Prognosis observation of intensive lipid-lowering in acute ischemic stroke prognosis

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ABSTRACT

Objective: To explore the intensive lipid-lowering therapy on the prognosis of acute ischemic stroke, and provide reference for clinical research. Methods: During May 2012 - June 2014 in our hospital 82 cases of acute ischemic stroke were randomly divided into the experimental and control groups for 40 cases and 42 cases respectively. The experimental group was treated with intensive treatment regimen; patients in the control group were treated with treatment of conventional therapy. Changes in lipid levels before and after treatment were observed; changes in inflammatory factors between the two groups of patients before and after treatment were compared; Barthel index of living conditions and prognosis of recurrence in patients before and after treatment were compared. Results: Before treatment, the two groups of patients with TC, TG, LDL-C and HDL-C levels had no difference (P>0.05). After treatment, both groups of patients with TC, TG, LDL-C levels were significantly lower (P<0.05) compared with that of before treatment, and HDL-C levels were significantly higher (P<0.05). However after treatment, changes of TC, TG, LDL-C and HDL-C levels were more obvious compared with the control group of patients after treatment, which had a significant difference (P<0.05). Before treatment, levels of Hs-CRP, TNF-α and IL-8 in both groups of patients were not significantly different (P>0.05). After treatment, the levels of Hs-CRP, TNF-α, IL-8’s in two group of patients were significantly lower (P<0.05), but in the experimental group patients after treatment, levels of Hs-CRP, TNF-α, and IL-8 were obviously lower than that of in control group, which had significant differences (P<0.05). On admission, Barthel index scores in both groups of patients were not different (P>0.05). After treatment, scores of 1, 3 and 5 months in two groups of patients were significantly increased (P<0.05), but the Barthel Index scores in the experimental group patients were increased more obviously compared with the control group, which had a significant difference (P<0.05). After treatment, the experimental group patients had one case of TIA, 2 cases of cerebral infarction, with the recurrence rate of 7.5%, which was significantly lower than that of in control group (26.2%), with a significant difference (P<0.05). Conclusions: The intensive lipid-lowering therapy in the treatment of acute ischemic stroke can significantly lower blood lipid levels and inflammatory factors, improve Barthel Index score and reduce the recurrence rate in acute ischemic stroke patients.

1. Introduction

Stroke is a kind of common clinical sudden onset of cerebral blood circulation disorder[1]. The Chinese departments concerned found that stroke is currently the second cause of death in humans, and is the first cause of death in China. Clinically, stroke is divided into ischemic cerebral stroke and hemorrhagic cerebral stroke, among which ischemic stroke accounted for about 80%[2]. Stroke has a character of high incidence, high morbidity and high mortality rate, and brings heavy economic burden to family and society. As a result, treatment of stroke draws more and more attention from the whole society. Some studies have found that hyperlipidemia and atherosclerosis are the risk factors of ischemic stroke recurrence[3]. The aim of the present study is to explore the intensive lipid-lowering therapy on the prognosis of acute ischemic stroke, and provide reference for clinical research.

2. Materials and methods

2.1 Clinical materials

A total of 82 cases of acute ischemic stroke patients were selected for the present study who were admitted to our hospital from May 2012 to June 2014. The patients were randomly divided into the experimental group and the control group, with 40 and 42 cases in...
3.2 Analysis of inflammatory factor levels in two groups before and after treatment.

Before treatment, Hs-CRP, TNF-α and IL-8 levels in two groups had no significant difference ($P > 0.05$). After treatment, Hs-CRP, TNF-α and IL-8 levels in the patients of two groups were greatly decreased ($P < 0.05$). But after treatment, the Hs-CRP, TNF-α and IL-8 levels in experimental group were obviously decreased compared with that of control group, which had significant difference ($P < 0.05$) (Table 2).
Table 2
Analysis of inflammatory factor levels in two groups before and after treatment (X±S).

<table>
<thead>
<tr>
<th>Lipid indexes</th>
<th>Experimental group</th>
<th>Control group</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hs-CRP (mg/L)</td>
<td>Before treatment</td>
<td>15.52±3.10</td>
<td>15.53±2.12</td>
</tr>
<tr>
<td></td>
<td>After treatment</td>
<td>7.10±1.75</td>
<td>10.93±3.25</td>
</tr>
<tr>
<td>TNF-α (pg/L)</td>
<td>Before treatment</td>
<td>118.73±31.84</td>
<td>119.32±33.85</td>
</tr>
<tr>
<td></td>
<td>After treatment</td>
<td>61.65±20.56</td>
<td>84.48±22.50</td>
</tr>
<tr>
<td>IL-8 (pg/mL)</td>
<td>Before treatment</td>
<td>97.15±24.82</td>
<td>96.85±24.85</td>
</tr>
<tr>
<td></td>
<td>After treatment</td>
<td>56.54±17.82</td>
<td>76.98±19.96</td>
</tr>
</tbody>
</table>

3.3 Analysis of Barthel indexes in two groups before and after treatment

On admission, Barthel indexes of two groups of patients had no significant difference (P>0.05). After treatment, scores of 1, 3 and 5 months in two groups of patients were significantly increased compared with that before treatment (P<0.05), but the Barthel Index scores in the experimental group patients were increased more obviously compared with the control group, which had a significant difference (P<0.05) (Table 3).

