Effect of danhong injection combined with sodium ozagrel on serum IL-8, TNF-α, VEGF, TBIL and NSE in old patients with acute cerebral infarction

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Objective: To study the effect of danhong injection combined with sodium ozagrel on serum IL-8, TNF-α, VEGF, TBIL and NSE in old patients with acute cerebral infarction. Methods: A total of 100 old patients with acute cerebral infarction in our hospital from August 2014 to December 2016 were enrolled in this study. The subjects were divided into the control group (n=50) and the treatment group (n=50) randomly. The control group was treated with sodium ozagrel, the treatment group was treated with danhong injection combined with sodium ozagrel, and both the two groups were treated for 14 days. The serum IL-8, TNF-α, VEGF, TBIL and NSE of the two groups before and after treatment were compared. Results: There were no significantly differences of the serum IL-8, TNF-α, VEGF, TBIL and NSE of the two groups before treatment. The serum IL-8, TNF-α, NSE levels of the two groups after treatment were significantly lower than before treatment, the serum VEGF, TBIL levels of the two groups after treatment were significantly higher than before treatment, and that of the treatment group after treatment were significantly better than the control group. Conclusion: Danhong injection combined with sodium ozagrel can significantly reduce the serum IL-8, TNF-α, NSE levels, improve the serum VEGF, TBIL levels, and reduce inflammation, promote the nerve functional recovery of the old patients with acute cerebral infarction, and it was worthy clinical application.

1. Introduction

Acute cerebral infarction is one of the most common cerebrovascular diseases in clinic, due to cerebral arteriovenous vascular stenosis or cerebral embolism caused by insufficient blood supply to the brain, resulting in damage to brain function and nerve function[1]. Acute cerebral infarction occurs in elderly people over the age of 60, it has the characteristic of sudden onset, acute illness, disability and high death rate, often occurs in patients with sleep or quiet rest and in a few hours or within 1 d of rapid progress. The clinical manifestations were nausea, vomiting, dizziness, headache, dizziness, tinnitus, dysphagia, syncope, language disadvantage, hemiplegia etc[2]. With the aging of the population, the incidence of acute cerebral infarction is increasing year by year, which seriously threatens the health of the elderly population[3]. At present, the clinical treatment of acute cerebral infarction is mostly sodium ozagrel, Yuri, and other drugs, although the clinical symptoms can be relieved to some extent, the curative effect of monotherapy is not obvious[4]. Danhong injection is a traditional compound preparation containing many kinds of Chinese herbal medicine, such as Salvia miltiorrhiza, safflower and so on. It has the function of Tongmai Shu Shu, promoting blood circulation and removing blood stasis. It has a wide range of applications in the treatment of cardiovascular and cerebrovascular diseases[5]. This study was to observe the effect of danhong injection combined with sodium ozagrel on serum IL-8, TNF-α, VEGF, TBIL and NSE in old patients with acute cerebral infarction. The results are as follows.
2. Informations and methods

2.1. General information

We selected 100 elderly patients with acute cerebral infarction treated in our hospital from August 2014 to December 2016 as the subjects. Case inclusion criteria: (1) In line with the “Fourth National Conference on cerebrovascular diseases standard” in the diagnosis of acute cerebral infarction criteria; (2) The diagnosis of acute cerebral infarction was confirmed by head MRI and CT examination; (3) Age more than 60 years old; (4) The incidence of patients admitted to hospital within 6-24 h. Case exclusion criteria: (1) Viral infection and fever patients; (2) Patients with epilepsy, malignant tumors and other nervous system diseases; (3) Patients accompanied by endocrine and metabolic diseases and acute and chronic infection; (4) Patients with hepatic or renal dysfunction; (5) Patients that have asthma, alcohol, and drug allergy; (6) Patients with mental disorders.

The 100 subjects included in this study were randomly divided into two groups: the control group and the experimental group, each with 50 cases. The control group consisted of 29 males and 21 females, aged 60-78 years and mean age (65.47±4.01) years; Cerebral infarction type: 12 cases of brainstem infarction, 25 cases of basal ganglia infarction, 13 cases of lobar infarct. The experimental group consisted of 27 males and 23 females, aged 60-79 years and mean age (66.41±5.15) years; Cerebral infarction type: 13 cases of brainstem infarction, 26 cases of basal ganglia infarction, 11 cases of lobar infarct. The sex, age, cerebral infarction type and other general data of the two groups were not statistically significant (P>0.05), comparable. The two groups of patients were informed of the study before the treatment, and signed the informed consent with consent. The study was approved by the medical ethics committee of our hospital.

