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ABOUT COVER

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RESPONSIBLE EDITORS FOR THIS ISSUE

Efficacy of acupuncture at ghost points combined with fluoxetine in treating depression: A randomized study

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Abstract

BACKGROUND

Depression affects more than 350 million people worldwide. In China, 4.2% (54 million people) of the total population suffers from depression. Psychotherapy has been shown to change cognition, improve personality, and enhance the ability to cope with difficulties and setbacks. While pharmacotherapy can reduce symptoms, it is also associated with adverse reactions and relapse after drug withdrawal. Therefore, there has been an increasing emphasis placed on the use of non-pharmacological therapies for depression. The hypothesis of this study was that acupuncture at ghost points combined with fluoxetine would be more effective than fluoxetine alone for the treatment of depression.

AIM

To investigate the efficacy of acupuncture at ghost points combined with fluoxetine for the treatment of patients with depression.

METHODS

This randomized controlled trial included patients with mild to moderate depression (n = 160). Patients received either acupuncture at ghost points combined with fluoxetine (n = 80) or fluoxetine alone (control group, n = 80). Needles were retained in place for 30 min, 5 times a week; three treatment cycles were administered. The Mann–Whitney U test was used to compare functional magnet resonance imaging parameters, Hamilton depression rating scale (HAMD) scores, and self-rating depression scale (SDS) scores between the acupuncture group and control group.

RESULTS

There were no significant differences in HAMD or SDS scores between the acupuncture group and control group, before or after 4 wk of treatment. The acupuncture group exhibited significantly lower HAMD and SDS scores than the control group after 8 wk of treatment (P < 0.05). The acupuncture group had significantly lower fractional Amplitude of Low Frequency Fluctuations values for the left anterior wedge leaf, left posterior cingulate gyrus, left middle occipital gyrus, and left inferior occipital gyrus after 8 wk. The acupuncture group also had significantly higher values for the right inferior frontal gyrus, right insula, and right hippocampus (P < 0.05). After 8 wk of treatment, the effective rates of the acupuncture and control groups were 51.25% and 36.25%, respectively (P < 0.05).

CONCLUSION

The study results suggest that acupuncture at ghost points combined with fluoxetine is more effective than fluoxetine alone for the treatment of patients with mild to moderate depression.

Key Words: Traditional Chinese medicine; Acupuncture; Ghost point; Fluoxetine; Depression; Resting state magnetic resonance

Core Tip: Acupuncture is an effective auxiliary method for the treatment of clinical depression. In this study, the authors found that the combined use of acupuncture at ghost points and fluoxetine may be more effective than fluoxetine alone for the treatment of patients with mild to moderate depression.

INTRODUCTION

Depression affects approximately 4.4% of the global population and is characterized by persistent mood depression, physical symptoms, intellectual disability, cognitive impairment, and decreased activity. It not only has adverse effects on physical and mental health, but also increases social and economic burden[1]. While selective serotonin reuptake inhibitors, tricyclic antidepressants, and other Western medicine treatments have satisfactory clinical effectiveness, they also have significant side effects, such as dependency and withdrawal reactions[2].

Acupuncture is an effective auxiliary method for the treatment of clinical depression. It mainly stimulates the nerve-related signaling pathway by adjusting neurotransmitter redistribution *via* the integration of the central nervous system, thus facilitating brain function through self-regulation of the human body. Nevertheless, its effect on prognosis remains to be further analyzed. While the results of a previous study have suggested that acupuncture can promote the onset of selective 5-hydroxy-tryptamine reuptake inhibitors and reduce adverse reactions[3], the related

mechanistic interactions are currently unclear. Therefore, this study explored the effect of acupuncture at ghost points combined with fluoxetine on clinical indicators of depression and resting-state functional magnetic resonance imaging (fMRI) parameters in patients with mild to moderate depression.

