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Clinical effect of oseltamivir phosphate in the treatment of influenza

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Abstract: **To explore the clinical effect of oseltamivir phosphate in the treatment of influenza in children. 84 children with influenza treated in our hospital from February 2019 to February 2020 were selected. The patients were divided into control group and the observation group by random number table method, with 42 cases in each group. The control group using conventional antiviral treatment, and the observation group was treated with oseltamivir phosphate and conventional antiviral treatment, to compare the therapeutic effect of two groups of children. The total effective rates of treatment in the control group and the observation group were 85.71% and 97.62%, respectively($P<0.05$). Compared with the control group, the symptom relief time in the observation group was significantly faster($P<0.05$). The clinical efficacy of oseltamivir phosphate in treating children's influenza is significant, and it can help patients to quickly reduce clinical symptoms, shorten the treatment time, and improve the prognosis of children. It has high clinical value in the treatment of childhood influenza.**

Keywords: Oseltamivir phosphate; Children; Influenza; Clinical efficacy

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1. Introduction

Influenza is a highly infectious disease that has the characteristics of rapid spread and wide range of epidemics. Its main transmission route is air transmission. It is extremely prone to large-scale influenza epidemics when the seasons change, especially in winter. Influenza viruses are the main cause of this disease. The main clinical symptoms of patients with influenza are runny nose, high fever, stuffy nose, sore throat and so on. If the condition of influenza patients get worse, they are likely to have other serious complications, such as shock, respiratory failure and so on, which will seriously affect the health of influenza patients. In all age groups, the elderly and children are the most frequent groups of the disease. It is found that the main pathogenic factor of influenza is influenza virus, which mainly including three types: influenza A virus, influenza B virus and influenza C virus. The symptoms of influenza caused by different influenza viruses are also different, influenza A in all influenza has a shorter incubation period and the strongest transmission, which is very easy to cause a large-scale epidemic. Because children's bodies are still in the developmental stage and their immunity is poor, influenza viruses can easily spread between children, resulting in a wide range of influenza outbreaks[1]. If the treatment is not timely, complications such as pneumonia can be easily induced, which seriously threatens the physical health of children. Effective treatment can help patients quickly control the condition and relieve symptoms, so it is necessary to strengthen the research on influenza treatment options.

At present, the available treatment options are limited to two class of drugs known as the neuraminidase inhibitors and M2 ion channel blocker. Compared with amantadines, these two classes of drugs have extensive resistance. However, M2 ion channel blockers only have inhibitory effect on influenza A virus and cannot inhibit other types of influenza virus. Neuraminidase inhibitors mainly include Oseltamivir, zanamivir, ranimivir, Paramivir among them. Oseltamivir is the most commonly used drug of neuraminidase inhibitors. Some research data shows that oseltamivir can help uncomplicated seasonal influenza patients to relieve symptoms by 16 to 24 hours, and also observational research gradually shows that oseltamivir can reduce the mortality of severe influenza patients.

In order to further explore the clinical effect of oseltamivir phosphate in the treatment of influenza in children, this paper has carried out the following research, and the detailed report is as follows.

2. Materials and Methods

2.1. General information

A total of 84 children with influenza in our hospital from February 2019 to February 2020 were selected as the subjects of this study. The patients were divided into the control group and the observation group by random number table method, with 42 cases in each group. There were 24 males and 18 females in the control group, aged from 4 to 12 years old, with an average age of (7.9 ± 0.41) years old, with an onset time of 7 to 54 hours and an average onset time of (18.5 ± 1.5) h. There were 22 males and 20 females in the observation group, aged 4 to 11 years, with an average age of (7.8 ± 0.39) years, the onset time was 7.5 to 51 hours, and the

average onset time was (17.6 ± 1.4) h. Comparing the general clinical data of the control group and the observation group, there was no significant difference between the groups, there was no statistical significance (P＞0.05).

2.2. Inclusion and exclusion criteria

Inclusion criteria: (1) the patient was diagnosed with influenza, and the patients were free of liver and kidney failure, coagulation dysfunction and other congenital diseases; (2) the age of the patients ranged from 3 to 12 years old, all of which were in the age range of children; (3)none of the patients had allergic reactions to the drugs in this study; (4) patients and their families have informed consent for this study and actively cooperate with related studies.

Exclusion criteria: (1) patients had an allergic reaction to the drug in this study; (2) the patient has congenital heart disease, congenital liver and kidney dysfunction and and so on. All children met the above inclusion criteria.