2.2. Experimental method

All patients were given conventional treatment such as anti-infection, hypoglycemic, antihypertensive, antiplatelet, anticoagulant and so on. The control group were treated with sodium ozagrel treatment (purchased from Guangzhou Laitai Pharmaceutical Co., Ltd., specifications 20 mg/branch, Chinese medicine word H20046566), intravenous drip, 80 mg/time with 2 times/d, continuous treatment of 14 d. The patients in the experimental group were given Danhong Injection on the basis of the treatment of the control group (purchased from Shandong Danhong Pharmaceutical Co., Ltd., 10 mL/branch, Chinese medicine word Z20026866), 30 mL was added to 250 mL at a concentration of 5% in Glucose Injection, Intravenous infusion, 1 times/d, continuous treatment for 14 d.

2.3. Detection index

5mL venous blood of the two groups before and after treatment in the morning fasting state was collected. The supernatant was centrifuged and the serum was kept at -70 centigrade freezer. The serum levels of IL-8, TNF-α, VEGF, TBIL and NSE were detected and compared between the two groups before and after treatment. Serum IL-8 levels were detected by turbidimetric immunoassay, and Kit was purchased from Beijing Compulife gene science Limited by Share Ltd; Serum levels of TNF-α, VEGF, TBIL and NSE were detected by double sandwich enzyme-linked immunosorbent assay (ELISA), which was purchased from Quanzhou City blueprint Biotechnology Co. Ltd.

2.4. Data processing

We Used SPSS 19.0 software package to process the test result data. The data representation of the results of this study are mean ± standard deviation, the use of t test was to compare the difference between groups; The rate (%) indicated the clinical general enumeration data, using $\chi^2$ test, and $P<0.05$ indicated that the difference was statistically significant.

3. Results

3.1. Comparison of serum IL-8, TNF-α and VEGF levels before and after treatment in two groups

Before treatment, the levels of serum IL-8, TNF-α and VEG in the control group were (1.66±0.25) ng/L, (3.07±0.42) ng/L and (167.15±36.70) pg/mL, that in the experimental group were (1.64±0.23) ng/L, (3.12±0.49) ng/L and (168.02±37.14) pg/mL, there was no significant difference between the two groups

<table>
<thead>
<tr>
<th>Group</th>
<th>n</th>
<th>Time</th>
<th>IL-8 (ng/L)</th>
<th>TNF-α (ng/L)</th>
<th>VEGF (pg/mL)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control group</td>
<td>50</td>
<td>Before treatment</td>
<td>1.66±0.25</td>
<td>3.07±0.42</td>
<td>167.15±36.70</td>
</tr>
<tr>
<td></td>
<td></td>
<td>After treatment</td>
<td>1.13±0.14</td>
<td>1.65±0.28</td>
<td>202.84±46.34</td>
</tr>
<tr>
<td>Experimental group</td>
<td>50</td>
<td>Before treatment</td>
<td>1.64±0.23</td>
<td>3.12±0.49</td>
<td>168.02±37.14</td>
</tr>
<tr>
<td></td>
<td></td>
<td>After treatment</td>
<td>0.60±0.09*</td>
<td>1.14±0.17**</td>
<td>275.49±50.11**</td>
</tr>
</tbody>
</table>

Note: compared with before treatment, *P<0.05; compared with the control group, **P<0.05.
Table 2. Comparison of serum TBIL, NSE levels before and after treatment in two groups.

<table>
<thead>
<tr>
<th>Group</th>
<th>n</th>
<th>Time</th>
<th>TBIL (mmol/L)</th>
<th>NSE (ng/mL)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control group</td>
<td>50</td>
<td>Before treatment</td>
<td>12.65±1.18</td>
<td>40.43±10.51</td>
</tr>
<tr>
<td></td>
<td></td>
<td>After treatment</td>
<td>22.63±1.92*</td>
<td>25.38±8.43</td>
</tr>
<tr>
<td>Experimental group</td>
<td>50</td>
<td>Before treatment</td>
<td>13.02±1.25</td>
<td>41.12±11.17</td>
</tr>
<tr>
<td></td>
<td></td>
<td>After treatment</td>
<td>30.47±2.14*</td>
<td>11.66±7.05</td>
</tr>
</tbody>
</table>

Note: compared with before treatment, *P<0.05; compared with the control group, #P<0.05. 

(α>0.05); After treatment, the levels of serum IL-8, TNF-α and VEGF in the control group were (1.13±0.14) ng/L, (1.65±0.28) ng/L and (202.84±6.34) pg/mL, which in the experimental group were (0.60±0.09) ng/L, (1.14±0.17) ng/L and (275.49±50.11) pg/mL. The IL-8, TNF-α serum levels of the two groups were significantly lower than those before treatment, and the levels of VEGF in the experimental group were lower than those before treatment, and the serum levels of VEGF were significantly higher than those before treatment, and after treatment, the changes of serum IL-8, TNF-α and VEGF levels in the experimental group were better than those in the control group, the difference was statistically significant (P<0.05). Please look at the Table 1.

