Clinical Observations

Effects of Acupuncture at 7-9 am and 3-5 pm on Plasma Thromboxane and Prostaglandin in Patients with Ischemic Cerebrovascular Disease

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Objective: To observe the effects of acupuncture at different times on plasma thromboxane (TXB$_2$) and prostaglandin 6-Keto-PGF$_{1a}$ (6-K-P) in patients with ischemic cerebrovascular disease. Methods: Totally 90 patients were randomly divided into a group acupunctured at 7–9 am, a group acupunctured at 3–5 pm and a drug control group, with 30 cases in each group. The contents of plasma TXB$_2$ and 6-K-P from venous blood before treatment were compared with those 15 days after treatment. Results: The plasma TXB$_2$ levels of the two acupuncture groups were obviously lower than those before treatment ($P<0.05$, $P<0.01$), but the 6-K-P levels of both the acupuncture groups were remarkably higher than those before treatment ($P<0.05$, $P<0.01$). And the TXB$_2$ level in the 3–5 pm acupuncture group was obviously lower than that in the 7–9 am acupuncture group ($P<0.05$), and the 6-K-P level of the former was obviously higher than that of the latter ($P<0.05$). Conclusion: Acupuncture can promote functional recovery in patients with ischemic cerebrovascular disease and enhance their survival quality.

Key words: plasma thromboxane; prostaglandin; ischemic cerebrovascular disease; acupuncture

Acupuncture may show the effect of promoting functional recovery in patients with ischemic cerebrovascular disease and enhancing their survival quality. The author used acupuncture to treat 60 cases from January 2004 to January 2007 with a drug control group of 30 cases as the controls. The report follows.

CLINICAL MATERIALS

All the 90 cases in this series conformed to the Diagnostic Standards for Ischemic Cerebrovascular Disease$^1$ of the blood stasis pattern in TCM.$^2$ They were diagnosed by CT, MRI and color Doppler ultrasonic examinations. The 90 patients (53 males and 37 females) were randomly divided into 3 groups. 30 cases (19 males and 11 females) were acupunctured at 7–9 am; 30 cases (16 males and 14 females) were acupunctured at 3–5 pm; and 30 cases (18 males and 12 females) were in the drug control group. Their illness course ranged from 1 day to two years. The general data were comparable among the three groups with no obvious differences in sex, age, illness course, functional states and complications ($P>0.05$). The patients aged under 40 or over 70 years, and those with hepatic failure, renal failure and tumors were excluded.

METHODS

In the 7–9 am and 3–5 pm Acupuncture Groups

Shugu (BL 65) was vertically punctured 0.3–0.5 cun deep with the twirling-reinforcing method, and with the needle retained for 30 minutes; Neiguan (PC 6) was punctured 1 cun deep with the lifting, trusting, and twirling-reducing method, and with the needle manipulated for 1 minute and retained for 30 minutes; Fengchi (GB 20) was punctured 1–1.5 cun deep with the twirling-reinforcing method, and with the needle manipulated for 1 minute and retained for 30 minutes; Fenglong (ST 40) was punctured 1.5 cun deep with the twirling-reducing method, and with the needle manipulated for 1 minute and retained for 30 minutes; Zusanli (ST 36) was punctured 1–1.5 cun deep with the lifting, trusting, and twirling-reinforcing method, and after the needling sensation was felt, a moxa roll was put on the needle handle and ignited, with the
needle retained for 30 minutes. And the needles were vertically inserted into Yinxi (HT 6) and Ximen (PC 4) 1 cun deep with the twirling-reinforcing method, manipulated for 1 minute and retained for 30 minutes.

In the Drug Control Group

On the basis of conventional treatment, the enteric soluble Aspirin 50 mg was orally taken once a day. All the 3 groups were treated once a day for 15 days.