MATERIALS AND METHODS

Patient recruitment and inclusion criteria

A total of 160 patients diagnosed with mild to moderate depression between January 2019 and December 2021 were recruited. Patients were included if they (1) met the diagnostic criteria for depression, according to the fifth edition of the American Handbook on Diagnosis and Statistics of Mental Disorders[4,5]; (2) had a score between 17 and 24 points on the 17-item Hamilton depression rating scale (HAMD); and (3) were between 19 and 75 years of age. The exclusion criteria were as follows: history of brain tumor or cerebrovascular disease; cardiac or pulmonary dysfunction; infectious diseases; dementia or Alzheimer's disease; other mental disorders; history of craniocerebral trauma or surgery; and other serious diseases. The study protocol was approved by the appropriate medical ethics committee, and all patients provided written informed consent prior to examination and treatment.

Treatment methods

Patients were randomly allocated to receive either (1) acupuncture at ghost points combined with fluoxetine (acupuncture group, *n* = 80); or (2) fluoxetine alone (control group, *n* = 80). The following acupoints were selected: governor vessel, Dazhui, spine, and Mingmen, combined with 13 ghost points on the star (flat thorn), people, less business, Yinbai, Laogong, and Shenmai (Table 1). Procedures were conducted in accordance with the national acupoint positioning standard for the selection of acupoints, acupoint positioning, and acupuncture depth, the "acupoint name and positioning" standard (GB/T12346-2006).

The Dazhui acupoint (GV14) is located in the spinal region (in the subspinous depression of the seventh cervical spine and on the posterior median line). The Jizhong (GV6) acupoint is located in the subspinal depression of the 11th thoracic spine and is on the posterior median line. The Mingmen (GV4) acupoint is located in the subspinous depression of the second lumbar spine and on the posterior midline. The Shaoshang (LU11) acupoint is located approximately 2.5 mm above the metacarpo-phalangeal joint of the finger, the radial side of the distal segment of the thumb and the medial side of the nail root. The Yinbai (SP1) acupoint is 2.5 mm posterior to the distal segment of the most medial toe, at the toenail corner.

The Laogong (PC8) acupoint is in the metacarpal region. It is oriented horizontally to the proximal third of the metacarpophalangeal joint, while the second and third metacarpal bones are inclined towards the third metacarpal bone. The Shenmai (BL62) acupoint is in the ankle region, below the tip of the lateral malleolus and in the depression between the lower edge of the lateral malleolus and the calcaneus.

Each patient assumed a sitting position and routine local skin disinfection was performed. A 40-mm disposable stainless-steel needle with a diameter of 0.25 mm (Huatuo brand) was first applied at the Du meridian points *via* the flat needling method. Patients then assumed a supine position and direct needling (with the retaining needle applied for 30 min) was performed at ghost acupoints *via* the Shangxingping acupuncture method. All acupuncture operators previously underwent uniform training and all operative procedures were standardized. Needles were retained in place for 30 min, 5 times a week (10 times as an observation course); a total of three treatment cycles were administered.

Fluoxetine capsules (20 mg/d for adult and elderly patients) were administered orally in accordance with the psychiatrist's instructions. If necessary, the dose was re-evaluated and adjusted within the first 3–4 wk of treatment as higher doses increase the risk of adverse reactions. Some patients did not experience any obvious effects with a standard 20 mg dose; in such cases, doses were gradually increased to a maximum of 60 mg.

