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Effectiveness of paroxetine in the treatment of poststroke depression

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Abstract

This study retrospectively investigated the effectiveness of paroxetine for the treatment of poststroke depression (PSD).

Seventy patient cases with PSD were included in this study, and were assigned to an intervention group and a control group equally. All patients received routine treatment in both groups. Additionally, patients in the intervention group underwent paroxetine, while patients in the control group received psychotherapy for a total of 8 weeks intervention. The primary outcomes included depression, measured by Hamilton depression rating scale (HAMD); and anxiety, measured by Hamilton Anxiety Rating Scale (HAMA). The secondary outcomes consisted of neurological impairment, measured by Scandinavian Stroke Scale (SSS), and activities of daily living, measured by Barthel index (BI), as well as the adverse events. All outcomes were assessed before and after 8-week treatment.

After 8-week treatments, patients in the intervention group did not show greater effectiveness in depression, measured by HAMD ($P = .11$), and anxiety, assessed by HAMA ($P = .13$), as well as the neurological impairment, evaluated by SSS ($P = .24$), and activities of daily, performed by BI ($P = .19$), compared with patients in the control group. In addition, no significant differences regarding adverse events were found between the 2 groups.

The results of this study indicated that paroxetine may not bring promising effectiveness for patients with PSD. Future studies are still needed to warrant the results of this study.

Abbreviations: BI = Barthel index, HAMA = Hamilton Anxiety Rating Scale, HAMD = Hamilton depression rating scale, PSD = poststroke depression, SSRIs = selective serotonin reuptake inhibitors, SSS = Scandinavian Stroke Scale.

Keywords: effectiveness, paroxetine, poststroke depression

1. Introduction

Poststroke depression (PSD) is a very common complication from stroke survivors.[1,2] It has been reported that PSD is highly associated with increased mortality and poor impaired functional outcome parameters.[3–5] Its morbidity ranges from 25% to 68%, which largely affects the prognosis of stroke patients,[6,7] and the quality of life in patients with PSD.

Several treatment options are available for such condition, including medications, and psychotherapy.[8–14] As for medication therapy, selective serotonin reuptake inhibitors (SSRIs) are often utilized to treat depression. However, most patients are still reported to experience insufficient efficacy and a variety of adverse events if they took such kinds of drugs for a long period.[8–12] On the other hand, psychological therapies are also reported to treat patients with PSD. However, it still lacks efficacy for the treatment of PSD.[13,14]

Of these options, paroxetine is reported to treat such disorder effectively, and also with fewer side effects in patients with PSD.[15–18] However, there is still limit available evidence to support this therapy.[17,18] Thus, in this retrospective study, we explored the effectiveness and safety of paroxetine for the treatment of patients with PSD.

2. Methods

2.1. Design

This retrospective study included 70 patient cases with PSD. All of them were divided into an intervention group and a control group equally. All patients were given routine treatment in both groups. In addition, 35 patients in the intervention group received paroxetine, while the other 35 patients in the control group underwent psychotherapy. All patients in both groups were treated for a total of 8 weeks.

2.2. Ethical considerations

This study was approved by the Ethics Committee of Fifth Center Hospital of Tianjin. All the cases of included patients were recruited from this hospital between December 2015 and October 2017. All patients provided the written informed consent.

2.3. Eligibility criteria

A total of 70 eligible patients with PSD were included in this retrospective study. All patients were confirmed diagnosed with

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PSD according to the diagnosis criteria of Diagnostic and Statistical Manual IV categorizes PSD.[19] They aged between 27 and 81 years old, with stroke duration of more than 3 months. However, the cases were excluded if patients were unconsciousness, or failed to have normal communication ability and recognition, or pregnant, breast feeding, or had received the paroxetine or phychotherapy 1 month before the treatment, or history of brain surgery, cancers, or other severe diseases, or had incomplete data.

2.4. Study interventions

All patients received routine treatment for stroke rehabilitations. In addition, patients in the intervention group received paroxetine tablet (provided by Beijing Wansheng Pharmaceutical Co., Ltd., Batch number: 008016023), 20 mg/tablet, 1 tablet daily in the morning, 7 days weekly for a total of 8 weeks.

Patients in the control group received psychotherapy by an expert of psychologist. Each patient received such intervention 30 minutes daily, once weekly for 8 weeks in total.

