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Research

Clinical Study on the Treatment of Mental Disorders in Patients with Cerebral Infarction Using Olanzapine Tablets Combined with Sodium Valproate Tablets

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Abstract **Objective:** To explore the efficacy and safety of olanzapine tablets combined with sodium valproate tablets in treating patients with mental disorders due to cerebral infarction.

Methods: A total of 62 patients diagnosed with mental disorders due to cerebral infarction at Ling County Second People's Hospital from July 2020 to March 2023 were selected. According to the treatment plan, they were divided into two groups: a control group of 40 patients and a combined group of 22 patients. The control group was treated with olanzapine tablets, while the combined group received both olanzapine tablets and sodium valproate tablets, with treatment lasting 8 weeks. After 8 weeks, the total effective rate and incidence of adverse reactions were recorded for both groups. Additionally, PANSS, TESS, NIHSS, and ADL scores were assessed for all patients before treatment, after 2 weeks, and after 8 weeks.

Results: The total effective rate in the combined group was 95.45%, significantly higher than the 62.50% in the control group, with a highly significant statistical difference ($P<0.05$). The incidence of adverse reactions in the combined group was significantly lower than that in the control group, with a statistically significant difference ($P<0.05$). After 2 and 8 weeks of treatment, PANSS, TESS, and NIHSS scores in the combined group were significantly lower than those in the control group, while ADL scores were significantly higher, with all differences reaching statistical significance ($P<0.05$).

Conclusion: The efficacy of combined olanzapine and sodium valproate in treating mental disorders due to cerebral infarction is superior to that of olanzapine alone, without increasing the incidence of adverse reactions, demonstrating high safety and warranting promotion.

Keywords: Olanzapine; Sodium Valproate; Cerebral Infarction; Mental Disorders

Classification Code: R749

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Introduction

Cerebral infarction is a common cerebrovascular disease characterized by rapid onset and progression, with a high disability rate, making it a significant risk factor for mortality both domestically and internationally [1]. Mental disorders resulting from cerebral infarction have become a severe complication, with common manifestations including anxiety, depression, delirium, and hallucinations, which severely threaten patients' physical and mental health and lead to a drastic decline in quality of life. Current medical practice commonly adopts pharmacological treatment strategies aimed at improving cerebral blood circulation to provide essential nutritional support to damaged nerve cells and effectively prevent thrombus reformation, hoping to alleviate or reverse the series of mental disorders caused by cerebral infarction. Among these, olanzapine is one of the most commonly used medications for treating mental disorders, exhibiting

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good clinical efficacy, though it has drawbacks such as significant individual variability and numerous adverse reactions due to its multiple target sites [2]. Sodium valproate is widely used in the treatment of schizophrenia, bipolar disorder, and other mental illnesses, while also participating in the processes of neuronal growth and apoptosis [3]. Therefore, this study investigates the combined use of olanzapine and sodium valproate for treating mental disorders due to cerebral infarction.

1. Materials and Methods

1.1 General Data

This study selected 62 patients diagnosed with mental disorders due to cerebral infarction at Ling County Second People's Hospital from July 2020 to March 2023. According to the treatment plan, patients were divided into two groups: a control group of 40 patients and a combined group of 22 patients. A comparison of general data between the two groups is shown in Table 1. Inclusion criteria: confirmed acute cerebral infarction through CT or MRI examinations; diagnosed according to the criteria for mental disorders due to cerebral infarction in the "Chinese Classification and Diagnostic Criteria of Mental Disorders, Third Edition" [4] established by the Chinese Medical Association's Psychiatry Branch. Exclusion criteria: severe liver and kidney dysfunction; heart function diseases; other psychiatric disorders; and allergies to the medications used in this study. Informed consent was obtained from patients and their families, and the study was approved by the Medical Ethics Committee of our hospital.

Table 1: Coeen Two Groups

Group	Age (years)	BMI (Kg/m²)	Comorbidities (%)
Control Group (n=40)	66.56 ± 10.25	25.52 ± 5.46	21 (52.50)
Combined Group (n=22)	65.88 ± 10.68	25.49 ± 5.18	11 (50.00)
t/2	0.429	0.230	0.036
P	>0.05	>0.05	>0.05

1.2 Treatment Methods

Patients in the control group received olanzapine tablets (Manufacturer: Dr. Reddy's Laboratories Ltd, Approval No: H20150141, Specification: 5 mg20 tablets/box) orally, starting at a dose of 5 mg/day. The dose was gradually increased based on clinical observation, with a maximum daily dose not exceeding 20 mg. The combined group received sodium valproate tablets (Manufacturer: Hunan Xiangzhong Pharmaceutical Co., Ltd., Approval No: H4308874, Specification: 0.2g100 tablets/bottle) orally in addition to olanzapine, starting at a dose of 5–10 mg/kg, with adjustments made based on the patient's condition until stabilization. Both groups received medication for a total of 8 weeks.