3.2. Comparison of serum TBIL, NSE levels before and after treatment in two groups

Before treatment, the levels of serum TBIL, NSE in the control group were (12.65±1.18) mmol/L, (40.43±10.51) ng/mL, that in the experimental group were (13.02±1.25) mmol/L, (41.12±11.17) ng/mL, there was no significant difference between the two groups (P>0.05); After treatment, the levels of serum TBIL, NSE in the control group were (22.63±1.92) mmol/L, (25.38±8.43) ng/mL, that in the experimental group were (30.47±2.14) mmol/L, (11.66±7.05) ng/mL. The serum TBIL levels in the two groups were higher than those before treatment, and the serum NSE levels were lower than those before treatment, and the changes of serum TBIL and NSE levels in the experimental group were better than those in the control group, the difference was statistically significant (P<0.05). Please look at the Table 2.

4. Discussion

Studies have shown that the occurrence and development of acute cerebral infarction are related to hypertension, hyperlipidemia, cerebral atherosclerosis, hypercoagulability, chronic inflammation and so on[7]. When acute cerebral infarction occurs, Brain tissue ischemia and hypoxia intensify the small keratinocyte/macrophage, which cause the synthesis of IL-8, TNF-α and other inflammatory factors in brain tissues, so that it will aggravate the damage of brain ischemia and hypoxia; In addition, brain ischemia and hypoxia can lead to damage of cerebral vascular endothelial cells, neuron damage and necrosis, and cause significant changes in serum markers such as VEGF, TBIL, NSE and so on[8,9]. Sodium ozagrel is a thromboxane A2 (TXA2) synthetase inhibitor, it inhibits the aggregation of platelets and reduces blood viscosity by blocking prostaglandin H2 production of TXA2, and it also has the function of relieving cerebral vasospasm, improving microcirculation, promoting the blood supply of brain and reducing the damage of nerve function[10]. Danhong injection mainly consists of Salvia miltiorrhiza and safflower. On the one hand, it can significantly inhibit platelet aggregation, reduce blood viscosity, inhibit thrombosis, on the other hand, it can regulate the metabolism of neurotransmitters in the brain and restore the brain nerve function[11]. This study was to observe the effect of danhong injection combined with sodium ozagrel on serum IL-8, TNF-α, VEGF, TBIL and NSE in old patients with acute cerebral infarction, in order to provide some inspiration for the clinical treatment of acute cerebral infarction in the elderly.

The results showed that there was no significant difference in serum IL-8, TNF-α, VEGF, TBIL and NSE levels between the two groups before treatment (P>0.05); After treatment, the serum levels of IL-8, TNF-α and VEGF in the two groups were lower than those before treatment, the serum levels of VEGF and TBIL were higher than those before treatment, the levels of serum IL-8, TNF-α, VEGF, TBIL and NSE in the experimental group were better than those in the control group, and the difference was statistically significant (P<0.05). The results suggest that Danhong injection combined with ozagrel can significantly reduce the levels of serum IL-8, TNF-α and NSE in elderly patients with acute cerebral infarction, and increase the levels of serum VEGF and TBIL. Both IL-8 and TNF-α are serum inflammatory factors. The occurrence and development of acute cerebral infarction can lead to the elevation of serum level, while the increase of its expression level will also aggravate the risk of brain tissue damage and morbidity in patients with acute cerebral infarction[12]. VEGF is a vascular endothelial growth factor, which can efficiently promote the growth of vascular endothelial cells, participate in the formation of blood vessels, and also increase the permeability of blood vessels and protect neurons[13]. TBIL is a hemoglobin containing bile component produced by the breakdown of senescent erythrocytes, the results showed that the serum TBIL levels in patients with acute cerebral infarction were lower than those of healthy subjects[14]. NSE is a specific enzyme found in endocrine cells and neurons in the brain, in brain...
improve the nervous function can significantly reduce the inflammatory response of the brain and prevent platelet aggregation, its combination of Danhong injection can significantly reduce the serum IL-8, TNF-α levels, improve the VEGF, TBIL levels, and reduce inflammation, promote the nerve functional recovery of the old patients with acute cerebral infarction, and it was worthy clinical application.

In conclusion, Danhong injection combined with sodium ozagrel can significantly reduce the serum IL-8, TNF-α, NSE levels, improve the serum VEGF, TBIL levels, and reduce inflammation, promote the nerve functional recovery of the old patients with acute cerebral infarction, and it was worthy clinical application.

Reference