2.5. Outcome measurements

The primary outcomes consisted of depression and anxiety. The depression was assessed by Hamilton depression rating scale (HAMD);[20] and the anxiety was evaluated by Hamilton Anxiety Rating Scale (HAMA).[21] The HAMD is a multiple item questionnaire utilized to provide an indication of depression. It includes 17 items, and each item scored from 0 to 7, a higher score indicating a server depression.[20] The HAMA consists of 14 items used to evaluate the severity of anxiety. Each item ranges from 0 (not present) to 4 (severe), with a total score of 56.[21]

The secondary outcomes included neurological impairment and activities of daily living. Of those, neurological impairment was measured by the Scandinavian Stroke Scale (SSS);[22] and activities of daily living were performed by the Barthel index (BI).[23] The SSS has 9 items, and the score varies from 0 to 22 (prognostic score)/48 (long term score), a higher score meaning a better prognosis.[22] The BI scale yields a score of 0 to 100, with a higher score indicating better activities of daily living.[23] In addition, adverse events were also documented during the treatment period of this study. All outcomes were measured and evaluated before and after 8-week treatment.

2.6. Statistical analysis

All data were analyzed by the SAS package (Version 8.1; SAS Institute Inc., Cary, NC). Mann–Whitney *U*-test or *t* test was utilized to analyze the continuous data, while χ^2 test or Fisher's exact test was used to analyze the categorical data. The statistical significance level was defined as $P < .05$.

3. Results

The patient characteristics of both groups are listed in Table 1. The comparisons of all characteristic and demographic values did not differ significantly between the 2 groups (Table 1).

The results of all outcomes after 8 weeks treatment did not exert significant differences in primary outcomes of depression, as measured by HAMD ($P = .11$, Table 2), and anxiety, as measured by HAMA ($P = .13$, Table 3); as well the secondary outcomes of neurological impairment, as measured by SSS ($P = .24$, Table 4),

Table 1

General characteristic of the included patients in both groups.

Characteristics	Intervention group (n = 35)	Control group (n = 35)	*P* value
Age, years	62.5 (11.4)	64.1 (12.3)	.57
Sex			
Male	23 (65.7)	20 (57.1)	.46
Female	12 (34.3)	15(42.9)	.46
Race (Asian Chinese)	35 (100.0)	35(100.0)	–
BMI, kg/m^2	22.7 (2.1)	23.1 (2.4)	.46
Duration of post stroke, months	9.1 (3.3)	8.7 (3.1)	.60
Duration of PSD onset, months	5.5 (2.0)	5.3 (2.2)	.69
Previous stroke attacks	1.7 (1.2)	1.4 (1.3)	.32
Previous treatment			
Fluoxetine	23 (65.7)	26 (74.3)	.44
Other antidepressant drug	11 (31.4)	7 (20.0)	.28
Acupuncture	15 (42.9)	12 (34.3)	.46
Comorbidities			
Cardiovascular diseases	7 (20.0)	10 (28.6)	.41
Respiratory diseases	12 (34.2)	9 (25.7)	.44
Osteoarthritis diseases	14 (40.0)	16 (45.7)	.63
Others	8 (22.9)	10 (28.6)	.59
HAMD	27.9 (6.8)	26.0 (5.9)	.21
HAMA	18.5 (7.3)	19.4 (6.8)	.59
SSS	17.9 (6.6)	18.3 (7.0)	.81
BI	71.2 (12.4)	73.5 (13.3)	.45

Data are present as mean ± standard deviation or number (%).
BI = Barthel index, BMI = body mass index, HAMA = Hamilton Anxiety Rating Scale, HAMD = Hamilton depression rating scale, PSD = poststroke depression, SSS = Scandinavian Stroke Scale.

Table 2

Comparison of depression between the 2 groups.

HAMD	Intervention group (n = 35)	Control group (n = 35)
Post-treatment	15.1 (7.3)	18.0 (7.7)
Difference from pretreatment	−12.7 (−15.9, −8.3)	−8.1 (−13.1, −5.2)
P value	<.01	<.01
Difference between groups		−4. 5 (−6.3, −2.9)
P value		.11

Data are present as mean ± range.
HAMD = Hamilton depression rating scale.

Table 3

Comparison of anxiety between the 2 groups.

