Clinical investigation on Levetiracetam treatment in patients with epilepsy

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Abstract: Objective To observe and evaluate the clinical beneficial effect and the side effect of Levetiracetam (Lev) both in add-on therapy and mono-therapy. **Methods** 241 epileptic patients were observed, 125 of them were given Lev by add-on therapy while 116 cases by Lev mono-therapy. **Results** 225 cases completed a course of 20 weeks' therapy. In add-on therapy group, the effective rate of Lev achieved 60. 17 % in mono-therapy group, it reached 73. 83%. It showed that both mono and add-on therapy of Lev were effective to all of the seizure types. **Conclusion** Lev had satisfactory therapeutic effect both in mono and add-on therapy. It is a new broad spectrum, safe and well tolerated antiepileptic drug.
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Levetiracetam (Lev) trade name Gaepo blue a newly developed antiepileptic drugs, has a unique mechanism of antiepileptic action, better pharmacological properties and good tolerability [1]. Through research of literature we found that there are currently Gaepo blue monotherapy or add-on therapy of epilepsy [2,3], and the lack of a larger sample Gaepo orchid monotherapy and add-on therapy studies comparing the efficacy of epilepsy. From January 2007 to June 2009, cases of 241 diagnosed with epilepsy, patients were given Gaepo Lan treatment medication and observed clinical efficacy and adverse reactions of add-on and monotherapy. The results are as reported below.

1 Materials and Methods

1.1 Data and Grouping

All patients were seen by specialist outpatient epilepsy from this hospital and divided into the group conditions: ① All patients were clinically diagnosed as epilepsy and EEG, and press on the International League Against Epilepsy seizures and epilepsy syndrome classification criteria; ②before three months seizure frequency ≥ 1 were divided into the group; ③intracranial lesions and other progressive neurological diseases were excluded; ④ non-pregnant or lactating women.

From enrolled a total of 241 cases were due to lost, economic reasons such treatment in 16 patients out of a total of 225 cases in the analysis, of which 107 cases were on monotherapy, add-on therapy group, 118 cases. 136 cases were male, female 89 cases, aged 3 months to 48 years, mean 12.8 ± 4.2 years, duration of 5 days to 30 years. Seizure types: simple partial seizures (SPS) 35 cases; complex partial seizures (CPS) 55 cases; secondary tonic - clonic seizures (SGTCS) 82 cases; tonic - clonic seizures (GTCS) 45 case; West syndrome in three cases; Lennox-Gastaut (LGS) syndrome in 5 cases. Monotherapy group and add between treatment groups in age, sex, seizure type, seizure frequency based on the average difference was not significant (P> 0. 05) (Table 1).

1.2 Methods of administration of levetiracetam from Belgium UCB S. A production company, imported drug registration No: H20060377. (A) a single treatment groups: children under 16 years starting dose of 10mg / (kg • d), for every 1 week increase 10 mg / (kg • d) increase the amount of dose and gradually increase the dose to no more than 50 mg / (kg • d), bid, orally. Adult 250 mg, bid on, and gradually increase the dose to no more than 1.5g, bid, within the dose range above optimal dose efficacy for the target dose; (2) add-on therapy group: Its original use of antiepileptic drugs were unchanged, adding levetiracetam treatment, plus the amount of the same way as a single treatment group.

1.3 Observation of the contents was observed once every four weeks the disease, and seizure frequency, adverse reactions, weight, etc. details fine recorded before treatment and after 20 weeks, respectively, blood test, urine, liver and kidney function and EEG.

1.4 Evaluation with reference to the Chinese Medical Association First National Conference on the development of epilepsy four clinical criteria: (1) Control: no seizures; (2) markedly: seizure frequency decreased by 75% to 99%; (3) Effective: reduction in seizure frequency of 50% to 74%; (4) invalid: seizure frequency reduction <50%. According to the control to markedly and effective calculating the total efficiency.

Calculated according to the effective control markedly effective.

1.5 Statistics Statistical analysis: SPSS 12. 0 software for entry and statistical analysis percentage and chi-square test were used.