1.3 Observation Indicators

(1) Clinical efficacy was assessed based on four levels: ineffective (PANSS and TESS score reduction <25%); effective (25% ≤ reduction <50%); markedly effective (50% ≤ reduction <75%); and cured (reduction >75%). The total effective rate was calculated as the percentage of markedly effective, effective, and cured cases out of the total number of patients.

(2) The PANSS scoring system consists of positive and negative dimensions, covering 30 basic items categorized

into positive symptoms, negative symptoms, and general psychopathology. Each item is rated on a scale of 1 to 7, with higher scores reflecting greater severity of mental disorders. Scores were assessed before treatment, at 2 weeks, and at 8 weeks.

(3) The TESS score evaluates symptoms that occur during treatment, covering various adverse clinical symptoms. Each symptom is rated from 0 to 4 based on severity, clinical signs, and drug association, with an additional 0 to 6 comprehensive scoring method. Ratings were performed by psychiatrists, and the average of two consecutive evaluations was taken as the final score. An increasing score trend indicates worsening mental disorder status. Ratings were conducted before treatment, at 2 weeks, and at 8 weeks.

(4) NIHSS scores assess neurological deficits after a stroke, including 11 components: consciousness, language, vision, motor function, sensation, coordination, limb paralysis, limb function, limb sensation, limb coordination, and lesion severity. Scores range from 0 to 42, with >20 indicating severe stroke; 15–20 indicating moderate to severe stroke; 5–15 indicating moderate stroke; and 1–4 indicating mild stroke. Ratings were conducted before treatment, at 2 weeks, and at 8 weeks.

(5) ADL scores assess patients' daily living capabilities, divided into two parts: a basic self-care scale with 6 items and an instrumental daily living skills scale with 8 items. Higher scores indicate better self-care ability and recovery status. Ratings were conducted before treatment, at 2 weeks, and at 8 weeks.

(6) Adverse reactions included nausea, vomiting, headache, fatigue, diarrhea, etc.

1.4 Statistical Methods

Data analysis was performed using SPSS 27.0 statistical software. For continuous data, results are expressed as mean (x) ± standard deviation (s). Differences were assessed using t-tests; for data involving repeated measures over multiple time points, one-way repeated measures ANOVA was employed to comprehensively assess the time effects on data changes. Categorical data were presented as percentages (%), with differences assessed using chi-squared (χ^2) tests. A significance level of α=0.05 was established for determining statistical significance.

2. Results

2.1 Clinical Efficacy

As shown in Table 2, the total effective rate in the combined group was higher than that in the control group (P<0.05).

Table 2: Clinical Efficacy [n (%)]

Group	Cure	Significant Effect	Effective	Ineffective	Total Effective Rate
Control Group (n=40)	5 (12.50)	10 (25.00)	10 (25.00)	15 (37.50)	25 (62.50)
Combined Group (n=22)	4 (18.18)	14 (63.64)	3 (13.64)	1 (4.50)	21 (95.45)
2	8.051				
P	<0.05				

2.2 Comparison of PANSS, TESS, NIHSS, and ADL Scores

After 2 and 8 weeks of treatment, PANSS, TESS, and NIHSS scores in the combined group were lower than those in the control group, while ADL scores were higher,

all with P<0.05; significant differences were observed across all three repeated measures for PANSS, TESS, NIHSS, and ADL scores regarding medication, time, and interaction effects (P>0.05). See Table 3.

Table 3: Comparison of PANSS, TESS, NIHSS, and ADL Scores (x±s, points)

Group	PANSS				TESS		
	Pre-treatment	2 Weeks Treatment	8 Weeks Treatment		Pre-treatment	2 Weeks Treatment	8 Weeks Treatment
Control Group（n=40）	88.25±4.25	70.26±4.53	60.77±4.15		12.15±2.15	8.95±1.55	6.76±1.25
Combined Group（n=22）	87.48±4.26	60.15±4.20	50.12±4.21		12.25±2.21	5.75±1.57	4.12±1.54
t	0.682	8.623	9.619		0.174	7.743	7.321
P	＞0.05	<0.05	<0.05		＞0.05	<0.05	<0.05
F	F_{Group}=104.549 F_{Time}=913.648 $F_{interaction}$=24.541				F_{Group}=47.930 F_{Time}=249.492 $F_{interaction}$=15.872		
P	P_{Group}<0.05 P_{Time}<0.05 $P_{interaction}$<0.05				P_{Group}<0.05 P_{Time}<0.05 $P_{interaction}$<0.05		