Resting-state fMRI scans were performed after routine scans to confirm the absence of organic brain lesions. A conventional structural image scan was performed using the T1 weighted image merge sequence. The scanning parameters were as follows: repetition time = 2300 ms; echo time = 2.2 ms; field-of-view = 256 mm × 256 mm; voxel = 1 mm × 1 mm × 1 mm; matrix = 256 × 256; number of layers = 192; number of excitations = 1; and a scanning time of approximately 5 min. The scanning parameters

Table 1 Comparison of general information of the two groups of patients, *n* **(%)**

Factors	Acupuncture group (*n* = 80)	Fluoxetine group (*n* = 80)	*t*/χ^2	*P* value
Age (yr)	47.96.5	46.3 ± 7.2	1.475	0.142
Years of education (yr)	7.9 ± 2.2	8.1 ± 2.4	-0.549	0.583
HAMD score (points)	20.13 ± 2.20	19.75 ± 2.38	1.049	0.296
SDS score (points)	61.84 ± 4.55	60.63 ± 4.92	1.615	0.108
Gender			1.047	0.306
Male	22 (27.50)	28 (35.00)		
Female	58 (72.50)	52 (65.00)		
Smoking			1.477	0.224
Yes	12 (15.00)	18 (22.50)		
No	68 (85.00)	62 (77.50)		
Drinking			1.653	0.199
Yes	16 (20.00)	10 (12.50)		
No	64 (80.00)	70 (87.50)		
Hypertension			1.283	0.257
Yes	35 (43.75)	28 (35.00)		
No	45 (56.25)	52 (65.00)		
Diabetes			1.200	0.273
Yes	17 (21.25)	23 (28.75)		
No	63 (78.75)	57 (71.25)		
Hyperlipidemia			2.209	0.137
Yes	15 (18.75)	23 (28.75)		
No	65 (81.25)	57 (71.25)		

HAMD: Hamilton depression rating scale.

for functional imaging using the echo planner imaging sequence were as follows: repetition time = 2000 ms; echo time = 30 ms; field-of-view = 220 mm; slice thickness = 3.5 mm; layer spacing = 0.6 mm; voxel = 3.44 mm × 3.44 mm × 3.44 mm; fractional anisotropy = 90; matrix = 64 × 64; number of layers = 33 (using layer-by-layer scanning); number of excitations = 1; time points = 240; and a scanning time of approximately 8 min. Pre- and post-treatment evaluations of fMRI parameters were performed and comparisons were made between the groups.

Clinical parameters and detection methods

Clinical parameters comprised the HAMD, self-rating depression scale (SDS), and traditional Chinese medicine (TCM) syndrome score. The HAMD consists of 17 test items[6]. Higher scores reflect more severe depression. The absence of depression is indicated by a score < 7. A total score in the range of 7–17 suggests that a patient may have depression, while a score between 17 and 24 confirms the diagnosis of depression. A total score > 24 indicates severe depression.

The SDS contains 20 items[7]. Norm data from the Chinese population defines mild, moderate, and severe depression by scores of 53, 53–62, and 63–72 points, respectively. The TCM syndrome score is based on the "Criteria for Diagnosis and Efficacy of TCM Symptoms"[8], which includes the three main syndromes of impatience and irritability, chest tightness, and rib distension. The secondary syndromes comprise headache, red eyes, bitter mouth, noise, constipation, and short yellow urine. Scores reflecting the severity of the main syndromes range from 0–6, while those for the secondary syndromes range from 0–3. Higher scores reflect greater syndrome severity.

The HAMD reduction rate ([before treatment - after treatment]/before treatment × 100%) was used to evaluate the treatment efficacy[9]. Reduction rates of ≥ 90,

70%–89%, and ≤ 69% indicated that the treatments were markedly effective, effective, and ineffective, respectively.

Statistical analysis

The distributions of the HAMD scores, SDS scores, and fMRI parameters were tested for normality. Following confirmation of approximate normal distributions (expressed as "mean ± SD"), the *t*-test was used for comparisons between the two groups. Enumeration data were expressed as *n* (%). The χ^2 test was used to compare nominal variables such as sex, combined diseases, and the presence of adverse reactions. The groups were compared in terms of ordinal variables using the Mann–Whitney *U* test to evaluate differences in clinical efficacy. The Statistical Package for Social Science version 21.0 (SPSS Inc., Chicago, IL, USA) was used for all statistical analyses. The level of statistical significance was set at α = 0.05.

