

Original Research Article

Analysis of the effect of sodium valproate sustained release tablets on epilepsy control and cognitive improvement in elderly patients

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ABSTRACT

Background: To study the effect of sodium valproate sustained release tablets on epilepsy control and cognitive function improvement in elderly patients.

Methods: Study was conducted from January 2018 to December 2019, the elderly epilepsy patients admitted in our center were prospectively collected and divided into experimental group and control group according to the method of random number table. The experimental group was treated with sodium valproate sustained-release tablets, and the control group was treated with carbamazepine tablets. The epilepsy control rate and cognitive function improvement of the two groups were observed.

Results: total of 71 patients entered the study, including 36 in the experimental group and 35 in the control group; the epilepsy control rate ($p = 0.03$) and the improvement of cognitive function ($p = 0.01$) in the experimental group were better than those in the control group.

Conclusions: Sodium valproate sustained-release tablets can improve the epilepsy control rate and cognitive function of elderly epilepsy patients, but it needs further large samples and external data validation.

Keywords: Cognition, Elderly, Epilepsy, Improvement, Sodium valproate sustained release tablets

INTRODUCTION

Epilepsy is a chronic recurrent and transient brain dysfunction syndrome characterized by recurrent seizures caused by abnormal discharge of neurons. Studies have shown that 86 in 100,000 of the people over 60 years old suffered epilepsy, and the incidence rate is 2-5 times of the young people.^{1,2} Elderly epilepsy patients has the characteristics of high incidence rate, high recurrence rate and good response to medicine therapy. Therefore, rational treatment decision is especially important for those elderly patients.³

Sodium valproate sustained-release tablets have good curative effect and less side effects, which is one of the first-line medicine in the treatment of epilepsy.⁴

The aim of this study is to investigate the treatment effect of Valproate Sustained-release tablets in the elderly epilepsy patients.

METHODS

From January 2018 to December 2019, the clinical data of elderly epilepsy patients, admitted to our hospital, were prospectively collected.

Inclusion criteria

- Age > 60 years.
- No medicine allergy history.

- No hypertension, heart disease, diabetes and other underlying diseases; all patients signed informed consent.

Exclusion criteria

Patients with space occupying lesions, mental disease and progressive brain recession were excluded.

Treatment

The patients in control group was treated with carbamazepine tablets, orally, 100-200mg/time, 1-2 times/day, gradually increasing the dosage in the course of taking until the best effect was achieved.

The experimental group was treated with valproate sustained-release tablets, the initial daily dose is 10-50mg/kg, then adjusted to the optimal dose of 20-30mg/kg. Two groups of patients were treated with 6 courses of therapy, each course of therapy last for 2 weeks.

Evaluation criteria of epilepsy control in elderly patients:
 1. Significant effect: after treatment, the number of epileptic seizures was significantly reduced, and the clinical symptoms were significantly relieved;
 2. Effective: after treatment, the number of epileptic seizures was gradually reduced, and the clinical symptoms were gradually relieved;
 3. Ineffective: after treatment, the number of epileptic seizures was not reduced, and the clinical symptoms were not relieved.

Epilepsy control rate = significant efficiency + effective efficiency.

The cognitive function was assessed by MMSE, and the higher the score, the higher degree of cognitive function recovery as the score higher.⁵

Statistical analysis

Statistical analysis completed by Spss 19.0 software.

The cognitive function of the elderly epilepsy patients in the two groups was analyzed by t-test; the epilepsy control rate of two groups was analyzed by x2-test; p <0.05 as statistically significant.

RESULTS

From February 2016 to February 2018, a total of 72 elderly epilepsy patients were divided into experimental group and control group according to the random number table method. 36 cases entered the experimental group, including 20 males and 16 females, with an average age of 66.5±5.5 years and an average epilepsy course of disease of 4.1±3.5 years; 17 idiopathic, 14 symptomatic and 5 cryptogenic type of epilepsy; 35 cases entered the control group, including 21 males and 14 females, with an average age of 67.5±6.5 years and an average course of disease of 4.6±3.4 years, 16 idiopathic, 15 symptomatic and 4 cryptogenic type of epilepsy (Table 1).