2.3. Methods

All patients in the control group were routinely treated with conventional antiviral therapy. A single dose of paracetamol, caffeine, bezoar and Chlorphenamine Maleate oral solution was given to children with influenza. The dosage of the drug need be adjusted according to the age of the children with influenza. For children between 4 to 12 years old, each dose is 0.5 mL, and the influenza children needs to be taken orally three times a day. For children between 5 to 9 years old, each dose is 10 mL, and the influenza patients needs to be taken orally three times a day. Children over 10 years of age,each dose is 15mL ~ 20mL. the influenza children need be taken orally three times a day[2]. All children in the control group need to be treated continuously for 3-5d.

The observation group was treated with oseltamivir phosphate on the basis of conventional antiviral therapy. The children with influenza were given Oseltamivir Phosphate Granules. If the weight of children with influenza is less than 15kg, the dosage of the drug was 30mL daily, twice daily. If the weight of children with influenza was 15kg ~ 22kg, the dosage of the drug was 45mg daily, twice daily The child weighs 23 to 45kg, and the dose of the drug was 60 mg daily, twice daily. Children of the observation group need continuous treatment for 3 to 5 days.

During the medication period, the patient's condition were tested to avoid adverse reactions and other adverse events as much as possible.

2.4. Evaluation index

The therapeutic effect of the children was observed and evaluated. The evaluation criteria of the curative effect were as follows: If the child's body temperature returns to normal levels after the treatment, the clinical symptoms such as cough, sore throat, and runny nose had basically disappeared, and the body of the children returns to normal state, and their daily activities were not affected. The above situation indicates that effect of the treatment was significant. After treatment, the clinical symptoms of the child were significantly reduced, and their daily activities were slightly affected. If the child did not get any better after treatment, it was said to be ineffective. The formula for calculating the total effective rate is as follows: the total effective rate = (number of effective cases + number of effective cases)/total number of cases ×100%.

2.5. Statistical analysis

Using the biological statistics software SPSS 21.0 to analyze all the data were involved in this study. The measurement data was expressed in the form of mean ± standard deviation (SD), and the count data was expressed in percentage. P> 0.05 means no statistical difference, and P <0.05 means statistical difference.

3. Results

3.1. Comparing the clinical effects of the two groups of treatments

In the control group, there are 20 cases that were significantly effective, 16 cases that were effective, the rest of 6 cases that were ineffective, and the total effective rate was 85.71%. In the observation group, there are 28 cases that were effective, 13 cases that were effective, and the rest of 1 case that was ineffective, the total effective rate was 97.62%. Comparing the clinical therapeutic effects of the two groups of patients, the total effective rate was statistically significant between the two groups (X^2=3.896, P<0.05).

3.2. Compare the time to symptom relief between the two groups of children

In the observation group, the remission time of runny nose, nasal congestion, cough and fever were (3.34±0.54) d, (3.49±0.61) d, (4.71±0.87) d and (1.68±0.21) d, respectively. In the control group,the remission time of runny nose, nasal congestion, cough and fever were (4.01±0.42) d, (4.91±0.92) d, (6.20 ±1.02) d, (3.13 ±1.01) d, respectively. Compared with the control group, the symptom relief time of the observation group was significantly faster, and the difference between the two groups was significant (P < 0.05). Table 1.

3.3. Compare the incidence of adverse reactions between the two groups

There were no adverse reactions during the treatment in the control group and the observation group.

Table 1. Compare the time to symptom relief between the two groups of children

Group	Number of cases	Runny nose relief time	Cough relief time	Nasal congestion relief time	Fever reduction time
the observation group	42	3.34±0.54	4.71±0.87	3.49±0.61	1.68±0.21
the control group	42	4.01±0.42	6.20±1.02	4.91±0.92	3.13±1.01
T value	-	6.347	7.202	8.337	9.109
P	-	<0.05	<0.05	<0.05	<0.05

4. Discussion

Influenza is a kind of acute respiratory infection disease caused by virus. This disease develops rapidly, has strong harmfulness, and is highly infectious. It is mainly transmitted through the droplets in the air and human-to-human contact. After people get the influenza, a series of clinical symptoms will appear, their body will appear clinical symptoms,such as rapid rise of body temperature,stuffy nose and runny nose, weakness of limbs, sore throat, general pain and physical weakness and so on[3]. The research data shows that Autumn and winter are the peak periods of influenza outbreak. Compared with common cold, influenza is very easy to cause a variety of complications. Especially when children are infected with the influenza,it can easily cause serious complications such as pneumonia, diarrhea, etc. It even leads to death of children in serious cases. Influenza is caused by influenza virus. There are various types of influenza virus, mainly including three types of A, B and C. the clinical symptoms of each type influenza are different. Taking influenza A as an example, it is found that influenza A virus is prone to antigenic variation in the process of transmission, which increases the difficulty of influenza A treatment. Influenza A H1N1 is also a type of influenza A. Although the influenza has self limitation, the patients with influenza are prone to death due to serious complications. Therefore, it requires that the specific type of influenza virus infected by the influenza patient is identified during treatment, and that it is administered reasonably according to the type of virus[4].