RESULTS

There were no significant differences in HAMD or SDS scores between the acupuncture and control groups, before or after 4 wk of treatment. After 8 wk of treatment, the acupuncture group exhibited significantly lower HAMD and SDS scores than the control group ($P < 0.05$). Within-group comparisons showed that HAMD and SDS scores in both groups were significantly lower after 4 and 8 wk compared to those recorded before treatment ($P < 0.05$) (Table 2).

Comparisons between the groups before and after 4 wk of treatment did not yield significant differences in fractional amplitude of low frequency fluctuations (fALFF) values of the left posterior cingulate gyrus, left posterior cingulate gyrus, left anterior wedge leaf, left middle occipital gyrus, left inferior occipital gyrus, right inferior frontal gyrus, right cerebral island, or right hippocampus. After 8 wk of treatment, the fALFF values of the left posterior cingulate gyrus, left anterior wedge leaf, left middle occipital gyrus, and left inferior occipital gyrus were significantly lower in the acupuncture group than in the control group ($P < 0.05$). The fALFF values of the right inferior frontal gyrus, right insula, and right hippocampus in the acupuncture group were significantly higher than those in the control group ($P < 0.05$) (Table 3). TCM syndrome scores before treatment were not significantly different between the groups (Table 4). Plasma adrenocorticotropic hormone (ACTH), cortisol, and corticotropin-releasing hormone levels were not significantly different between the acupuncture and control groups. After 8 wk of treatment, the plasma ACTH and cortisol levels in the acupuncture group were significantly lower than those in the control group ($P < 0.05$) (Table 5). Within-group comparisons showed that the plasma ACTH, cortisol, and corticotropin-releasing hormone levels in the two groups were lower than those before treatment ($P < 0.05$). After 8 wk of treatment, 51.25% of the acupuncture group showed improvement, the effective rate was 41.25%, and the ineffective rate was 7.50%. The effective rate of the control group was 36.25%, the effective rate was 50.00%, and the ineffective rate was 13.75% (Table 6). The clinical effectiveness of the acupuncture group was significantly higher than that of the control group ($P < 0.05$) (Table 7).

DISCUSSION

The pathophysiology of depression is currently unclear, despite prior investigations of the intestinal flora hypothesis and the role of neurotransmitters, neurotrophic factors, and neuroendocrine-immune interactions[10]. Pharmacotherapy is the primary treatment modality for depression. Selective serotonin reuptake inhibitors and tricyclic antidepressants act on neurotransmitters, cytokines, and their receptors, thereby modifying complex inflammatory pathways. Although such drugs are highly effective in reducing symptoms, they are also associated with adverse reactions and relapse after drug withdrawal[11].

TCM theory postulates that the underlying basis of depression is a poor mood due to Qi stagnation, which leads to dysfunction of the viscera. Thus, acupuncture treatment for patients with depression often uses acupoints associated with soothing of the liver and depression relief, as well as tranquilization of the heart and mind. These acupoints include Baihui, Yintang, and other governor vessels. The selection of acupoints in patients with mild to moderate depression in the present study was based on the unique theory of Shen's acupuncture treatment for depression syndrome, which

Table 2 Comparison of Hamilton depression rating scale scores and self-rating depression scale scores between the two groups (mean ± SD, scores)

Group	n	HAMD score (points)			SDS score (points)		
		Before treatment	4 wk of treatment	8 wk of treatment	Before treatment	4 wk of treatment	8 wk of treatment
Acupuncture group	80	20.13 ± 2.20	16.60 ± 2.85[a]	13.64 ± 2.75[a]	61.84 ± 4.55	56.92 ± 5.10[a]	51.14 ± 6.12[a]
Fluoxetine group	80	19.75 ± 2.38	17.21 ± 2.91[a]	15.20 ± 2.48[a]	60.63 ± 4.92	57.88 ± 5.53[a]	54.63 ± 5.58[a]
t value		1.049	-1.340	-3.768	1.615	-1.141	-3.769
P value		0.296	0.182	0.000	0.108	0.255	0.000

[a]$P < 0.05$ *vs* this group before treatment.

