared using Pearson chi-square test. $P < 0.05$ was considered statistically significant.

Results

Comparison of clinical data

One patient in the observation group and 2 patients in the control group withdrew due to cerebral hemorrhage during treatment. There were no significant differences between the two groups in terms of gender, age, education level, body mass index, time from onset to the start of intervention, stroke sites or comorbidities, indicating the two groups were comparable (all $P > 0.05$). See **Table 1**.

Table 2. Comparison of clinical efficacy (n, %)

Group	Cured	Remarkable improvement	Improvement	Invalid	Total effective rate (%)
Observation group (n = 39)	4 (10.26)	20 (51.28)	10 (25.64)	5 (12.82)	34 (87.18)
Control group (n = 38)	1 (2.63)	11 (28.95)	13 (34.21)	13 (34.21)	25 (65.79)
χ^2		8.348			4.916
P		0.039			0.027

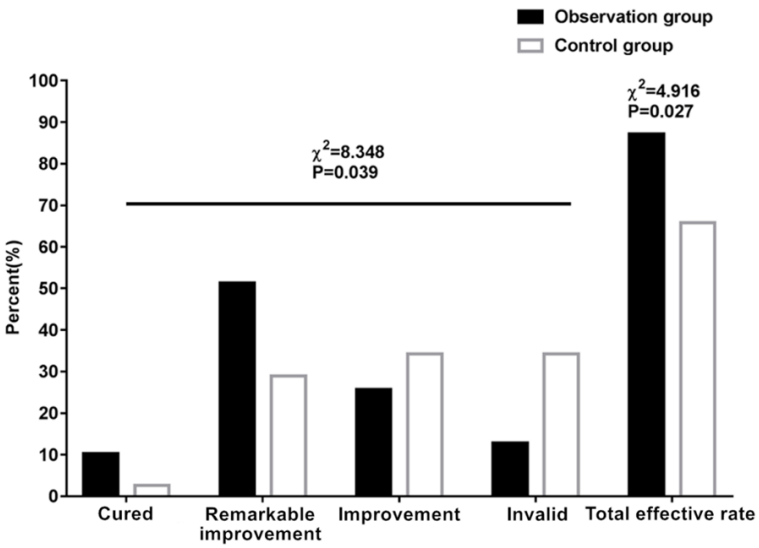

Figure 1. Comparison of clinical efficacy.

Table 3. Comparison of MMSE and MoCA scores before and after treatment (x ± sd)

Item	Observation group		Control group	
	Before treatment	After treatment	Before treatment	After treatment
MMSE (point)	25.56±1.24	27.87±0.93$^{**,\#\#\#}$	25.41±1.18	25.74±1.82
MoCA (point)	22.52±1.99	23.76±2.06$^{*,\#\#\#}$	22.25±2.38	22.25±2.17

Note: Comparison before and after treatment in the same group, $^{*}P < 0.05$, $^{**}P < 0.01$; compared with control group after treatment, $^{\#\#\#}P < 0.001$. MMSE: mini-mental state examination; MoCA: Montreal Cognitive Assessment.

Comparison of clinical efficacy

The comparison of clinical efficacy between the two groups showed that there was no significant difference in the number of cases with cured, remarkable improvement, improvement and invalid recovery between the two groups (P < 0.05). The total effective rate of the observation group was 87.18%, which was higher compared with 65.79% of control group (P < 0.05). See **Table 2** and **Figure 1**.

Comparison of MMSE and MoCA scores before and after treatment

MMSE and MoCA in the observation group were significantly improved after treatment compared with those before treatment (P < 0.05 or P < 0.01), and MMSE and MoCA in the observation group were better compared with those in the control group after treatment (P < 0.001). See **Table 3**.

Comparison of inflammatory factors before and after treatment

The levels of CRP, TNF-α and IL-6 in both groups after treatment were lower compared with those before treatment (all P < 0.05), and the decrease of the observation group was better compared with those of control group (P < 0.001). See **Table 4**.

Comparison of sleep quality scores before and after treatment

After treatment, the sleep quality scores of both groups decreased compared with those before treatment (both P < 0.05). After treatment, the sleep quality score of the observation group was higher compared with that of the control group (P < 0.05). See **Table 5**.