The Reagents and Instruments Used

The reagents for detecting TXB$_2$ and 6-K-P were provided by the Sci-tech Development Center of General Hospital of the Chinese People’s Liberation Army. The automatic GMJ radio-immunity γ-counter was produced by Jiangsu Medical Electronic Institute. The DDL-5 refrigerative centrifuge was produced by Shanghai Anting Scientific Instrument Factory.

Statistical Processing

SPSS 10.0 software was used to statistically process the data expressed as $X \pm s$ with $t$ test. Before treatment, 2 ml venous blood was drawn at 8 am for patients in all the 3 groups. After 15-day treatment, the venous blood was drawn once again at 8 am in the 7–9 am acupuncture group, and at 4 pm in the 3–5 pm acupuncture group for the lab tests.

Criteria for Therapeutic Effects

The Criteria for Diagnosis and Therapeutic Effects of Apoplexy$^3$ were adopted to evaluate the therapeutic effects. The standards for evaluating the blood stasis syndrome are described in reference,$^2$ and the standards for evaluating the illness condition in references.$^4-5$

RESULTS

1. Effects of acupuncture on the symptoms and signs (Table 1).
2. Effects of acupuncture on the blood stasis syndrome (Table 2).
3. Comparison of TXB$_2$, 6-K-P and TXB$_2$/6-K-P before and after treatment (Table 3).

Table 1. The evaluating score for the symptoms and signs before and after treatment in the 3 groups ($X \pm s$)

<table>
<thead>
<tr>
<th></th>
<th>Group acupunctured at 3–5 pm (30 cases)</th>
<th>Group acupunctured at 7–9 am (30 cases)</th>
<th>Drug control group (30 cases)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dysfunction of limbs</td>
<td>1.85±0.78</td>
<td>1.94±0.62*</td>
<td>1.94±0.70</td>
</tr>
<tr>
<td>Numb limbs</td>
<td>1.54±0.94</td>
<td>0.83±0.85*</td>
<td>1.30±0.82</td>
</tr>
<tr>
<td>Dark purple lips and gum</td>
<td>0.94±0.89</td>
<td>0.49±0.70*</td>
<td>1.10±0.67</td>
</tr>
<tr>
<td>Dark tongue or ecchymosis</td>
<td>0.92±0.79</td>
<td>0.61±0.79*</td>
<td>0.70±0.89</td>
</tr>
<tr>
<td>Varicose vein under tongue</td>
<td>1.27±0.63</td>
<td>0.64±0.64*</td>
<td>1.58±0.68</td>
</tr>
<tr>
<td>Uneven pulse</td>
<td>1.00±0.56</td>
<td>0.57±0.57*</td>
<td>1.19±0.96</td>
</tr>
</tbody>
</table>

Note: $^\Delta P<0.05$, $^*P<0.01$ as compared with the data before treatment; $^\# P<0.05$, $^\bullet P<0.01$ as compared with the 3–5 pm acupuncture group.

Table 2. The evaluating score for the blood stasis syndrome ($X \pm s$)

<table>
<thead>
<tr>
<th></th>
<th>Cases</th>
<th>Before treatment</th>
<th>After treatment</th>
<th>Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group acupunctured at 3–5 pm</td>
<td>30</td>
<td>23.27±14.04</td>
<td>10.58±5.67*</td>
<td>12.68±3.29*</td>
</tr>
<tr>
<td>Group acupunctured at 7–9 am</td>
<td>30</td>
<td>22.35±13.49</td>
<td>15.32±8.66*</td>
<td>7.03±2.38a</td>
</tr>
<tr>
<td>Drug control group</td>
<td>30</td>
<td>21.24±13.36</td>
<td>19.59±9.87</td>
<td>1.65±0.76</td>
</tr>
</tbody>
</table>

Note: $^\Delta P<0.05$, $^*P<0.01$ as compared with the data before treatment; $^\bullet P<0.001$, $^\# P<0.01$ as compared with the drug control group.
Table 3. Comparison of TXB$_2$, 6-K-P and TXB$_2$/6-K-P among the 3 groups (X ±s)