HAMD: Hamilton depression rating scale; SDS: Self-rating depression scale.

Table 3 Comparison of fractional amplitude of low frequency fluctuations values between the two groups of patients (mean ± SD)

Acupuncture group-fluoxetine group (fALFF difference)	MNI coordinates (mm)			Voxel	*t* value
	X	Y	Z		
Before treatment					
Cingulate back	-3	-11	13	12	-0.431
Left precuneus	-4	-8	-4	14	1.102
Middle occipital gyrus	-9	6	5	8	1.339
Left suboccipital back	-14	-21	-9	17	1.482
Lower forehead of right frame	14	12	-2	19	1.773
Right insula	15	18	-5	16	1.295
Right hippocampus	11	-1	13	14	1.374
Post treatment					
Cingulate back	14	18	-11	21	2.23
Left precuneus	5	13	6	19	1.748
Middle occipital gyrus	12	38	8	24	2.548
Left suboccipital back	7	14	11	32	3.251
Lower forehead of right frame	-18	-16	9	37	3.926
Right insula	-17	-13	14	15	1.554
Right hippocampus	-13	12	-11	9	0.983

fALFF: Fractional amplitude of low frequency fluctuations.

involves "regulating yang and eliminating pathogenic factors"[12]. After 4 and 8 wk of treatment, the HAMD and SDS scores in both the acupuncture and control groups were significantly lower than those before treatment.

Patients in the acupuncture group had significantly lower HAMD and SDS scores than patients in the control group. This suggests that the long-term clinical effect of acupuncture at ghost points combined with fluoxetine is better than fluoxetine alone for the treatment of mild to moderate depression. The decrease in scores between weeks 4 and 8 was not as notable as that observed from baseline to week 4. This could be attributed to the fact that the scores for each scale have a lower limit; indeed, both HAMD and SDS scores had entered a relatively stable range after 8 wk of treatment, even approaching values observed in patients without depression.

The assessment of the neurophysiology and neuroanatomy of affective disorders with fMRI can be used to facilitate the diagnosis of depression. Some studies have suggested that fALFF and regional homogeneity values can be used as indicators for

Table 4 Comparison of traditional Chinese medicine syndrome scores between the two groups of patients (mean ± SD, scores)

| Group | n | TCM syndrome points | | t value | P value |
		Before treatment	Post treatment		
Acupuncture group	80	21.73 ± 4.20	7.96 ± 1.55	27.511	0.000
Fluoxetine group	80	20.68 ± 4.47	10.20 ± 2.39	18.493	0.000
t value		1.531	-7.033		
P value		0.128	0.000		

TCM: Traditional Chinese medicine.

Table 5 Comparison of plasma adrenocorticotropic hormone, Cor and corticotropin-releasing hormone levels before and after treatment in the two groups

| Group | n | ACTH (ng/L) | | Cor (ng/L) | | CRH (ng/L) | |
		Before treatment	8 wk of treatment	Before treatment	8 wk of treatment	Before-treatment	8 wk of treatment
Acupuncture group	80	38.74 ± 7.20	28.64 ± 5.51[a]	122.64 ± 14.81	98.13 ± 11.77[a]	132.85 ± 17.20	112.69 ± 12.54[a]
Fluoxetine group	80	40.01 ± 8.14	31.47 ± 7.08[a]	120.28 ± 16.57	105.25 ± 13.60[a]	130.51 ± 15.83	116.11 ± 14.38[a]
t value		-1.045	-2.821	0.950	-3.541	0.895	-1.603
P value		0.297	0.005	0.344	0.001	0.372	0.111

[a]$P < 0.05$ *vs* this group before treatment.
ACTH: Adrenocorticotropic hormone; CRH: Corticotropin-releasing hormone.