Table 1. Monotherapy group and add between treatment groups in age, sex, seizure type, seizure frequency based on the average difference

Seizure types	Monotherapy group (n = 107)						Add-on therapy group (n = 118)					
	Case no.	Control	Cured	Effective	null	Total efficiency	Case No.	Control	Cured	Effective	null	Total efficiency
SPS	14	5	3	2	4	71.43	21	6	3	3	9	57.14
CPS	23	11	2	2	8	65.22	32	8	5	4	15	53.13
SGTCS	41	17	7	7	10	75.61	41	15	6	6	14	65.85
GTCS	26	14	4	3	5	80.77	19	5	3	4	7	63.16
West Syndrome	0	0	0	0	0		3	1	1	0	1	66.67
LGS Syndrome	3	0	1	1	1	66.67	2	0	1	0	1	50
Total	107	47	17	15	28	73.83	118	35	19	17	47	60.17

2 Results

2.1 Alone group compared with the effect of the addition of groups shown in Table 1. Gaepo Lan efficiency alone group, significant efficiency and control rates were 14.02%, 15.89%, 43.92%, total effective rate was 73.83%; plus group efficiency, productivity and control rates were significantly was 14.41%, 16.10%, 29.66%, total effective rate was 60.17%. Two sets of control rate ($\chi 2 = 4.93$, $P < 0.05$) and total efficiency ($\chi 2 = 4.71$, $P < 0.05$) were significantly different.

2.2 Adverse reactions in each group distribution monotherapy adverse reactions occurred in 11 cases, the incidence of 10.28%; adding the treatment group 19 cases of adverse reactions, the incidence of 16.10%, both groups incidence of adverse reactions ($\chi 2 = 1.62$, $P > 0.05$) There was no significant difference. Adverse reactions that occurred were not special treatment, in 1 to 2 months disappeared, no one case out of treatment due to adverse reactions.

Table 2. Adverse reactions listed

	Cases no.	Drowsiness	Dizziness	Fatigue	Mood disorders	Memory decline	Unresponsive	Nausea	Anorexia	Diarrhea
Monotherapy group	11	2	1	1	2	2	1	1	1	0
Add-on therapy group	19	3	1	2	3	1	3	2	2	2

3 Discussion

Gaepo orchid is a pyrrolidine derivative and Gaepo orchid exact mechanism of action is unknown [1], and its antiepileptic mechanism may be as follows: ① with brain synaptic vesicle protein SV2A binding. Levetiracetam with the SV2A in the brain has a high affinity (but SV2B, SV2C the role of vice versa), and the inhibition of epileptic discharges are closely related. ② suppress hippocampal CAl pyramidal neurons N2 type high-voltage activated calcium channels. ③ by releasing negative allosteric agent (β-carbolines and zinc) on GABA (γ-aminobutyric acid) and glycine neurons can be inhibited, indirectly enhancing central inhibition. ④ Cortical GABA receptor blockade lowered and lowered receptors remain in the hippocampus and enhance GABA inhibition of neuronal circuits [4].

This study shows that Gaepo orchid monotherapy and add-on therapy for various types of epilepsy have a better effect, alone group, the total effective rate was 73.83%, plus total effective rate was 60.17%, and foreign reports similar [5,6]. In the study in patients with epilepsy Gaepo Lan monotherapy control rates and efficient than adding the treatment group, the reasons: on the one hand and add-on therapy in the presence of drug interactions, on the other hand

may be added in the treatment group there is some medically intractable epilepsy, drug refractory epilepsy itself and the presence of multidrug resistance gene expression [7], for an antiepileptic drug resistance, to another anti-epileptic drugs are also likely to resist.

Adverse drug reactions in the application to open the majority of patients with mild symptoms Lan Pu, foreign common adverse reactions reported in the literature as drowsiness, weakness, dizziness, mood disorders, behavioral disorders and gastrointestinal reactions [8]. This group appears common adverse reactions are drowsiness, mood disorders, memory loss and slow response. Compared the two groups monotherapy group than in the treatment group added slightly lower incidence of adverse reactions, which may be due to single-drug group had no mutual interference between drugs, no liver enzyme induction.

By Lan Pu folio treatment of this group was observed in patients with epilepsy, we believe that the drug has a broad spectrum anti-epileptic and is worthy of further promoting the use of effectiveness, safety, easy to use.

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