Discussion

The main clinical manifestations of CIS are that the oxidative stress response leads to the pro-

Table 4. Comparison of inflammatory factors before and after treatment (x ± sd)

Item	Before treatment		After treatment	
	Observation group (n = 39)	Control group (n = 38)	Observation group (n = 39)	Control group (n = 38)
CRP (mg/L)	6.67±1.98	6.82±1.73	4.79±1.55$^{**,\#\#\#}$	5.66±1.49*
TNF-α (μg/mL)	123.92±18.65	123.92±18.21	86.92±14.94$^{***,\#\#\#}$	104.18±16.54***
IL-6 (μg/mL)	351.37±37.02	352.98±37.76	275.23±26.92$^{***,\#\#\#}$	318.92±31.45***

Note: Comparison before and after treatment in the same group, $^{*}P < 0.05$, $^{**}P < 0.01$, $^{***}P < 0.001$; compared with control group after treatment, $^{\#\#\#}P < 0.001$. CRP: C-reactive protein; TNF-α: tumor necrosis factor-α; IL-6: interleukin-6.

Table 5. Comparison of sleep quality scores before and after treatment (x ± sd)

Item	Before treatment		T	P	After treatment		t	P
	Observation group	Control group			Observation group	Control group		
Sleep quality	2.09±0.49	2.07±0.47	0.945	0.397	1.28±0.19*	1.62±0.23*	2.139	0.031
Sleep latency	2.12±0.39	2.13±0.45	0.541	0.741	1.29±0.21*	1.65±0.31*	3.012	0.017
Sleep time	2.27±0.53	2.25±0.52	0.741	0.553	1.35±0.26*	1.61±0.28*	2.269	0.032
Sleep efficiency	2.18±0.49	2.19±0.49	0.021	0.984	1.48±0.31*	1.79±0.41*	2.257	0.036
Sleep disorders	2.21±0.49	2.24±0.52	0.698	0.534	1.39±0.26*	1.73±0.29*	2.015	0.047
Hypnotic drugs	2.17±0.37	2.15±0.38	0.625	0.489	1.46±0.23*	1.73±0.19*	3.014	0.024
Depression	2.59±0.59	2.58±0.54	0.689	0.604	1.36±0.21*	1.79±0.31*	2.687	0.032
Daytime dysfunction	2.81±0.59	2.83±0.56	0.536	0.621	1.28±0.26*	1.85±0.37*	3.416	0.002
Total score of PSQI	18.79±1.05	18.82±1.13	0.687	0.621	11.28±0.51*	14.24±0.61*	4.587	< 0.001

Note: Compared with before treatment within the same group, $^{*}P < 0.05$. PSQI: Pittsburgh sleep quality index.

duction of inflammatory factors, as well as changes in the nature of blood flow lead to blood circulation disorders in the body, and ultimately leading to nerve cell damage [17]. After neuronal cell apoptosis, it can induce immune responses *in vivo*, promoting the formation of inflammatory cells, and thus forms a vicious cycle [18]. CIS belongs to the category of stroke in traditional Chinese medicine, and traditional Chinese medicine has unique advantages in treating stroke, among which acupuncture has a long history of good recovery [19]. After the stimulation of acupuncture at Baihui acupoints, the cortex and corticospinal tracts of the brain can be excited, and the excitability of motor nerves in the nerve reflex circuit can be improved. It can not only reduce muscle tension, but also promote nerve repair and promote the recovery of patients' motor function [20]. Acupuncture at Du Meridian and Huoxue Tongluo acupoints to treat patients with CIS can stimulate the motor center of the cerebral cortex, which is beneficial to the increase of blood supply to ischemic brain tissue and the recovery of nerve function and motor function, to further improve the quality of life [21]. Acupuncture can stimulate neurons and establishing new nerve conduction pathways [22]. Cognitive impairment often occurs after CIS nerve injury. In this study, acupuncture combined with APPB for CIS had a significant effect and can improve cognition, which may be related to the promotion of nerve repair by acupuncture.

Oxidative stress, massive release of inflammatory factors in the brain and endothelial dysfunction caused by cerebral vascular endothelial injury are all related to the occurrence and development of cerebral infarction [23, 24]. Acupuncture can reduce the level of inflammatory factors in patients with CIS [25]. Electroacupuncture may inhibit the inflammatory factors by inhibiting the release of TNF-α from macrophages [26]. Acupuncture can effectively regulate the NF-κB signaling pathway and reduce neuronal cell apoptosis to achieve anti-inflammatory effects [27]. This study showed that after treatment with acupuncture combined with APPB, inflammatory factor levels in patients were significantly decreased, which was consistent with the above research results.

Sleep disorders often occur after stroke. Acupuncture can dilate cerebral blood vessels, accelerate cerebral blood flow, improve the

patient's nerve function and at the same time help to improve the patient's sleep quality [28, 29]. Auricular point stimulation can regulate the viscera and meridians of human body, and APPB for patients with sleep disorders can reduce excitement, play a sedative role, and promote the improvement of sleep disorders in patients [30, 31]. This study showed that acupuncture combined with APPB can effectively improve the sleep quality of CIS patients, which may be related to the above research mechanism.