Table 6 Comparison of clinical efficacy between the two groups of patients, n (%)

Group	n	Markedly effective	Efficient	Invalid
Acupuncture group	80	41 (51.25)	33 (41.25)	6 (7.50)
Fluoxetine group	80	29 (36.25)	40 (50.00)	11 (13.75)
Z		-2.041		
P value		0.041		

Table 7 Comparison of the incidence of adverse reactions between the two groups of patients, n (%)

Group	n	Insomnia	Nausea	Irritable	Anxiety	Tremor	Complication rate
Acupuncture group	80	1	1	0	2	0	4 (5.00)
Fluoxetine group	80	4	2	2	4	1	13 (16.25)
χ^2							5.331
P value							0.021

the early diagnosis and monitoring of depression[13]. After 8 wk of treatment in the present study, the fALFF values of the left posterior cingulate gyrus, left precuneus, left middle occipital gyrus, and left inferior occipital gyrus were significantly lower in the acupuncture group than in the control group. In contrast, the fALFF values of the right inferior frontal gyrus, right insula, and right hippocampus in the acupuncture group were higher than those in the control group[14,15]. These results suggest that the combined use of acupuncture at ghost points and fluoxetine has a greater effect on the regulation of neurological function compared to fluoxetine alone when used in patients with mild to moderate depression[16]. Acupuncture combined with fluoxetine

may play an antidepressant role by reducing the fALFF values of patients in the frontal lobe, middle frontal gyrus, parietal lobe, anterior central gyrus, precuneus, and parietal lobule, which are higher than those of healthy people. The combined use of acupuncture and fluoxetine affects a wider range of brain regions than fluoxetine alone, thus indicating that each treatment may regulate brain function *via* different mechanisms. Acupuncture may have a more significant regulatory role in a greater number of brain regions compared to pharmacotherapy[17,18].

Previous studies have reported significantly lower TCM syndrome scores in an acupuncture group compared to a fluoxetine group after 8 wk of treatment; a greater clinical efficacy was achieved with acupuncture treatment[19,20]. In addition, the incidence of adverse reactions in the acupuncture group (5.71%) was significantly lower than that in the fluoxetine group (25.71%). This suggested that acupuncture at ghost points combined with fluoxetine had a greater clinical efficacy than fluoxetine alone in patients with mild to moderate depression. The results of the present study provide additional evidence for the efficacy of acupuncture in the treatment of depression. Acupuncture exerts its effects *via* multiple targets and mechanisms; these comprise the regulation of neurotransmitters and receptors, nerve plasticity, the neuroendocrine-immune network, and the brain-gut axis. This study demonstrated that the combined use of acupuncture and pharmacotherapy may provide synergistic benefits in patients with mild to moderate depression. Additional studies are warranted to further investigate the efficacy of different acupuncture and drug combinations.

CONCLUSION

The combined use of acupuncture at ghost points and fluoxetine may be more effective than fluoxetine alone for the treatment of patients with mild to moderate depression. At the same time, it has a better effect on improving the TCM syndrome of patients and regulating the neurological function of brain functional areas.

ARTICLE HIGHLIGHTS

Research background

Depression affects more than 350 million people worldwide. In China, 4.2% (54 million people) of the total population suffers from depression.

Research motivation

This study provided data reference for the treatment of depression.

Research objectives

This study explored the effect of acupuncture at ghost points combined with fluoxetine on clinical indicators of depression and resting-state functional magnetic resonance imaging (fMRI) parameters in patients with mild to moderate depression.

Research methods

They were divided into acupuncture group (acupuncture at ghost points combined with fluoxetine) and fluoxetine group (fluoxetine alone) with 80 cases in each group.

Research results

The acupuncture group was better than the fluoxetine group.

