

Comparison of the efficacy of Trazodone hydrochloride tablets alone and in combination with press-needles in the treatment of post-stroke depression

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Abstract

The purpose of this study was to compare the efficacy of Trazodone hydrochloride tablets alone and in combination with press-needles in the treatment of post-stroke depression. One hundred and four post-stroke depression patients, admitted to Yantaishan Hospital, China, from August 2019 to June 2021, were randomly divided in two groups: Group A (n=52) and Group B (n=52). Group A was given oral Trazodone hydrochloride tablets, while Group B was treated with press-needle and Trazodone hydrochloride tablets. Post treatment assessment revealed that after treatment, National Institutes of Health Stroke Scale scores, Hamilton Depression Rating Scale scores, serum 5-hydroxytryptamine and brain-derived neurotrophic factor levels of Group B were lower than those of Group A (all $p < 0.001$). Treatment efficiency of Group B was higher than that of Group A ($p = 0.014$). Compared with Trazodone hydrochloride tablets alone, Trazodone hydrochloride tablets combined with press-needles may reduce neurological impairment and depressive mood in post-stroke depression patients more effectively. It can be because the combination better promotes the increase of 5-hydroxytryptamine and brain-derived neurotrophic factor.

Keywords: Press-needle, Trazodone hydrochloride, Post-stroke depression, 5-hydroxytryptamine, Brain-derived neurotrophic factor.

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Introduction

Post-stroke depression (PSD) is a persistent depressive mood disorder that occurs after a stroke.¹ It is not yet known how PSD develops. Some studies have shown that the pathogenesis of PSD is associated with 5-hydroxytryptamine (5-HT).² Reduced 5-HT levels are predictive of depressive symptoms. Some studies have also shown that high expression of brain-derived neurotrophic factor (BDNF) can nourish nerves and facilitate the

regeneration and differentiation of damaged neurons.³ Trazodone hydrochloride tablets have previously been used to treat depression. They are 5-HT(2A) receptor antagonists that selectively inhibit the reuptake of 5-HT and norepinephrine, thereby exerting antidepressant and other effects.⁴

Acupuncture has been shown to be safer, more efficient and acceptable among patients for the treatment of depression in previous studies.⁵ Thanks to their tiny size, press-needle enjoys the great advantage of extended duration of acupuncture effect over traditional acupuncture needles.⁶ The use of press-needle in the treatment of PSD has been rarely reported.

The purpose of this study was to compare the efficacy of Trazodone hydrochloride tablets alone and in combination with press-needles in PSD treatment, and analyse their effect on serum 5-HT and BDNF.

Patients, Methods and Results

This retrospective study was approved by the medical ethics committee of Yantaishan Hospital, China. Sample size was calculated by G Power software.⁷ A total of 104 PSD patients admitted to Yantaishan Hospital, China, between August 2019 to June 2021, were selected as research subjects. Patients who met PSD diagnostic criteria; had Hamilton Depression Rating Scale (HAMD) score > 17 ; had no history of antidepressant treatment within two weeks prior to the treatment; had no history of psychiatric disease or family history of psychiatric disease prior to a stroke; were conscious with normal comprehension, and had no aphasia or expression disorders; no limit of cerebral apoplexy lesion side, site and extension; and voluntarily gave informed consent for the study (by the patient or the patient's family) were included in the study.

Exclusion criteria included: cases with craniocerebral infection, tumour, and trauma; severe cardiovascular disease, abnormalities in haematopoietic system, hepatic and renal function or other organ dysfunction; infection or ulceration at the acupuncture site; history of allergy with drugs like Trazodone hydrochloride tablets; or those who withdrew from the study. The random number table method was used to randomly divide the patients into Group A and Group B, with 52 cases each.

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Group A was given oral Trazodone hydrochloride tablets at an initial dose of 50mg 2-3 times/day, and then the dose was increased or decreased according to the patient's condition, with the maximum dose controlled at 300 mg/d for eight weeks.