<table>
<thead>
<tr>
<th></th>
<th>Group acupunctured at 3–5 pm (30 cases)</th>
<th>Group acupunctured at 7–9 am (30 cases)</th>
<th>Drug control group (30 cases)</th>
</tr>
</thead>
<tbody>
<tr>
<td>TXB$_2$ (pg/ml)</td>
<td>89.22±9.04</td>
<td>64.55±4.42</td>
<td>90.31±9.02</td>
</tr>
<tr>
<td>6-K-P (pg/ml)</td>
<td>57.26±13.51</td>
<td>89.00±13.33</td>
<td>57.40±13.49</td>
</tr>
<tr>
<td>TXB$_2$/6-K-P</td>
<td>1.56±0.18</td>
<td>0.72±0.011</td>
<td>1.57±0.25</td>
</tr>
</tbody>
</table>

Note: △P<0.01, *P<0.05 as compared with the data before treatment; ▲P<0.01, ★P<0.05 as compared with the datum in the drug control group; #P<0.05 as compared with the 7–9 am acupuncture group.

**DISCUSSION**

Under a normal condition, the contents of TXB$_2$ and 6-K-P in the blood are in a state of relative balance, which may prevent aggregation, expand blood vessels and maintain good blood circulation. When the blood vessels are injured, the blood platelets may adhere to the damaged areas, leading to an increase of TXB$_2$ and a decrease of 6-K-P. Arteriosclerosis and other factors can cause a long-term ischemia and hypoxia of the vascular endotheliocytes with chronic injury, thus TXB$_2$ increased and 6-K-P reduced with aggregation of the blood platelets and formation of thrombus, which is one of the main causes for ischemic cerebrovascular disease. Usually, acupuncture treatment is adopted at the restoration stage of cerebrovascular disease because at the early stage the passage of acupuncture information can not be set up due to edema of the cerebral tissues, paralysis of the nervous network and dysfunction of the cerebral nervous transmitters.

Ischemic cerebrovascular disease (ICD) can be treated by acupuncture to promote the functional recovery and enhance the life quality. And the effects for ICD patients treated in the afternoon are better than these treated in the morning because the ying-$qi$ of the Urinary Bladder Channel is exuberant at 3–5 pm. This conclusion is contrary to the results reported by FENG Bin. Neiguan (PC 6) is used to soothe the liver $qi$, promote the circulation of $qi$ and blood, calm hyperactive liver and suppress yang. Shugu (UB 65) is used for lingering illness. Fengchi (GB 20) can regulate yin, yang, $qi$ and blood in the head, clear the channels and collaterals and nourish the brain and marrow. Zusanli (ST 36) can strengthen the spleen and stomach. Fenglong (ST 40) can promote circulation of $qi$ and blood, resolve phlegm and clear away the heat. Yinxi (HT 6) and Ximen (PC 4) can promote repair of the tissues, with increase of 6-K-P and decrease of TXB$_2$ to prevent thrombus from being further aggravated. The above-mentioned points used together can resolve phlegm, promote circulation of $qi$ and blood, remove blood stasis, nourish the brain and marrow, and promote recovery from cerebrovascular disease.

The results from the present study show that the curative effect of acupuncture for cerebrovascular disease is better than that of west medicine, which conforms to many other reports. After the treatment by acupuncture, the plasma TXB$_2$ level obviously decreases and the 6-K-P level remarkably increases, indicating that acupuncture can regulate both TBX$_2$ and 6-K-P. And the TXB$_2$ and TXB$_2$/6-K-P decrease and the 6-K-P increase are more obvious in the 3–5 pm acupuncture group than those of the 7–9 am acupuncture group, suggesting that the curative effect of acupuncture performed in the afternoon is better than that in the morning for the ICD patients.

**REFERENCES**

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