Application of Xiyanping in treatment of infantile rotavirus diarrhea

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ARTICLE INFO

Article history:
Received
Received in revised form
Accepted
Available online

Keywords:
Xiyanping
Ribavirin
Rotavirus
Diarrhea

ABSTRACT

Objective: To observe the application effect of Xiyanping in the treatment of infantile rotavirus diarrhea. Methods: A total of 80 children with rotavirus diarrhea who were admitted in our hospital from January, 2014 to April, 2015 were included in the study and randomized into the treatment group and the control group with 40 cases in each group. The patients in the two groups were given ribavirin 10 mg/kg.d, iv drip, qd. On this basis, the patients in the treatment group were given additional Xiyanping injection 7.5 mg/kg, iv drip, qd. The symptom and sign relieving time and temperature reduced degree after treatment in the two groups were compared. The serum BDNF, NGF, and NTF levels in the two groups were detected. Results: The treatment total effective rate in the treatment group was significantly higher than that in the control group ($P<0.05$). The symptom and sign relieving time in the treatment group was significantly shorter than that in the control group ($P<0.05$), and the temperature recovering degree was significantly superior to that in the control group ($P<0.05$). The serum BDNF, NGF, and NTF levels after treatment in the treatment group were significantly higher than those in the control group ($P<0.05$). Conclusions: Xiyanping in combined with ribavirin in the treatment of infantile rotavirus diarrhea can effectively relieve the symptoms and signs, and protect the neurological function, with efficacy superior to that by pure ribavirin treatment.

1. Introduction

Diarrhea is a common pediatric digestive system disease in the clinic, mainly including infectious and non-infectious diarrhea, with complicated pathogenesis[1]. Most parents fail to pay adequate attention to infantile diarrhea in that it may not pose serious effect on the health[2]. But some researches demonstrate that[3] diarrhea is mainly accounting for inducing deadly diseases in children. Rotavirus diarrhea mainly occurs in children in autumn and winter. Once there is an attack, it will develop rapidly, with clinical manifestations of diarrhea, dehydration, and hyperpyrexia[4]. Anti-viral therapy with ribavirin, supplementing electrolyte, and maintaining water and electrolyte balance are mainly involved in the treatment of rotavirus diarrhea in the clinic. However, long-term application of ribavirin is prone to produce drug resistance, with poor efficacy[5]. Xiyanping, a traditional Chinese medicine preparation, has a significant anti-viral effect[6]. The study is aimed to observe the clinical efficacy of Xiyanping in the treatment of infantile rotavirus diarrhea.

2. Materials and methods

2.1. General materials

A total of 80 children with rotavirus diarrhea who were admitted in our hospital from January, 2014 to April, 2015 were included in the study, among which 44 were male, and 36 were female; aged from 7 months to 9 years old, with an average age of (3.5±2.1) years old; course from 1 to 7 day, with an average course of (3.1±1.5) day. The patients were in accordance with the relevant diagnostic criteria of rotavirus diarrhea in the Chinese Journal of Practical Pediatrics, with main clinical manifestations of diarrhea in a different degree, fever, and vomiting. The patients were randomized into the treatment group and the control group with 40 cases in each group. The comparison of gender, age distribution, and course between the two groups was comparable ($P>0.05$). Those who had diarrhea...
caused by other factors, had gastrointestinal bleeding, and were allergic to the studied drugs were excluded from the study.

2.2. Treatment methods

On admission, the patients in the two groups were given diet adjustment, fluid infusion, water-electrolyte disturbance and dehydration correcting, micro-ecology inhibitor, and intestinal mucosa inhibitor.

Treatment group: Xiyanping injection (Jiangxi Qingfeng Pharmaceutical Co. Ltd., Approval No. Z20026249), iv drip, qd, 7.5 mg/kg; ribavirin (Chengdu Plain Pharmaceutical Co. Ltd., Approval No. H20043330), iv drip, qd, 10 mg/kg.

Control group: ribavirin (Chengdu Plain Pharmaceutical Co. Ltd., Approval No. H20043330), iv drip, qd, 10 mg/kg.

2.3. Observation indicators

The symptom and sign relieving time and temperature reduced degree after treatment in the two groups were compared. The serum BDNF, NGF, and NTF levels 7 days after treatment in the two groups were detected. Efficacy criteria[7]: excellent: symptoms and signs disappeared, with negative rotavirus examination results and normal stool; effective: stools were basically firm with reduced number, symptoms and signs were improved, and rotavirus examination results were weak positive or negative; invalid: rotavirus examination results were positive with no changed signs.

2.4. Statistical analysis

SPSS 19.0 software was used for the statistical analysis. The enumeration data were expressed as percentage and chi-square test was used. The measurement data were expressed as mean±SD, and t test was used. P<0.05 was regarded as statistically significant difference.

