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Research Article

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Analysis of the efficacy of nimodipine treatment of ischemic brain injury after cerebral hemorrhage

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ABSTRACT

Objective To study the actual clinical efficacy of nimodipine treatment of cerebral hemorrhage after cerebral hemorrhage.. Method take the 60 patients with ischemic brain injury after cerebral hemorrhage in the hospital from April 2012 to April 2014 as research subjects who were randomly divided into experimental and control group.Each group had30 people. The control group took conventional treatment model, and while the experimental group took intravenous infusion of 10mg nimodipine based on the treatment model of the control group each day . After the treatment period, compare the treatment of the two groups and take statistical analysis for data processing. Results As for the clinical treatment efficacy, the efficacy of nimodipine treatment of ischemic brain injury after cerebral hemorrhage in the experimental group was significantly better than the control group. And two groups had significant differences (P <0.05). Conclusion In the clinical treatment of patients with ischemic brain injury after cerebral hemorrhage, the use of nimodipine *as therapeutic drug has a more significant advantage, it is worth actively promoted in clinical practice.*

Key words: nimodipine; cerebral hemorrhage; ischemic brain injury

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INTRODUCTION

Foreword Ischemic brain injury caused by cerebral hemorrhage is very common in clinical, which is a kind of cerebrovascular devastating disease and has enormous adverse impact on the brain nerve of patients.This disease occurs at a short time,and develops rapidly [1]. There is a very high probability of death or disability caused by the disease. The past studies have shown that when the amount of bleeding in the brain is too much at the early stage, cerebral ischemia caused by decrease in blood flow to the brain will directly cause irreversible nerve damage and form infarction [2-3]. So how to take effective control and treatment measures in the event of such a crisis symptoms has always been a problem on which the brain surgeons have paid most concern and attention. [4]. The The Figure 1 has shown that the CT of the infarction.

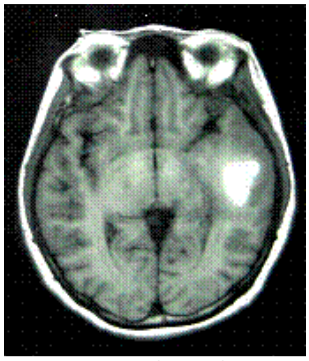
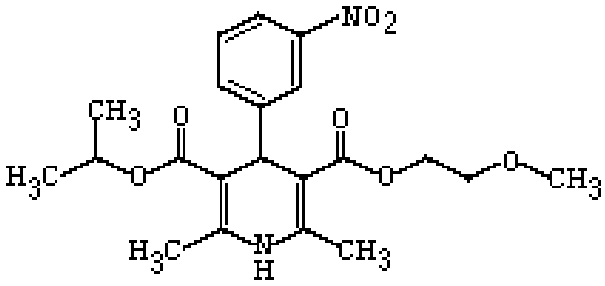


Figure 1. CT of the infarction

In this paper,take the 60 patients with ischemic brain injury after cerebral hemorrhage in the hospital from April 2012 to April 2014 as the subjects to study the efficacy of nimodipine treatment of ischemic brain injury after cerebral hemorrhage. The Figure 2 has shown structure ofnimodipine. The results of the study are reported as below:



Figuer 2: Structure ofnimodipine

EXPERIMENTAL SECTION

1.1 GENERAL INFORMATION

Take the 60 patients with ischemic brain injury after cerebral hemorrhage in the hospital from April 2012 to April 2014 as the study subjects among whom there were 42 male patients with the age range of 52-74 years, mean age of 64 ± 6.8 years and 18 female patients with the age range of 49-71 years, mean age of 62.5 ± 7.4 years old. All patients had achieved the diagnostic criteria that the amount of the bleed during the brain hemorrhage was greater than 30 ml, and individual patient had more obvious clot in the brain,which had been confirmed by the CT verification to be the secondary brain hemorrhage excluding symptoms caused by other illnesses. The patients were randomly divided into experimental and control group. Each group had 30 people. There was no significant difference on the age, gender, past medical history and disease course between the two groups (P> 0.05) , which were comparable.

1.2 TREATMENT

For the control group, take conventional treatment model including measures of anti-infective therapy,reducing intracranial pressure,dehydration support and so on. The experimental group took intravenous infusion of 10mg nimodipine based on the treatment model of the control group each day.Take 10 days of treatment as one cycle. After treatment cycles compare the clinical effect of the two groups。

1.3 EVALUATION INDEX

Take NIHSS score standard as the evaluation criterion of treatment effect, make analysis and score for the extent of brain damage in patients after treatment and judge according to dependence of the patients on daily life by BI scoring criteria[5]. The reference data took the correlation standard which had been made at the National Fourth National Cerebrovascular Disease academic session in 1995 as the following indicators [6].。

The evaluation index oftreatment was shown in Table 1. As for the treatment, markedly: neurological function impairment score of the patients reduce more than 90% with the incidence of adverse <5%; effective,neurological function impairment score of the patients reduce 70-90% with the incidence of adverse <10%; invalid, reductionof the neurological function impairment score of the patients is not obvious, and there is virtually no improvement with a higher incidence of adverse events [7]。

Table 1: neurological function assessment and BI score of the patients in the two groups after taking different modes

treatment	neurological function impairment score of the patients	incidence of adverse
Markdely	>90%	<5%
Effective	70-90%	<10%
Invalid not obvious		higher incidence

1.4 STATISTICAL ANALYSIS

Use the SPSS 19.0 software package to make statistical analysis and comparison for the treatment data collected by the two groups. The quantitative data was taken in the form of mean plus or minus standard deviation, comparison between groups was made by the t test, and quantitative data was taken by X2 test. When P <0.05, the difference can be considered statistically significant.