Research conclusions

Acupuncture at ghost points combined with fluoxetine is more effective than fluoxetine.

Research perspectives

The combined use of acupuncture at ghost points and fluoxetine may be more effective than fluoxetine alone for the treatment of patients with mild to moderate depression.

REFERENCES

1   **Phan MG**, Do TT, Nguyen TN, Do TVH, Dong NP, Vu MT. Chemical Constituents of *Eupatorium japonicum* and Anti-Inflammatory, Cytotoxic, and Apoptotic Activities of Eupatoriopicrin on Cancer Stem Cells. *Evid Based Complement Alternat Med* 2021; **2021**: 6610347 [PMID: 34055014 DOI: 10.1155/2021/6610347]

2   **Tuleasca C**, Bolton T, Régis J, Witjas T, Girard N, Levivier M, Van De Ville D. Graph theory analysis of resting-state functional magnetic resonance imaging in essential tremor. *Hum Brain Mapp* 2020; **41**: 1689-1694 [PMID: 31840354 DOI: 10.1002/hbm.24900]

3   **Berwian IM**, Wenzel JG, Kuehn L, Schnuerer I, Kasper L, Veer IM, Seifritz E, Stephan KE, Walter H, Huys QJM. The relationship between resting-state functional connectivity, antidepressant discontinuation and depression relapse. *Sci Rep* 2020; **10**: 22346 [PMID: 33339879 DOI: 10.1038/s41598-020-79170-9]

4   **Grimm O**, Kopfer V, Küpper-Tetzel L, Deppert V, Kuhn M, de Greck M, Reif A. Amisulpride and l-DOPA modulate subcortical brain nuclei connectivity in resting-state pharmacologic magnetic resonance imaging. *Hum Brain Mapp* 2020; **41**: 1806-1818 [PMID: 31880365 DOI: 10.1002/hbm.24913]

5   **Xu Z**, Lai J, Zhang H, Ng CH, Zhang P, Xu D, Hu S. Regional homogeneity and functional connectivity analysis of resting-state magnetic resonance in patients with bipolar II disorder. *Medicine (Baltimore)* 2019; **98**: e17962 [PMID: 31764799 DOI: 10.1097/MD.0000000000017962]

6   **You Y**, Zhang T, Shu S, Qian X, Zhou S, Yao F. Wrist-ankle acupuncture and Fluoxetine in the treatment of post-stroke depression: a randomized controlled clinical trial. *J Tradit Chin Med* 2020; **40**: 455-460 [PMID: 32506860 DOI: 10.19852/j.cnki.jtcm.2020.03.014]

7   **Achalia RM**, Jacob A, Achalia G, Sable A, Venkatasubramanian G, Rao NP. Investigating spontaneous brain activity in bipolar disorder: A resting-state functional magnetic resonance imaging study. *Indian J Psychiatry* 2019; **61**: 630-634 [PMID: 31896871 DOI: 10.4103/psychiatry.IndianJPsychiatry_391_19]

8   **Zhang K**, Wang M, Zhang J, Xie J, Su X, Du X, Chen Z. Dynamic Alterations in Spontaneous Brain Activity in Mothers: A Resting-State Functional Magnetic Resonance Imaging Study. *Neurosci Bull* 2019; **35**: 766-770 [PMID: 31093887 DOI: 10.1007/s12264-019-00392-7]

9   **Meng Q**, Zhang A, Cao X, Sun N, Li X, Zhang Y, Wang Y. Brain Imaging Study on the Pathogenesis of Depression & Therapeutic Effect of Selective Serotonin Reuptake Inhibitors. *Psychiatry Investig* 2020; **17**: 688-694 [PMID: 32631032 DOI: 10.30773/pi.2020.0041]

10 **Aghdam MA**, Sharifi A, Pedram MM. Diagnosis of Autism Spectrum Disorders in Young Children Based on Resting-State Functional Magnetic Resonance Imaging Data Using Convolutional Neural Networks. *J Digit Imaging* 2019; **32**: 899-918 [PMID: 30963340 DOI: 10.1007/s10278-019-00196-1]