3. Results

3.1. Symptom and sign relieving time after treatment

After treatment, the diarrhea relieving time, the abdominal pain relieving time, the borborygmus relieving time, and nausea and vomiting relieving time in the treatment group were (2.67±0.45) d, (2.40±0.43) d, (4.01±0.67) d, and (1.41±0.37) d, respectively, while in the control group were (3.68±0.46) d, (3.32±0.59) d, (6.33±0.94) d, and (2.21±0.49) d, respectively. The diarrhea, abdominal pain, borborygmus, nausea and vomiting relieving time in the observation group was significantly shorter than that in the control group (P<0.05).

3.2. Temperature reduction after treatment

The difference of temperature 15 min after treatment between the two groups was not statistically significant (P>0.05). The temperature 30 and 45 min after treatment in the treatment group was significantly reduced and was significantly lower than that in the control group (P<0.05). The difference of temperature 60 min after treatment between the two groups was not statistically significant (P>0.05) (Table 1).

Table 1

<table>
<thead>
<tr>
<th></th>
<th>n</th>
<th>15 min</th>
<th>30 min</th>
<th>45 min</th>
<th>60 min</th>
</tr>
</thead>
<tbody>
<tr>
<td>Treatment</td>
<td>40</td>
<td>40.21±4.63</td>
<td>38.06±3.99</td>
<td>37.77±3.78</td>
<td>37.57±3.68</td>
</tr>
<tr>
<td>Control</td>
<td>40</td>
<td>40.08±4.44</td>
<td>40.27±4.43</td>
<td>39.76±4.15</td>
<td>37.72±3.58</td>
</tr>
</tbody>
</table>

P<0.05, when compared with the control group.

3.3. Serum BDNF, NGF, and NTF levels after treatment

The serum BDNF, NGF, and NTF levels after treatment in the treatment group were significantly higher than those in the control group (P<0.05) (Table 2).

Table 2

<table>
<thead>
<tr>
<th></th>
<th>n</th>
<th>BDNF (ng/L)</th>
<th>NGF (ng/L)</th>
<th>NTF (ng/L)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Treatment</td>
<td>40</td>
<td>103.10±12.96</td>
<td>131.27±15.49</td>
<td>5.71±0.79</td>
</tr>
<tr>
<td>Control</td>
<td>40</td>
<td>66.10±6.95</td>
<td>91.83±9.94</td>
<td>3.27±0.63</td>
</tr>
</tbody>
</table>

P<0.05, when compared with the control group.

3.4. Clinical efficacy

In the treatment group, 22 (55.0%) were excellent, 16 (40.0%) were effective, 2 (5.0%) were invalid, and the total effective rate was 95.0%, while in the control group, 15 (37.5%) were excellent, 15 (37.5%) were effective, 10 (25.0%) were invalid, and the total effective rate was 75.0%. The total effective rate in the treatment group was significantly higher than that in the control group (P<0.05).

4. Discussion

Rotavirus diarrhea, more seen in children and highly occurring in autumn, so that to be called autumn diarrhea in children, is an acute infectious disease of digestive tract caused by rotavirus infection[8]. Rotavirus diarrhea in children is mainly characterized by diarrhea, yellow watery stools in a large amount, no mucus and pus blood, high fever in a majority of children, respiratory tract symptoms in partial patients, and even dehydration in a severe condition, which
can affect the children’s health and life security[9].

Currently, antibiotics, microecologics, and fluid therapy are mainly involved in the treatment of rotavirus diarrhea, but the treatment protocol should be selected according to the patients’ specific circumstances[10-12]. Ribavirin is a common broad-spectrum antiviral drug in the clinic with significant effect on infantile rotavirus diarrhea, but the treatment goal of ribavirin is achieved by inhibiting the adenylase in the virus; therefore, the drug resistance is easy to be produced, which can affect the efficacy[13,14]. In the study, the patients in the control group were only given ribavirin, with a treatment total effective rate of 75.0%, indicating that only ribavirin can also treat infantile rotavirus diarrhea. Xiyanping injection, a traditional Chinese medicine preparation, with main component of andrographolide, has significant antibacterial and antiviral effects[15]. Some researches demonstrate that[16] andrographolide has a favorable water solubility and penetrability, and can penetrate the rotavirus cell to block its replication. The pathogenesis of diarrhea illustrated by the traditional Chinese medicine is that diarrhea is mainly caused by invasion of cold pathogen, spleen wetting, and transportation disorder, and eliminating dampness and cooling blood, clearing heat and removing toxicity are mainly involved in the treatment, while andrographolide in Xiyanping injection has a significant effect on diarrhea[17]. The results in the study showed that the treatment total effective rate in the treatment group was significantly higher than that in the control group (P<0.05), and the improvement of symptoms and signs was significantly faster than that in the control group (P<0.05), proving that on the basis of conventional treatment, administration of additional Xiyanping can enhance the therapeutic effect, and accelerate the symptom and sign remission. Moreover, the serum BDNF, NGF, and NTF levels after treatment in the treatment group were significantly higher than those in the control group (P<0.05), suggesting that Xiyanping can effectively prevent the nervous system damage due to high fever.

In conclusion, Xiyanping in combined with ribavirin in the treatment of infantile rotavirus diarrhea can effectively relieve the symptoms and signs, and protect the neurological function, with efficacy superior to that by pure ribavirin treatment.

References