Group B was treated with press-needle and Trazodone hydrochloride tablets, i.e., along with the treatment of group A, press-needle was added. The procedures of press-needle were as follows: after the acupuncture treatment, press-needle was applied to the patient's Baihui, Shenting, and Yintang acupoints; the patient was instructed to press the acupoints for about three minutes every two to three hours; the press-needle was changed once a day for a total of two treatment courses (each treatment course being six days).

Patients' depressive mood scores were assessed before and after the treatment using HAMD. Score >17 on HAMD indicating moderate to severe depression is taken as operational definition of depression in this study.⁸

The National Institutes of Health Stroke Scale (NIHSS) was used to evaluate neurological function before and after the treatment.

Five millilitre peripheral venous blood was drawn from the patients before and after the treatment. Serum was separated and assayed for 5-HT and BDNF by ELISA.

The treatment efficiency was observed in the two groups. The efficacy was judged by the following criteria. Basically cured: disappearance of symptoms like poor mood, low interest, and reduced mobility after the treatment, and HAMD decrement rate $\geq 75\%$. Significantly effective: significant improvement in symptoms like poor mood, low interest and reduced mobility after treatment, and $50\% \leq$ HAMD decrement rate $<74\%$. Treatment was considered effective in cases where certain degree of relief of symptoms like poor mood, low interest and reduced mobility, and $25\% \leq$ HAMD decrement rate $<50\%$ was seen. Treatment was considered ineffective in cases where there was no obvious improvement in symptoms like poor mood, low interest and reduced activity after treatment, and HAMD decrement rate $<24\%$.⁹ Treatment efficiency (%) = number of basically cured cases + number of significantly effective cases + number of effective cases / total number of cases $\times 100\%$.

SPSS 25 was used for statistical analysis of data. Measurement data was expressed as mean $\pm$ standard deviation, and an independent sample t-test was used. The enumeration data were expressed as n (%), and the chi-square test was used. $P < 0.05$ indicated that the difference was statistically significant.

Among the 52 cases in Group A, 29 (55.8%) were males and 23 (44.2%) females. They were between 48-70 years old, with a mean of 62.84 ± 2.17 years. The duration of the disease was 4-7 months, with a mean of 4.82 ± 0.30 months. Stroke type: 28 (53.8%) were ischaemic and 24 (46.2%) haemorrhagic. Combined underlying diseases: 9 (17.3%) cases of hypertension, 7 (13.5%) cases of coronary artery disease, and 5 (9.6%) of type 2 diabetes mellitus.

Among the 52 cases in Group B, 31 (59.6%) were males and 21 (40.4%) females. They were between 49-71 years of age, with a mean age of 63.01 ± 2.38 years. The duration of the disease was 5-8 months, with a mean of 4.91 ± 0.42 months. Stroke type: 27 (51.9%) were ischaemic and 25 (48.1%) haemorrhagic. Combined underlying diseases: 10 (19.2%) cases of hypertension, 6 (11.5%) cases of coronary heart disease, and 6 (11.5%) cases of type 2 diabetes mellitus.

Before the treatment, there was no statistically significant difference in NIHSS and HAMD scores between the two groups ($p = 0.782$ and 0.246 , respectively, Table 1); after treatment, NIHSS and HAMD scores of patients in Group B were lower than those of Group A (both $p < 0.001$, Table 1).

Before the treatment, there was no statistically significant difference in serum 5-HT and BDNF levels between the two groups ($p = 0.865$ and 0.940 , respectively, Table 1), while after the treatment, serum 5-HT and BDNF were higher in Group B than those in Group A (both $p < 0.001$, Table 1).

The treatment efficacy was 80.8% (42 cases) in Group B, and 96.2% (50 cases) in Group A, indicating that the treatment efficacy of Group B was higher than that of Group A ($p = 0.014$, Table 2).

Table-1: Comparison of relevant parameters between the two groups.

