Effect of *xingnaoqing* injection and *angong niuhuang wan* on neurological functional defect in acute stage of cerebral infarction*

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Abstract

**BACKGROUND:** It is discovered in clinical practice that the principles of regaining consciousness, opening orifice combining with benefiting qi and nourishing yin for the treatment of both root causes and symptoms can improve remarkably neurological functional recovery in acute stage of cerebral infarction.

**OBJECTIVE:** To observe the effects of *xingnaoqing* injection and *angong niuhuang wan* on neurological functional disturbance in acute stage of cerebral infarction.

**DESIGN:** Randomized controlled study based on patients.

**SETTING:** Guangdong General Hospital of Chinese People’s Armed Police Force.

**PARTICIPANTS:** Inpatients with cerebral infarction in Department of Neurology of Guangdong General Hospital, Chinese People’s Armed Police Force from September 1998 to September 2003.

**METHODS:** Totally 120 cases in the acute stage of cerebral infarction were randomized into *xingnaoqing* injection group (XJ), *angong niuhuang wan* (ANW) group and *danshen fen* group, 40 cases in each group. Fourteen days after treatment, the therapeutic effects and neurological functional improvement were observed.

**MEAN OUTCOME MEASURES:** Comparison of the improvement in neurological function in groups was carried on in the experiment.

**RESULTS:** The total effective rates were 95%, 90% and 65% in *xingnaoqing* injection group, *angong niuhuang wan* group and *danshen fen* group respectively. The paralysis of limb was recovered more markedly in *xingnaoqing* injection group and *angong niuhuang wan* group compared with the control. The therapeutic effect was significant in *xingnaoqing* injection group.

**CONCLUSION:** Both *xingnaoqing* injection group and *angong niuhuang wan* group treat cerebral infarction of acute stage with better therapeutic effects, and the former provides rather remarkable effect on the recovery of neurological functional defect.


**INTRODUCTION**

*Xingnaoqing* injection is the water-injection infusion modified and prepared on the basis of ancient formula, *angong niuhuang wan*, and is the necessity of Chinese patent medicine for the emergency in Chinese medicine hospitals appointed by State Administration of Traditional Chinese Medicine. In order to probe into the therapeutic effects of *xingnaoqing* injection and *angong niuhuang wan* for the acute cerebral infarction (ACI), the writer has used *xingnaoqing* injection and *angong niuhuang wan* to treat the disease respectively so as to improve the neurological functional recovery in the patients with ACI.

**SUBJECTS AND METHODS**

**Subjects**

Inpatients with cerebral infarction in Department of Neurology of Guangdong General Hospital, Chinese People’s Armed Police Force from September 1998 to September 2003 were employed in the study. Inclusion criteria: (1) Conforming to the diagnostic criteria approved in 1995 the 4th National Academic Meeting on Cerebral Vascular Disease [1] . (2) 2(4) hours after the onset of hospitalization verified with brain CT scan exam. Exclusion criteria: The patients were not included if they presented severe disablement or complicating with cerebral hemorrhage and severe dysfunction of liver and kidney. There were 120 cases conforming to the criteria all together, randomized into *xingnaoqing* injection group, *angong niuhuang wan* group and *danshen fen* group, and 40 cases in each group.

**Methods**

The treatment started right after hospitalization. In *xingnaoqing* injection group, the intravenous injection was administrated with *xingnaoqing* injection 20 ml + glucose NaCl injection 250 ml, once a day. In *angong niuhuang wan* group, one bolus was administrated each time, once a day. It was prepared into homogenate for oral application or nasal feeding. In *danshen fen* group, the intravenous injection was administrated with *danshen fen* 0.8 g + 50 g/L glucose NaCl injection 250 ml, once a day. Fourteen days made a session of treatment. The basic treatment was same in every group, for which, mannitol, drugs for lowering blood pressure and blood sugar and antibiotics were applicable.

**Functional evaluation:** According to reference [2]: Mild degree: 0–15 scores; Moderate degree: 16–30 scores and Severe degree: 31–45 scores. The evaluation was carried on the 5th day after treatment and at the end of treatment.

**Main outcome measures:** It was to observe consciousness state and alternation of limb myodynamia after treatment, the results of blood routine, urine routine, liver and kidney function, blood sugar and electrocardiograph (ECG) before and after treatment in each group.

**Statistical analysis:** Statistical Teaching & Research Room of Guangzhou Medical College carried on the analysis on data with SPSS 10.0 software. X2 test was applied for the analysis on results.

**RESULTS**

**Quantitative analysis of participants**

Totally 120 cases were included. Due to injection, 1 case in *angong niuhuang wan* group and 2 cases in *danshen fen* group were died. Therefore, there were 117 cases entering the analysis on results.

