

Original Article

The Clinical Effect of Manipulation of Acupuncture to *Shen-Men* and *Nei-Kuan* on Blood Pressure of Normal Male Subjects

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Objectives : With an assumption of traditional oriental medical theory, to evaluate the effect of tonification/sedation manipulative acupuncture on blood pressure in male normotensives.

Methods : This study was a randomized cross-over trial. We enrolled healthy male normotensive subjects, and assigned them randomly to group A or group B. Group A received acupuncture therapy on *Shen-Men* (He-7) and *Nei-Kuan* (EH-6) with tonification-manipulation, while group B received it with sedation-manipulation. Blood pressure was assessed every ten minutes for 2 hours. After 3 days of washout period, the subjects were crossed over to the other manipulation, and the same procedures were performed.

Results : We observed that blood pressure stimulated by the sedation-manipulation had a tendency to decrease compared to that by the tonification-manipulation.

Conclusions : We suggest the sedation manipulation has more synergic effect with the inhibitory effects of *Shen-Men* and *Nei-Kuan* on the sympathetic nervous system than the tonification-manipulation.

Key Words : *Nei-Kuan*, *Shen-Men*, blood pressure, tonification-manipulation, sedation-manipulation

Introduction

Blood pressure is mainly modulated by the autonomic nervous system. Previous reports suggest acupuncture can affect the autonomic nervous system^{1,6}. Especially, the *Shen-Men* (He-7) and *Nei-Kuan* (EH-6) acupoints are known to increase parasympathetic nervous activity^{7,9}.

This means that acupuncture on those acupoints can lead to reduction of blood pressure. In this study, on the assumption of traditional oriental medical theory, we evaluated the effect of tonification/sedation-manipulative acupuncture on the inhibitory effects of *Shen-Men* and *Nei-Kuan* on sympathetic activity by monitoring blood pressure.

Methods

1. Subjects

This study is a randomized cross-over trial. We enrolled healthy normotensive male subjects with blood pressure ranging from 120/80 to 100/60 mmHg. Recruitment was done at the Department of Cardiovascular & Neurologic Diseases (Stroke Center), Hospital of Oriental

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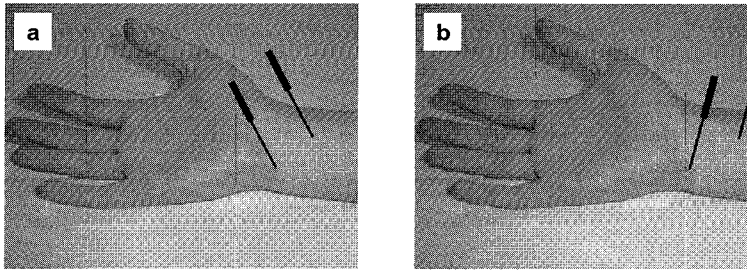


Fig. 1. Tonification/sedation manipulated acupuncture on *Shen-Men* (He-7) and *Nei-Kuan* (EH-6).
(a) (Sedation-manipulation): We inserted the needles against the meridian flow and rotated them six times in an anticlockwise direction.
(b) (Tonification-manipulation): We inserted the needles (0.25 X 40 mm) along the meridian flow and rotated them nine times in a clockwise direction.

Medicine, Kyung Hee Medical Center, Seoul, Korea, from April through August of 2005. We excluded patients who had been treated with anti-hypertension agents. Informed consent was obtained from all subjects after being given a full explanation of the study.

2. Procedures

The subjects were randomly assigned to group A or group B. The baseline blood pressure of the subjects was measured in the sitting position after 30 minutes of rest. Then group A received acupuncture therapy with tonification-manipulation, while group B received it with sedation-manipulation. The time when the interventions were applied was 10:00 am. The blood pressure was assessed every ten minutes for 2 hours. After 3 days of washout period, group A was crossed over to the sedation-manipulation, and group B to the tonification-manipulation. Other procedures were the same as previously described.

3. Intervention

When we did the tonification-manipulation, we inserted Dong Bang sterile acupuncture

needles (0.25 × 40 mm) on *Shen-Men* (He-7) and *Nei-Kuan* (EH-6) acupoints in the subjects' right hands along the meridian flow and rotated them nine times in a clockwise direction. The needles were removed after 30 minutes. When we did sedation-manipulation, we inserted needles against the meridian flow and rotate them six times in an anticlockwise direction. Again, needles were removed after 30 minutes (Fig. 1).

4. Measures

We assessed blood pressure with an ambulatory blood pressure monitor (Model TM2430, M & D company, Ltd., Japan) before treatment and every 10 minutes after treatment for 2 hours. The cuff was applied to the left hand of the subjects.