The sample size of this study was small and needs to be further expanded. The observation time was short, and the follow-up time should be further extended. The observation and follow-up time were short after treatment, and the improvement of the condition was not observed at multiple time points, and the effect of acupuncture manipulation and acupoint selection on the efficacy of CIS was not observed. In addition, the mechanism of acupuncture in improving the clinical efficacy of CIS patients was not studied.

In conclusion, acupuncture combined with APPB can improve clinical efficacy, reduce inflammation, improve cognitive function and sleep quality, which is worthy of further clinical application and research.

Disclosure of conflict of interest

None.

Address correspondence to: Min Xu, Department of Rehabilitation, Huai'an Hospital of Traditional Chinese Medicine, No.3 Heping Road, Qingjiangpu District, Huai'an 223000, Jiangsu, China. Tel: +86-13770478626; E-mail: xuminz6b7@163.com

References

[1] Bray BD, Paley L, Hoffman A, James M, Gompertz P, Wolfe CDA, Hemingway H and Rudd AG; SSNAP Collaboration. Socioeconomic disparities in first stroke incidence, quality of care, and survival: a nationwide registry-based cohort study of 44 million adults in England. Lancet Public Health 2018; 3: e185-e193.

[2] Yang NZ, Ju AC, Li X and Yun XH. Salvianolate injection in the treatment of acute cerebral infarction: a systematic review and a meta-analysis. Medicine (Baltimore) 2018; 97: e12374.

[3] Terai S. The analysis of the current condition of convalescent rehabilitation for stroke patients - A study in one facility, including a sub-analysis of the elderly. Nihon Ronen Igakkai Zasshi 2018; 55: 259-267.

[4] Atik İ, Kozaci N, Beydilli İ, Avci M, Ellidağ H and Keşaplı M. Investigation of oxidant and antioxidant levels in patients with acute stroke in the emergency service. Am J Emerg Med 2016; 34: 2379-2383.

[5] Planas-Rigol E, Terrades-Garcia N, Corbera-Bellalta M, Lozano E, Alba MA, Segarra M, Espígol-Frigolé G, Prieto-González S, Hernández-Rodríguez J, Preciado S, Lavilla R and Cid MC. Endothelin-1 promotes vascular smooth muscle cell migration across the artery wall: a mechanism contributing to vascular remodelling and intimal hyperplasia in giant-cell arteritis. Ann Rheum Dis 2017; 76: 1624-1634.

[6] Lou F, Zhou Y, Zhao L, Jiang CL and Wu MH. Rehabilitation effect and mechanism of Peiyuan Tongnao capsule in the treatment of neurological deficits in recovery period of ischemic stroke. Chin J Exp Tradit Med Formulae 2019; 25: 82-87.

[7] Saito J, Koyama T and Domen K. Long-term outcomes of FIM motor items predicted from acute stage NIHSS of patients with middle cerebral artery infarct. Ann Rehabil Med 2018; 42: 670-681.

[8] Aked J, Delavaran H, Norrving B and Lindgren A. Temporal trends of stroke epidemiology in southern Sweden: a population-based study on stroke incidence and early case-fatality. Neuroepidemiology 2018; 50: 174-182.

[9] Tang WK, Lau GC, Mok V, Ungvari GS and Wong KS. Insomnia and health-related quality of life in stroke. Top Stroke Rehabil 2015; 22: 201-207.

[10] Zheng LM, Zhao L, Wang YJ, Zhang N and Mu JW. The effect of routine rehabilitation therapy combined with aerobic exercise on neurological function in elderly ACI patients. J Guangxi Med Univ 2018; 35: 679-682.

[11] Liu L and Li MX. Effect of warming acupuncture combined with auricular acupoint pressure pill on insomnia of heart and spleen deficiency in ischemic stroke. World J Sleep Med 2020; 7: 603-605.

[12] Gao CY, Wu CH, Zhao JG, Cao XL, Xu BY, Wu BS, Zhang C, Wang ZH, Wang CJ and Zhang XJ. Guidelines for the diagnosis and treatment of cerebral infarction (Cerebral Ischemic Stroke) in China with integrated traditional Chinese and western medicine (2017). Chin J Integr Trad West Med 2018; 38: 136-144.

[13] Lyden P. Using the national institutes of health stroke scale: a cautionary tale. Stroke 2017; 48: 513-519.