Parameter	Group A (n=52) Mean $\pm$ SD	Group B (n=52) Mean $\pm$ SD	p-value
NIHSS scores before treatment	14.90 $\pm$ 1.18	14.98 $\pm$ 1.62	0.782
NIHSS scores after treatment	9.25 $\pm$ 0.62	7.17 $\pm$ 0.76	<0.001
HAMD scores before treatment	28.08 $\pm$ 2.28	28.69 $\pm$ 3.04	0.246
HAMD scores after treatment	16.50 $\pm$ 1.25	13.35 $\pm$ 1.51	<0.001
Serum 5-HT before treatment (ng/mL)	27.43 $\pm$ 2.17	27.34 $\pm$ 2.92	0.865
Serum 5-HT after treatment (ng/mL)	38.12 $\pm$ 3.01	41.27 $\pm$ 4.30	<0.001
Serum BDNF before treatment (ng/mL)	24.78 $\pm$ 1.96	24.75 $\pm$ 2.58	0.940
Serum BDNF after treatment (ng/mL)	35.19 $\pm$ 2.78	39.84 $\pm$ 4.15	<0.001

Table-2: Comparison of efficacy between the two groups.

Parameter	Group A (n=52) Mean $\pm$ SD	Group B (n=52) Mean $\pm$ SD	p-value
Basically cured [n(%)]	10 (19.2)	19 (36.5)	—
Significantly effective [n(%)]	17 (32.7)	21 (40.4)	—
Effective [n(%)]	15 (28.8)	10 (19.2)	—
Ineffective [n(%)]	10 (19.2)	2 (3.8)	—
Treatment efficiency [n(%)]	42 (80.8)	50 (96.2)	0.014

Conclusion

Compared with Trazodone hydrochloride tablets alone, Trazodone hydrochloride tablets in combination with press-needles may reduce neurological impairment and depressive mood in post-stroke depression patients more effectively, and the mechanism may be that it may better promote the increase of 5-hydroxytryptamine and brain-derived neurotrophic factor.

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Conflict of Interest: None.

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References

1. Guo J, Wang J, Sun W, Liu X. The advances of post-stroke depression: 2021 update. *J Neurol* 2022; 269: 1236-49.
2. Li G, Ma Y, Ji J, Si X, Fan Q. Effects of gastrodin on 5-HT and neurotrophic factor in the treatment of patients with post-stroke depression. *Exp Ther Med* 2018; 16: 4493-8.
3. Xia WG, Zheng CJ, Zhang X, Wang J. Effects of "nourishing liver and kidney" acupuncture therapy on expression of brain derived neurotrophic factor and synaptophysin after cerebral ischemia reperfusion in rats. *J Huazhong Univ Sci Technolog Med Sci* 2017; 37: 271-8.
4. Fagiolini A, Comandini A, Dell Osso MC, Kasper S. Rediscovering Trazodone for the Treatment of Major Depressive Disorder. *CNS Drugs* 2012; 26: 1033-49.
5. Wang Y, Huang YW, Ablikim D, Lu Q, Zhang AJ, Dong YQ, et al. Efficacy of acupuncture at ghost points combined with fluoxetine in treating depression: A randomized study. *World J Clin Cases* 2022; 10: 929-38.
6. Fujiwara A, Tsukada M, Ikemoto H, Izuno T, Hattori S, Okumo T, et al. Regulatory role of orexin in the anti-stress effect of "Press Tack Needle" acupuncture treatment. *Healthcare (Basel)* 2021; 9: 503.
7. Kang, H. Sample size determination and power analysis using the G* Power software. *J Educ Eval Health Prof* 2021; 18: 17-28.
8. Hamilton M. Development of a rating scale; for primary depressive illness. *Br J Soc Clin Psychol* 1967; 6: 278-96.
9. Zhang X. Clinical Effects of flupentixol and melitroxin tablets (Dailysine) combined with trazodone hydrochloride tablets in the treatment of patients with post-stroke depression. *China J Pharm Econ* 2021; 16: 113-5.