RESULTS

The effect of patients in the two groups before and after treatment was shown in Table 2. According to the findings of this article, after a 10-day treatment period, as for the brain nerve injury in patients with ischemic brain injury due to cerebral hemorrhage , injury of the patients in the observation group was significantly less than that in the control group, and the differences between the two groups were significant (P <0.05). Analysis from the BI evaluation index had shown that the two groups have increased after treatment, but as for the comparison between the groups, observation group had increased more significantly, the two groups had significant difference (P <0.05)。

Table 2: neurological function assessment and BI score of the patients in the two groups after taking different modes

groups	Number of patients (n)	Brain nerve injury		BI score	
		Before treatment	After treatment	Before treatment	After treatment
Observation group	30	23.17±2.17	12.87±2.05*	38.28±14.63	62.88±18.38*
Control group	30	22.45±2.65	17.85±2.18	37.36±13.28	42.28±13.24

*Note: * Compared with the control group, there was a significant difference, P <0.05。*

Analyze from the patient's cure state after treatment, in the observation group the number of patients with markedly,effective,invalid effect was respectively 16,11,3,and the rate was respectively 53.3%,36.7%,10%; the total effective rate was 90%. In the control group, the number of patients with markedly,effective,invalid effect was respectively 10,12,8,and the rate was respectively 33.3%,40%,26.7%;the total effective rate was 73.3%. Specification was shown in Table 3。

Table 3: clinical outcomes comparing between the patients in the two groups

groups	Number of patients (n)	Clinical outcomes			total effective rate
		markedly	effective	invalid	
Observation group	30	16 (53.3%)	11 (36.7%)	3 (10%)	90%*
Control group	30	10 (33.3%)	12 (40%)	8 (26.7%)	73.3%

*Note: * Compared with the control group, there was a significant difference, P <0.05.*

From the adverse reactions during the treatment of the two groups, there were 2 patients in the observation group having red and swelling skin caused by allergy, and the total rate of adverse reactions was 6.67%; there were three cases of adverse reactions adverse reactions in the control group,and the rate of adverse reactions was 10%.There was no statistical significance in the rate of adverse events between the two groups(P> 0.05). Specifications were shown in Table 4.

Table 4: Comparison of adverse reactions after treatment in the patients of the two groups

groups	Number of patients (n)	Number of adverse reactions (n)	rate of adverse events
Observation Group	30	2	6.67%
Control Group	30	3	10%

DISCUSSION

Clinically, brain hemorrhage is a kind of mechanical damage caused by cerebral blood clot or hematoma itself in the patients of cerebral department. Especially the acute secondary lesions can easily cause bleeding in the brain of patients, which is easy to cause a sharp decline of blood supply to the surrounding intracranial tissue in patients according to the past literature[8], and the adverse effects can even extend to the distant regions of the brain tissue in a short time. The most direct impact of the decline of the brain's blood supply is respiratory lack of oxygen and the lack of nutrients in brain nerve cells,and this kind of brain nerve damage caused in a short time is irreparable and

irreversible [9]. Once it can not be controlled and treated by timely measures, it will lead to the patient's death or disability. Therefore, it has always got great attention and concern of the clinical brain surgeons. Morbidity and mortality of brain hemorrhage is very high,clinically the general morbidity can reach 5%, and morbidity has reached about 60%. As for the time,it mainly ocurrs in the alternating time of the seasons, more commonly in spring and summer. The main reason is probably that the alternating seasons has caused dramatic changes in temperature,which has certain effect on rapid secretion and adjustment inside the patient's body. The quantity of protein fibers in the plasma and the degree of plasma viscosity has changed due to the influence of various hormones, such as that increased secretion of adrenaline can cause the shrink and increased vulnerability of capillaries. All these are potential adverse factors that patients with cerebral hemorrhage are likely to have ischemic brain damage.

Nimodipine belongs to antagonist drugs of calcium ion channels, which can combine to related receptors of calcium channels to alter the liquidity of calcium ion channels. This can slow down the cell necrosis caused by the calcium overload , which is important for protecting brain cells , especially for brain nerve cells [10], and has a strong protective effect on the brain nerve damage caused by cerebral hemorrhage. Results of this study has shown that, after a 10-day treatment period, as for the ischemic brain injury in patients caused by cerebral hemorrhage, the extent of damage in the observation group were significantly lower than that in the control group patients, and the difference between the two groups was significant ($P < 0.05$). The analysis from the BI evaluation has shown that the two groups have both increased after treatment, but as for the comparison between the groups, the observation group has increased more significantly, the two groups have significant difference ($P < 0.05$). Analyze from the patient's cure state after treatment, in the observation group the number of patients with markedly, effective, invalid effect was respectively 16,11,3,,and the rate was respectively 53.3%,36.7%,10%;the total effective rate was 90%. In the control group, the number of patients with markedly, effective, invalid effect was respectively 10, 12, 8, and the rate was respectively 33.3%, 40%, 26.7%; the total effective rate was 73.3%. This has suggested that as for the efficacy of nimodipine in clinical treatment the efficacy of ischemic brain injury after intracerebral hemorrhage in the observation group was significantly better than that in the control group.From the adverse reactions during the treatment of the two groups, there were 2 patients in the observation group having red and swelling skin caused by allergy, and the total rate of adverse reactions was 6.67%; there were three cases of adverse reactions adverse reactions in the control group, and the rate of adverse reactions was 10%. There was no statistical significance in the rate of adverse events between the two groups ($P > 0.05$).

CONCLUSION

In summary, in the clinical treatment of patients with ischemic brain injury after cerebral hemorrhage, the use of nimodipine as a therapeutic drug has a more significant advantage, which is worth actively promoted in clinical practice.

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