Continued form

Group	NIHSS				ADL		
	Pre-treatment	2 Weeks Treatment	8 Weeks Treatment		Pre-treatment	2 Weeks Treatment	8 Weeks Treatment
Control Group（n=40）	14.11±1.54	12.15±1.26	8.12±1.24		44.54±4.84	50.42±4.52	65.26±4.28
Combined Group（n=22）	14.21±1.46	8.45±1.23	5.25±1.26		44.45±4.56	60.21±4.21	83.45±4.26
t	0.249	11.160	8.671		0.071	8.356	16.040
P	＞0.05	<0.05	<0.05		＞0.05	<0.05	<0.05
F	F_{Group}=126.690 F_{Time}=418.238 $F_{interaction}$=31.153				F_{Group}=218.630 F_{Time}=614.240 $F_{interaction}$=57.631		
P	P_{Group}<0.05 P_{Time}<0.05 $P_{interaction}$<0.05				P_{Group}<0.05 P_{Time}<0.05 $P_{interaction}$<0.05		

2.3 Incidence of Adverse Reactions

During the 8-week treatment period, 5 patients in the combined group experienced adverse reactions, compared to 10 patients in the control group. The incidence of adverse reactions in the combined group was significantly lower than in the control group (P<0.05). See Table 4.

Table 4: Adverse Reactions [n (%)]

Group	Nausea and Vomiting	Headache	Fatigue	Diarrhea	Total

Group	Nausea and Vomiting	Headache	Fatigue	Diarrhea	Total
Control Group (n=40)	3 (7.50)	2 (5.00)	2 (5.00)	3 (7.50)	10 (25.00)
Combined Group (n=22)	2 (9.09)	1 (4.55)	2 (9.09)	1 (4.55)	5 (22.73)
x^2					21.106
P					<0.05

3.Discussion

The study indicates that the incidence and mortality rates of cerebral infarction remain high, drawing widespread attention to this disease [5]. Mental disorders resulting from cerebral infarction typically have sudden onset and rapid deterioration, often leading to emotional disturbances such as vulnerability, delusions, and hallucinations during the course, resulting in severe cognitive, perceptual, behavioral, and intellectual impairments that threaten patients' health and quality of life [6]. Therefore, there is an urgent need for effective treatment strategies for mental disorders caused by cerebral infarction. Current common treatment regimens primarily involve pharmacological therapy. Olanzapine and sodium valproate, as representatives of atypical antipsychotic drugs, are widely used in clinical practice for treating mental disorders induced by cerebral infarction, demonstrating significant efficacy. Olanzapine, a member of the benzodiazepine family, uniquely targets the midbrain cortex and limbic system, improving the cholinergic system in the hippocampus and enhancing patients' cognitive and social functioning [7]. Its drawbacks include significant individual variability, often necessitating the combined use of other medications to enhance treatment efficacy. Sodium valproate increases the synthesis of the inhibitory neurotransmitter gamma-aminobutyric acid (GABA) in the brain while reducing its degradation, thus raising GABA concentrations, which play a critical role in regulating neuronal excitability. When GABA levels rise, neuronal excitability is suppressed, thereby achieving control over mental disorders. Consequently, the authors considered combining these two medications to observe treatment effects [8].

In this study, the total effective rate in the combined group was higher than that in the control group, and the incidence of adverse reactions was lower; following treatment, PANSS, TESS, and NIHSS scores in the combined group were lower than pre-treatment levels, while ADL scores were higher, indicating better treatment outcomes and a return to more normal mental states and self-care abilities. Additionally, changes between the two groups after 8 weeks suggest that treatment efficacy is influenced by both medication and treatment duration, likely due to the combined effects of olanzapine and sodium valproate in antagonizing dopamine, cholinergic, and 5-HT systems, selectively reducing the firing of dopaminergic neurons in the limbic system, while also increasing GABA levels and reducing central nervous system excitability. These synergistic effects contribute to improved patient outcomes [9]. Furthermore, sodium valproate is associated with fewer adverse reactions and high safety [10], and its combined use does not increase the risk of adverse reactions in patients. The limitations of this study include a small sample size and unequal group distribution, which may affect the results; thus, future research should include more cases and delve deeper into the combined use of olanzapine and sodium valproate.

In summary, compared to the use of olanzapine alone, the

combined administration of olanzapine and sodium valproate not only improves the treatment efficacy of mental disorders due to cerebral infarction but also does not increase the incidence of adverse reactions, demonstrating high safety and suitability for clinical promotion.

Conflict of Interest

None.

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None.

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