Table 3
Analysis of Barthel indexes in two groups before and after treatment (X±S).

<table>
<thead>
<tr>
<th>Groups</th>
<th>Cases</th>
<th>On admission</th>
<th>1-month score</th>
<th>3-month score</th>
<th>5-month score</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experimental</td>
<td>40</td>
<td>35.50±5.50</td>
<td>40.50±6.50</td>
<td>52.50±6.60</td>
<td>60.40±6.60</td>
<td>&lt;0.05</td>
</tr>
<tr>
<td>Control</td>
<td>40</td>
<td>36.50±5.50</td>
<td>50.50±5.50</td>
<td>65.60±7.50</td>
<td>78.50±8.80</td>
<td>&lt;0.05</td>
</tr>
<tr>
<td>P value</td>
<td>-</td>
<td>&gt;0.05</td>
<td>&lt;0.05</td>
<td>&lt;0.05</td>
<td>&lt;0.05</td>
<td>-</td>
</tr>
</tbody>
</table>

3.4 Analysis of prognosis and recurrence in two groups before and after treatment

After treatment, the experimental group patients had one case of TIA, 2 cases of cerebral infarction, with the recurrence rate of 7.5%, which was significantly lower than that of the control group (26.2%), with a significant difference (P<0.05).

Table 4
Analysis of prognosis and recurrence in two groups before and after treatment (X±S, n(%)).

<table>
<thead>
<tr>
<th>Groups</th>
<th>Cases</th>
<th>TIA</th>
<th>Cerebral infarction</th>
<th>Recurrence rate</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experimental</td>
<td>40</td>
<td>1(2.5)</td>
<td>2(5.0)</td>
<td>3(7.5)</td>
<td>&lt;0.05</td>
</tr>
<tr>
<td>Control</td>
<td>42</td>
<td>4(9.5)</td>
<td>7(16.7)</td>
<td>11(26.2)</td>
<td>&lt;0.05</td>
</tr>
<tr>
<td>P value</td>
<td>-</td>
<td>&lt;0.05</td>
<td>&lt;0.05</td>
<td>&lt;0.05</td>
<td>-</td>
</tr>
</tbody>
</table>

4. Discussion

Stroke is a kind of chronic non-infectious disease with high incidence, high disability rate, high fatality rate and high recurrence rate, which has become the most serious threat to human life and health[5]. Stroke can be divided into hemorrhagic cerebral stroke and ischemic cerebral stroke. The Report on Cardiovascular Disease in China, 2010 stated that stroke showed a trend of rapid growth; in 1980, only 10,000 patients discharged from hospital with the diagnosis of stroke; however, in 2008, the number was more than 2 million and was increasing with a rate of 9%. At this rate, by 2020 China will reach 3.7 million in the number of stroke onset[6]. Hence, stroke has become a major public health problem in China which needs to draw attention of the whole society.

Modern pharmacology study shows that the increase of TC, TG and LDL-C and the decrease of HDL-C are important pathogenic factors for atherosclerosis, coronary heart disease and cerebrovascular disease. Many studies found that effective lipid lowering therapy of statins for either primary or secondary prevention treatment could obviously reduce the incidence and mortality rates of cardiovascular and cerebrovascular diseases[7]. Statins are the drug of first choice for treating dyslipidemia. This is because stains interfere with the synthesis of cholesterol in the liver through inhibiting the activity of HMG-CoA reductase, thus treating dyslipidemia[8]. In the present study, we found that after intensive lipid lowering therapy, the decreases of TC, TG and LDL-C in experimental group were more obvious than that of the control group, and the HDL-C level was increased more obviously compared with control group after treatment, thus showing the satisfactory effect of treatment of dyslipidemia by intensive lipid lowering therapy. In addition, atorvastatin also has the effect of plaque stabilization and reversion, anti-inflammatory, anti-oxidant, inhibition of thrombosis, regulation of endothelial cell function, promoting angiogenesis and neuroprotection, thus can significantly decrease the incidence of ischemic cerebral stroke[9]. The present study also found that the Hs-CRP, TNF-α and IL-8 levels in experimental group were decreased more obviously after treatment compared with that of the control group, which had a significant difference (P<0.05). This fully shows the anti-inflammatory effects of intensive lipid lowering. Barthel index is designed and established by Dorother Barthel and Floorence Mahoney and is a kind of ADL
assessment method commonly used in rehabilitation institutions of the U.S. Now it is commonly used in the assessment of activities of daily living in China, and is also the main indicator of prognosis in acute cerebral stroke patients [10]. In this paper, we found that after treatment of 1, 3 and 5 months, Barthel Index scores in experimental group patients were increased more obviously compared with the control group, which showed that intensive lipid lowering could obviously improve the prognosis of patients. We also found that the recurrence rate of patients in experimental group was significantly lower than that of the control group, which indicated that this kind of therapeutic method could significantly decrease the recurrence rate of patients with acute ischemic stroke.

In conclusion, the intensive lipid-lowering therapy in the treatment of acute ischemic stroke can significantly lower blood lipid levels and inflammatory factors, improve Barthel Index score and reduce the recurrence rate in acute ischemic stroke patients.

Reference