Table 1: The baseline data of included patient.

Parameter	Experimental group	Control group	Value	p
Age	66.5±5.5	67.5±6.5	0.71	0.49
Gender				
Male	20	21	0.14	0.70
Female	16	14		
Course of disease	4.1±3.5	4.6±3.4	0.61	0.54
Types of epilepsy				
Idiopathic	17	16	0.16	0.92
Symptomatic	14	15		
Cryptogenic	5	4		

Table 2: Comparison of epilepsy control rate between the two groups.

Groups	N	Significantly	Effectively	Ineffective	Control rate	p
Experimental	36	21 (58.3%)	12 (33.3%)	3 (8.3%)	33 (91.7%)	45.8 0.03
Control	35	17 (48.6%)	8 (22.9%)	10 (28.6%)	25 (71.4%)	

Table 3: Comparison of MMSE scores of cognitive function between the two groups.

Groups	N	MMSE (before treatment)	MMSE (after treatment)	t	p
Experimental	36	21.8±2.53	23.8±3.86	2.60	0.01
Control	35	21.5±2.57	22.9±3.52	1.90	0.06

Comparison of epilepsy control rate between the two groups

Total 21 cases of epilepsy in the experimental group were significantly controlled, 12 cases were effectively controlled, the control rate was 91.7%; 17 cases of epilepsy in the control group were significantly controlled, 8 cases were effectively controlled, the control rate was 71.4%; there was statistical difference between the two groups in the epilepsy control rate ($p = 0.03$, Table 2).

Comparison of cognitive function improvement between the two groups

The cognitive function of patients in the experimental group improved after treatment ($p = 0.01$); there was no improvement in the cognitive function of patients in the control group ($p = 0.06$) (Table 3).

DISCUSSION

Epilepsy is a chronic brain disease characterized by highly synchronous abnormal discharge of neurons. Because of the influence of age, combined diseases, liver and kidney function and other factors, it is difficult to treat the epilepsy of elderly patients, and the recurrence rate of this type of epilepsy is high, and repeated seizures will have a serious impact on the cognitive function of the patients. In the elderly patients, the cerebrovascular disease is the main cause of epilepsy, and other causes include trauma, dementia and intracranial tumors.⁶ The newly developed epilepsy in elderly patients is usually focal, which showed the existence of potential structural causes of epilepsy.^{7,8} Therefore, accurate and timely diagnosis of elderly epilepsy patients is particularly important.⁹ At present, the use of lamotrigine, levetiracetam, phenobarbital, phenytoin sodium or valproate and other medicine for the treatment of epilepsy, in which valproate has been confirmed to be one of the most effective medicine for epilepsy.¹⁰⁻¹³

The clinical treatment of epilepsy includes medicine, surgery, gene therapy and biofeedback, but it is still mainly medicine therapy. Sodium valproate sustained-release tablet is a traditional first-line antiepileptic medicine, which owned rapid efficacy, can correct abnormal brain activity in a short time, enhance the transmission of aminobutyric acid, and has high safety.¹⁴ According to the randomized study of epilepsy, the therapeutic effect of valproate is better than that of phenobarbital and carbamazepine, and the side effects are less.^{11,12} Other studies have shown that the safety of long-term utilization of valproate in elderly patients is relatively safe.^{14,15} So it is wise to use sodium valproate sustained-release tablets for treatment of the elderly patients with epilepsy.

Carbamazepine is also a commonly used medicine for epilepsy treatment. Studies had shown that

carbamazepine can inhibit the occurrence and spread of abnormal high-frequency discharge, enhance the activity of noradrenergic nerve in the center, and then enhance the body's oxidative stress system. However, sodium valproate sustained-release tablets can stimulate neutrophils to release inflammatory mediators, oxygen free radicals and other oxidative active factors after long-term activation, thus inhibiting the body's oxidative stress system; therefore, carbamazepine has no effect on improvement of patients cognitive function.^{14,15} The results of our study was similar with those result.

CONCLUSION

In conclusion, although there were shortage of single center study and small sample size in this study, it is preliminarily shown that valproate sustained-release tablets can improve the epilepsy control rate and cognitive function of elderly patients, which is worth to be utilized in clinic practice.

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