HAMA	Intervention group (n = 35)	Control group (n = 35)
Post-treatment	8.2 (5.5)	10.3 (6.1)
Difference from pretreatment	−10.3 (−13.7, −6.9)	−9.1 (−14.4, −7.2)
P value	<.01	<.01
Difference between groups		−1.3 (−2.1, −0.7)
P value		.13

Data are present as mean ± range.
HAMA = Hamilton anxiety rating scale.

Table 4

Comparison of neurological impairment between the 2 groups.

SSS	Intervention group (n = 35)	Control group (n = 35)
Post-treatment	8.0 (3.6)	9.1 (4.2)
Difference from pretreatment	−9.9, (−13.3, −6.4)	−9.0 (−12.9, −5.7)
P value	<.01	<.01
Difference between groups		−1.0 (−1.8, −0.3)
P value		.24

Data are present as mean ± range.
SSS = Scandinavian Stroke Scale.

Table 6

Comparison of adverse events between the 2 groups.

Adverse events	Intervention group (n = 35)	Control group (n = 35)	*P*
Loss of appetite	6 (17.1)	1 (2.9)	.08
Dizziness	5 (14.3)	1 (2.9)	.12
Insomnia	5 (14.3)	0 (0)	.09
Dry mouth	4 (11.4)	0 (0)	.13
Constipation	3 (8.6)	1 (2.9)	.33
Weakness	4 (11.4)	1 (2.9)	.20

Data are present as number (%).

and activities of daily living, as measured by BI ($P = .19$, Table 5) between the 2 groups.

The comparison of all adverse events did not differ significantly between the 2 groups (Table 6). No death related to the intervention was occurred in either group.

4. Discussion

Paroxetine is an antidepressant of the SSRIs class.[24] It is utilized to treat major depressive disorder, anxiety, panic order, posttraumatic stress disorder, and premenstrual dysphoric disorder.[24] It is the most potent and specific SSRIs, and binds to the allosteric site of the serotonin transporter.[25–27] It also inhibits the reuptake of norepinephrine to a lesser extent.[27]

This retrospective study did not show promising outcomes after 8-week intervention of paroxetine in patients with PSD, compared with the patients received psychological therapy. To our best knowledge, limit data are still available regarding the paroxetine for treating PSD in individuals presently. In this study, we utilized paroxetine for the treatment of PSD, compared with the psychological intervention. The findings indicated that paroxetine did not find encouraging effectiveness in treating patients with PSD.

Previous systematic studies have addressed this topic to evaluate the efficacy of paroxetine for the treatment of patients with PSD.[16–18] However, they drew inconsistent conclusions based on their results. One study designed with multiple treatments by meta-analysis of randomized controlled trials to create a rank order of the comparative efficacy and acceptability of different medications in PSD.[16] It found that paroxetine might be the best option for treating PSD after acute stroke, and fluoxetine might be the worst option. On the other hand, the other Cochrane systematic review failed to draw a positive conclusion of pharmacological agents, including paroxetine, and psychological therapies, because of the insufficient evidence.[17,18]

Table 5

Comparison of activities of daily living between the 2 groups.

BI	Intervention group (n = 35)	Control group (n = 35)
Post-treatment	87.3 (21.5)	80.1 (24.4)
Difference from pretreatment	16.1 (12.9, 20.4)	6.6 (4.7, 8.4)
P value	<.01	<.01
Difference between groups		9.3 (7.1, 11.0)
P value		.19

Data are present as mean ± range
BI = Barthel index.

In this study, our results failed to show that paroxetine is efficacious for patients with PSD. The results did not demonstrate better outcomes in depression, anxiety, neurological impairment, and activities of daily living. It indicates that paroxetine may not benefit for patients with PSD. Moreover, both groups had similar adverse events.

Obvious limitations of this retrospective study are as follows: Firstly, the effectiveness of this study was the combination of paroxetine with routine therapies, but not the paroxetine alone. Secondly, the sample size of this study was quite small, which may also impact the results of this study. Thirdly, this study did not include the follow-up assessment after the treatment, because no data were available during the follow-up period. All those limitations may affect the results in this retrospective study.

5. Conclusion

The results of this study showed that paroxetine may be not efficacious for patients with PSD after 8 weeks treatment. Further studies should still be focused to warrant the results of this study.

Author contributions

Conceptualization: Chen Ma, Ping Li.
Data curation: Chen Ma, Ping Li.
Formal analysis: Ping Li.
Investigation: Chen Ma.
Methodology: Ping Li.
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Validation: Ping Li.
Visualization: Ping Li.
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