5. Statistics

To compare the baseline assessment between groups A and B, we used independent t-test. Repeated measurement ANOVA was used to detect significant difference in the change of subject blood pressure between the two groups. All calculation was performed by SPSS for windows, version 12.0 (SPSS Inc., Chicago, Illinois, USA), and p-value under 0.05 was considered significant.

Table 1. Subjects' Baseline Assessment

	Group A(n=15)	Group B(n=15)	Sig.*
Age, yr	27.5 3.6	28.1 3.5	N.S.
Gender, male (%)	15 (100.0)	15 (100.0)	N.S.
Systolic BP, mmHg	112.8 12.3	112.9 9.0	N.S.
Diastolic BP, mmHg	71.1 8.3	69.9 6.1	N.S.
Medical history	None	None	N.S.

*: independent t-test for continuous variables and chi-square test for categorical variables

Results

Thirty subjects were enrolled. Of them, 15 were assigned to group A, the remaining 15 to group B. All of them were male, and there was no significant difference in the subjects' baseline assessment between the two groups (Table 1).

In the results, although there was no statistically significant difference in the change of blood pressure in the between-subjects analysis by repeated measure ANOVA, we observed that the blood pressure stimulated by the sedation-manipulation had a tendency to decrease compared to that by the tonification-manipulation (Fig. 2 and 3).

Discussion

From the traditional view of the Oriental Medicine, acupuncture on the same points can bring about different results according to the

manipulation. In general, so-called tonification-manipulation is said to enhance the vital energy, while sedation-manipulation is said to modulate the excess energy.

Of interest, we observed that the sedation method reduced blood pressure continuously more than tonification. Although its statistical significance was not detected, the tendency seemed to be obvious, for the curves of blood pressure of the tonification and the sedation manipulation did not cross. These results might be explained as that sedation manipulation reduced sympathetic activity, thus increased the inhibitory effects of *Shen-Men* and *Nei-Kuan* on the sympathetic nervous system^{7,9}.

Nei-Kuan (EH-6) belongs to hand yin in the equilibrium envelope of the heart meridian (EH), and it reduces cardiac frequency and systolic blood pressure^{7,10,11}, and improves left ventricular

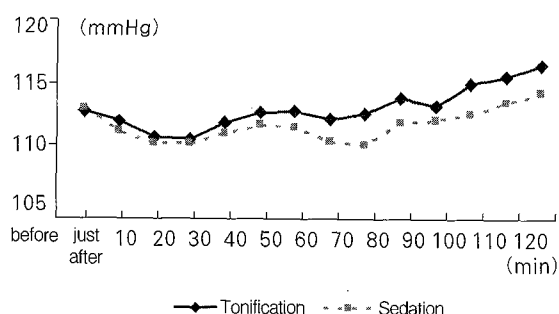


Fig. 2. Change of the systolic blood pressure after Tonification/Sedation-manipulation. The curves are not crossed: The sedation curve is located below the tonification continuously.

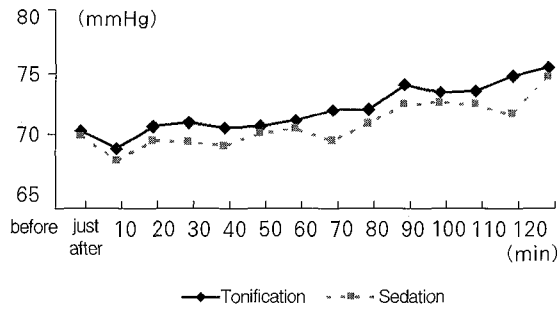


Fig. 3. Change of diastolic blood pressure after tonification/sedation-manipulation. The curves do not cross; the sedation curve is located below the tonification curve continuously.

function in patients with coronary artery disease²⁾. It also reduces the sympathetic reaction to mental stress¹³⁾. *Shen-Men* (He-7) belongs to hand yin minimum heart meridian (He), and increases the activity of vagal nerves, while decreasing the activity of sympathetic activity⁸⁾. Acupuncture on *Shen-Men* and *Nei-Kuan* seems to send specific afferent nerve signals to the central nervous system resulting afterwards in lower activity in the central sympathetic nervous system^{6,14)}. This can be supported by our previous work, which showed *Shen-Men* and *Nei-Kuan* improved insomnia in stroke patients possibly by reducing sympathetic activity¹⁵⁾.

In conclusion, we suggest that traditional sedation-manipulation acupuncture on *Shen-Men* and *Nei-Kuan* have synergic effect on sympathetic inhibition, but further evaluation on a larger sample size is needed to confirm this suggestion.

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