[14] Writing Group of Chinese Guidelines for Dementia and Cognitive Impairment Diagnosis

and Treatment and Professional Committee of Cognitive Impairment Diseases, Neurologist Branch, Chinese Medical Doctor Association. Chinese guidelines for the diagnosis and treatment of dementia and cognitive impairment (V): diagnosis and treatment of mild cognitive impairment. Natl Med J China 2018; 98: 1294-1301.

[15] Buysse DJ, Reynolds CF 3rd, Monk TH, Berman SR and Kupfer DJ. The Pittsburgh sleep quality index: a new instrument for psychiatric practice and research. Psychiatry Res 1989; 28: 193-213.

[16] Hashem SS, Helmy SM, El-Fayomy NM, Oraby MI, Menshawy M, Dawood NA and Hashem H. Predictors of stroke outcome: the role of hemorheology, natural anticoagulants, and serum albumin. Egypt J Neurol Psychiatr Neurosurg 2018; 54: 18.

[17] Chi NF, Hu HH, Wang CY, Chan L, Peng CK, Novak V and Hu CJ. Dynamic cerebral autoregulation is an independent functional outcome predictor of mild acute ischemic stroke. Stroke 2018; 49: 2605-2611.

[18] Guo J, Hu XH, Liu SG, Wang LQ and Xu RS. Observations on effects of Heihu ointment combined with routine therapy on cerebral infarction cases. Int J Clin Exp Med 2018; 11: 8965-8977.

[19] Fei Y, Fei R, Zhang J, Sun YY and Yu Q. Systematic evaluation of efficacy and safety of acupuncture treatment for patients with atrial fibrillation. Open Access Maced J Med Sci 2019; 7: 461-466.

[20] Wang SS, Ma TT, Wang LP, Liu L, Liu HL, Li B and Fu YB. Effect of acupuncture on cerebrovascular reserve in patients with acute cerebral infarction: protocol for a randomized controlled pilot study. Trials 2017; 18: 292.

[21] Klein JD and Wang XH. Electrically stimulated acupuncture increases renal blood flow through exosome-carried miR-181. Am J Physiol Renal Physiol 2018; 315: F1542-F1549.

[22] Staszewski J, Piusińska-Macoch R, Brodacki B, Skrobowska E and Stępień A. IL-6, PF-4, sCD40 L, and homocysteine are associated with the radiological progression of cerebral small-vessel disease: a 2-year follow-up study. Clin Interv Aging 2018; 13: 1135-1141.

[23] Joseph AT, Bhardwaj SK and Srivastava LK. Role of prefrontal cortex anti- and pro-inflammatory cytokines in the development of abnormal behaviors induced by disconnection of the ventral hippocampus in neonate rats. Front Behav Neurosci 2018; 12: 244.

[24] Li FW, Geng XK, Yip J and Ding YC. Therapeutic target and cell-signal communication of chlorpromazine and promethazine in attenuating blood-brain barrier disruption after ischemic stroke. Cell Transplant 2019; 28: 145-156.

[25] Wu JH, Zheng ZZ, Gao XZ, Wu XP and Xia ML. Effects of acupuncture combined with rehabilitation therapy on cerebral blood flow supply and inflammatory factors in patients with acute cerebral infarction. Prog Mod Biomed 2019; 19: 1508-1512.

[26] Liaw JJ and Peplow PV. Effect of electroacupuncture on inflammation in the obese zucker fatty rat model of metabolic syndrome. J Acupunct Meridian Stud 2016; 9: 73-79.

[27] Shu Q, Chen L, He WJ, Zhou HJ and Liang FX. A review of inflammatory signaling pathway regulated by acupuncture. World J Acupunct Moxibustion 2016; 26: 63-69.

[28] Noh SM, Lee KM and Kim BJ. Teaching neuroimages: cerebrospinal fluid leakage observed from skin after acupuncture. Neurology 2019; 92: e1141-e1142.

[29] Li L, Li GY, Dong YY and Ye YL. Electroacupucture accelerates peripheral nerve regeneration via enhancement of BDNF, NGF, and GAP43 in rats. Int J Clin Exp Med 2019; 12: 4904-4911.

[30] Wang SX, Hou L, Li JP, Zhang B, Huang YX and Zhuang LX. Clinical observation for effects of auricular acupoint application on PQSI and ESS in insomnia patients. World Chin Med 2017; 6: 1429-1431.

[31] Zhang LQ, Huang Y and Jin XX. Effective observation on treating insomnia in perimenopausal women by auricular point and TCM foot bath. Clin J Chin Med 2017; 9: 147-148.