**Comparison of baseline among the three groups (Table 1)**

| Group                  | Sex (n) | Age (yr) | Grades of sickness (n) | Severity of neurological function defect (n) | Conscious disturbance (n) | Complete paralysis (n) |
|------------------------|---------|----------|------------------------|---------------------------------------------|----------------------------|
|                        | Male    | Female   | Mild                   | Moderate                                    | Severe                     |                            |
| *xingnaoqing injection*| 21      | 19       | 14                     | 16                                          | 13                         | 27                         |
| *danshen fen*           | 23      | 17       | 9                      | 15                                          | 13                         | 27                         |
| *angong niuhuang wan*   | 24      | 16       | 13                     | 15                                          | 15                         | 25                         |

P > 0.05

**Flow chart of topic progression (Figure 1)**

**Comparison of therapeutic effects**

Concerning to the recovery of conscious disturbance and limb myo-
dynamia, the therapeutic effect in angong niuhuang wan group was obviously better than danshen fen group (P < 0.01); that in xingnaoqing injection group was obviously better than angong niuhuang wan group (P < 0.05). Table 2 presents the comparison of therapeu-
tic effects in every group and Table 3 presents time of pharma-
ceutical effect, cases of patients and percentage in every group after treatment.

![Figure 1: Flow chart of topic progression](image)

**Table 2** Comparison of therapeutic effects in every group (n=38)

<table>
<thead>
<tr>
<th>Group</th>
<th>Basically cured</th>
<th>Significantly improved</th>
<th>Improved</th>
<th>No change</th>
<th>Deteriorated</th>
<th>Total effective rate (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Xingnaoqing injection</td>
<td>13</td>
<td>19</td>
<td>6</td>
<td>1</td>
<td>1</td>
<td>95</td>
</tr>
<tr>
<td>Angong niuhuang wan</td>
<td>12</td>
<td>15</td>
<td>9</td>
<td>2</td>
<td>1</td>
<td>90</td>
</tr>
<tr>
<td>Danshen fen</td>
<td>7</td>
<td>11</td>
<td>8</td>
<td>10</td>
<td>2</td>
<td>65*</td>
</tr>
</tbody>
</table>

*P = 0.05 vs. angong niuhuang wan group

**Table 3** Time of pharmaceutical effect, cases of patients and percentage in every group after treatment (n=38)

<table>
<thead>
<tr>
<th>Time</th>
<th>Xingnaoqing injection</th>
<th>Angong niuhuang wan</th>
<th>Danshen fen</th>
</tr>
</thead>
<tbody>
<tr>
<td>Be clear on the 5th day</td>
<td>9/69</td>
<td>7/54</td>
<td>2/20</td>
</tr>
<tr>
<td>Recoverer II grade of myodynamia on the 5th day</td>
<td>11/41</td>
<td>10/37</td>
<td>5/20</td>
</tr>
<tr>
<td>Be clear at the end of treatment</td>
<td>12/92</td>
<td>9/69</td>
<td>5/50</td>
</tr>
<tr>
<td>Recoverer II grade at the end of treatment</td>
<td>25/93</td>
<td>21/78</td>
<td>14/56</td>
</tr>
</tbody>
</table>

**Adverse events and side effects**

On the 4th day of treatment, scarring rashes were apparent in 2 cases of xingnaoqing injection, which disappeared with continuous medication. No marked change presented in blood routine, urine routine, liver and kidney function, blood pressure, blood sugar and ECG in every group before and after treatment.

**DISCUSSION**

It was indicated in this research that the effect of xingnaoqing injection or angong niuhuang wan on improving neurological functional disturbance in patients with acute cerebral infarction was remarkably better than compound danshen injection. Both xingnaoqing injection and angong niuhuang wan act on well improvement of conscious disturbance. There is no obvious difference for xingnaoqing injection and angong niuhuang wan in the therapeutic effect on recovering limb paralysis. Xingnaoqing injection is the water-infusion injection modified and prepared on the basis of angong niuhuang wan. By intravenous injection, the medicine penetrates blood-cerebral barrier and acts on central neural system directly. It functions opening orifice, regaining consciousness and easing convulsion. It improves cerebral edema, enhances the tolerance of cerebral cell to oxygen deficiency, reduces overload of calcium and intracranial pressure and promotes effectively the neurological function in patients with cerebral infarction. The mechanism of those is related to the adjustment of the functions of activated hypothalamic-pituitary-adrenal cortex axis (1-3). It is indicated in the researches in vivo that during acute cerebral ischemia, the strongly irritated hypothalamic-pituitary-adrenal cortex axis mainly damages cerebral cell in glucose absorption and metabolism and produces neural toxicity to hormones (11). It is clarified in clinical research that cortisol aggravates cognitive disturbance of patients with cerebral apoplexy. The activation of hypothalamic-pituitary-adrenal cortex axis is the main substantial foundation of the aggravated ischemic neuron injury. Xingnaoqing injection is administrated to actively interfere such link so as to alleviate the stress of acute cerebral ischemia and protect ischemic neuron. The therapeutic effects of xingnaoqing injection is better than angong niuhuang wan 2 weeks later, which is probably due to that: it could be difficult in absorbing angong niuhuang wan completely by oral application, in addition, after cerebral infarction, gastric intestinal function is declined, even vomiting presents, which will even more disadvantage to the medical absorption. Hence, it is important to renovate pharmaceutical forms so as to improve clinical therapeutic effects.

**REFERENCES**


![REFERENCES](image)