At present, the main clinical treatment plan of influenza is symptomatic treatment and cause treatment. In order to improve the treatment effect, support treatment is also needed in the process of treating influenza patients, support treatment need patients with influenza requires the patient to do the following things: patients need to rest and drink more water after the onset of influenza, and they need to supplement vitamins properly. After eating, they need to wash their mouth with warm boiled water or warm salt water. At the same time, they should do a good job in cleaning their mouth and nose. After infection occurs in the whole body of patients, they should be given anti- infection treatment. The principle of treatment of influenza is to use antiviral treatment early in the onset of patients[5]. Usually, patients with influenza need to be treated with anti-influenza virus within 36 hours to 48 hours after the onset of the disease.Although the use of neuraminidase inhibitors is also effective after 48 hours of onset of influenza, most of the research data indicate that the clinical effect of early treatment of influenza patients is better.At the same time, in the process of treatment, we need to use antibiotics reasonably, strengthen the support treatment, and do a good job in the treatment and prevention of complications[6]. During the course of treatment, it is necessary to give reasonable antibacterial drugs for influenza patients, strengthen supportive treatment, and do good treatment and prevention of complications. The commonly used anti- influenza drugs in clinic are neuraminidase inhibition and M2 ion channel blocker. However, compared with M2 ion channel blocker, neuraminidase inhibition can treat more types of influenza. After treatment, the influenza patients have low adverse reactions and are not easy to develop drug resistance.Influenza is mainly caused by influenza virus. During the treatment of influenza virus, if antibiotics are used by influenza patients, there will be no clinical effect. Therefore, if there is no case of combined bacterial infection in patients, antibiotics shall not be used during the treatment to prevent secondary infection

or the formation of drug-resistant bacteria. If there is bacterial infection in influenza patients, it needs to be applied in time. As fever is a prominent symptom of influenza, the use of antipyretic aspirin can lead to the occurrence of Reynold's syndrome, so it is easy to choose physical cooling when dealing with fever of influenza patients, and try to avoid the use of large dose aspirin. Because fever is a prominent symptom of influenza, the application of antipyretic agent aspirin can also lead to the occurrence of Reye's syndrome, so it is easy to choose physical cooling when dealing with fever in patients with influenza, and try to avoid the application of large doses of aspirin. At the same time, the dosage of anti-influenza drugs for children is different from that in adults, but the treatment courses are the same.

As neuraminidase inhibitors, oseltamivir, pramivir and zaramivir all have good clinical effects in the treatment of influenza, but zaramivir is not suitable for children under 7 years old. The injection of pramivir and sodium chloride is usually not the first choice drug for influenza treatment, while oseltamivir can be used for infants over 3 months in an emergency. Because of the high safety of oseltamivir, it is widely used as the first choice of treatment drugs for childhood influenza.The active metabolite of oseltamivir phosphate is oseltamivir carboxylate, which can selectively inhibit the activity of influenza virus neuraminidase, making the virus unable to reproduce and grow in cells, so as to achieve the purpose of treatment of influenza.The oseltamivir phosphate granules used in this study are drug precursors of the active metabolite of oseltamivir phosphate. Therefore, influenza patients can achieve the purpose of treatment after medication.In this study, all children with influenza were categorized into two groups, the control group was treated with routine antiviral therapy, and the observation group was treated with oseltamivir phosphate on the basis of routine antiviral therapy, and the results shows the total effective rates. Compared with the control group, the symptom relief time in the observation group was significantly faster, and the differences between the two groups were significant. The above research results indicate that oseltamivir phosphate can effectively improve the treatment effect of children with influenza and help them recover quickly. Li et al.[7] showed that oseltamivir phosphate could effectively improve the treatment effect of influenza, which was consistent with the results of this study.

5. Conclusion

The clinical efficacy of oseltamivir phosphate in treating children's influenza is significant, and it can help patients to quickly reduce clinical symptoms, shorten the treatment time, and improve the prognosis of children. It has high clinical value in the treatment of childhood influenza.

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