11 **Sparacia G**, Parla G, Cannella R, Perri A, Lo Re V, Mamone G, Miraglia R, Torregrossa F, Grasso G. Resting-State Functional Magnetic Resonance Imaging for Brain Tumor Surgical Planning: Feasibility in Clinical Setting. *World Neurosurg* 2019; **131**: 356-363 [PMID: 31658578 DOI: 10.1016/j.wneu.2019.07.022]

12 **Qin Z**, Kang D, Feng X, Kong D, Wang F, Bao H. Resting-state functional magnetic resonance imaging of high altitude patients with obstructive sleep apnoea hypopnoea syndrome. *Sci Rep* 2020; **10**: 15546 [PMID: 32968086 DOI: 10.1038/s41598-020-72339-2]

13 **Song K**, Li J, Zhu Y, Ren F, Cao L, Huang ZG. Altered Small-World Functional Network Topology in Patients with Optic Neuritis: A Resting-State fMRI Study. *Dis Markers* 2021; **2021**: 9948751 [PMID: 34221189 DOI: 10.1155/2021/9948751]

14 **Dai P**, Zhou X, Ou Y, Xiong T, Zhang J, Chen Z, Zou B, Wei X, Wu Y, Xiao M. Altered Effective Connectivity of Children and Young Adults With Unilateral Amblyopia: A Resting-State Functional Magnetic Resonance Imaging Study. *Front Neurosci* 2021; **15**: 657576 [PMID: 34295218 DOI: 10.3389/fnins.2021.657576]

15 **Ao W**, Cheng Y, Chen M, Wei F, Yang G, An Y, Mao F, Zhu X, Mao G. Intrinsic brain abnormalities of irritable bowel syndrome with diarrhea: a preliminary resting-state functional magnetic resonance imaging study. *BMC Med Imaging* 2021; **21**: 4 [PMID: 33407222 DOI: 10.1186/s12880-020-00541-9]

16 **Catalino MP**, Yao S, Green DL, Laws ER, Golby AJ, Tie Y. Mapping cognitive and emotional networks in neurosurgical patients using resting-state functional magnetic resonance imaging. *Neurosurg Focus* 2020; **48**: E9 [PMID: 32006946 DOI: 10.3171/2019.11.FOCUS19773]

17 **Oudega ML**, van der Werf YD, Dols A, Wattjes MP, Barkhof F, Bouckaert F, Vandenbulcke M, De Winter FL, Sienaert P, Eikelenboom P, Stek ML, van den Heuvel OA, Emsell L, Rhebergen D, van Exel E. Exploring resting state connectivity in patients with psychotic depression. *PLoS One* 2019; **14**: e0209908 [PMID: 30653516 DOI: 10.1371/journal.pone.0209908]

18 **Dionisio-Parra B**, Wiesinger F, Sämann PG, Czisch M, Solana AB. Looping Star fMRI in Cognitive Tasks and Resting State. *J Magn Reson Imaging* 2020; **52**: 739-751 [PMID: 32073206 DOI: 10.1002/jmri.27073]

19 **Gonen OM**, Moffat BA, Kwan P, O'Brien TJ, Desmond PM, Lui E. Resting-state functional connectivity and quantitation of glutamate and GABA of the PCC/precuneus by magnetic resonance spectroscopy at 7T in healthy individuals. *PLoS One* 2020; **15**: e0244491 [PMID: 33373387 DOI: 10.1371/journal.pone.0244491]

20 **Jiang H**, Dai Z, Lu Q, Yao Z. Magnetoencephalography resting-state spectral fingerprints distinguish

bipolar depression and unipolar depression. *Bipolar Disord* 2020; **22**: 612-620 [PMID: 31729112 DOI: 10.1111/bdi.12871]

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