



Prohomeostatic effects of acupuncture

Y. Hirokado^{a,b,*}, K. Nagata^b, Y. Aoyama^b, K. Kiyama^b,
K. Okano^b, T. Hasegawa^b

^a *International College of Acupuncture and Moxibustion, Japan*

^b *Department of Psychosomatic Medicine, Hamamatsu University, School of Medicine, 1-20-1, Handayama, Hamamatsu, Shizuoka 431-3192, Japan*

Abstract. Forty-nine subjects (30.2 ± 9.0 years old, with 22 males and 27 females) were examined oxidative stresses by d-ROMs test and antioxidant potential by BAP test before and after acupuncture. The results of the d-ROMs test were significantly reduced after acupuncture. The results were significantly reduced among females, but no difference was noted in males. No significant changes were noted in the results of the BAP test after acupuncture. Neither was there a difference between males and females. These results indicated that acupuncture reduces the oxidative stresses but it had no effect on antioxidant potentials. When a comparison by gender was made, the effect of the procedure on antioxidative stress was noted in females. © 2006 Published by Elsevier B.V.

Keywords: Prohomeostasis; Acupuncture; Oxidative stress; Antioxidant potential

1. Introduction

Deviations in the internal environment within one's body (such as the autonomic nervous-endocrine-immunologic system caused by various stresses) are involved in the development of psychosomatic disorders. Physical therapy applying the principles of oriental medicine (e.g., acupuncture and moxabustion) has been used to correct such deviations. Recently, considerable scientific advances have been made in this area. Shirahata et al. [1] conducted a study on a large number of subjects to prove that acupuncture can correct abnormalities in one's hemodynamics. Nagata et al. [2–4] studied the effects of acupuncture on the levels of 17-KS-S (abbreviated as S) and 17-OHCS (abbreviated as OH) and the S/OH ratio, and reported that the first two increased immediately after the procedure and the last rose significantly on the following day.

* Corresponding author. Department of Psychosomatic Medicine, Hamamatsu University, School of Medicine, 1-20-1, Handayama, Hamamatsu, Shizuoka 431-3192, Japan. Tel.: +81 53 435 2158; fax: +81 53 435 2157.

E-mail address: vkagata@d1.dion.ne.jp (Y. Hirokado).

These responses to acupuncture may represent its prohomeostatic actions.

In the United States, acupuncture is actively employed as an antiaging procedure. Oxidative stresses such as those involving SOD are related to the aging processes. Furthermore, many of the so-called life style-related diseases, such as arteriosclerosis, cancers, diabetes mellitus and cerebral infraction occur in relation to oxidative stresses. In a broad sense, these disease entities are associated with the physiologic and pathologic features of psychosomatic diseases, and the biopsychosocial and existential problems that are unique to the patients are involved in the development of these disease conditions. It may be said that deviations in the patient's life style are responsible for oxidative stresses. The current study was conducted on the effects of acupuncture against oxidative stresses and antioxidant potential. Acupuncture was applied to the subjects, and the extent of oxidative stresses (d-ROMs test) and antioxidant potential (BAP test) were examined before and after the procedure.

2. Subjects and methods

Subjects were 49 healthy volunteers (30.2 ± 9.0 years old, 22 males and 27 females). Acupuncture methods were as follows: the subjects were instructed to rest on their back for 10 min, after which acupuncture stimuli were applied at 4 typical acupoints for 10 min; then the patients were instructed to lie in a prone position and acupuncture was applied to the following at 6 acupoints for 10 min. Before and after acupuncture, about 120 μ l of blood was collected from the third finger of the left hand. Using this sample, the extent of oxidative stress (d-ROMs test) and antioxidant potential (BAP test) were measured with the aid of FRAS 4 (Free Radical Analytical System) by Wismerll corporation.

In the d-ROMs test, the ROOH concentration is measured. The result is expressed in U.CARR (1 U.CARR corresponds to 0.08 mg/dl of hydrogen peroxide). The normal value is less than 300 U.CARR.

The test for antioxidation potency, called the BAP test (biological antioxidant potential), in which the reducing action by substances with reducing potential in the serum is determined. Specifically, the serum is combined with a reagent containing Fe(III) and the amount reduced by Fe(II) is determined by the extent of depigmentation of a colored solution by employing a photometer. The quantity of the reduced Fe ions is

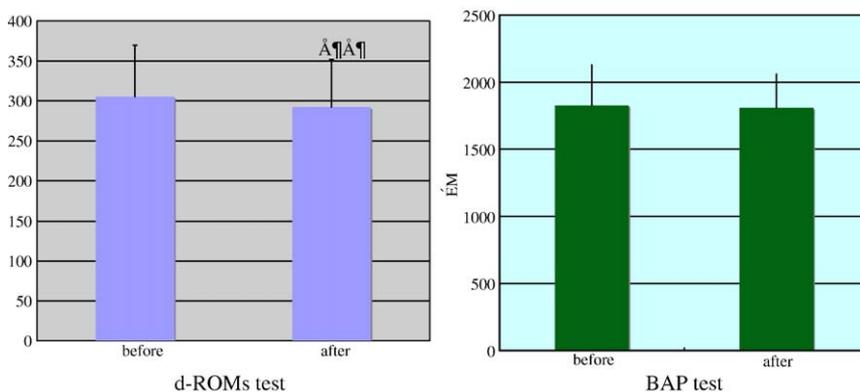


Fig. 1. d-ROMs test and BAP test before and after acupuncture.

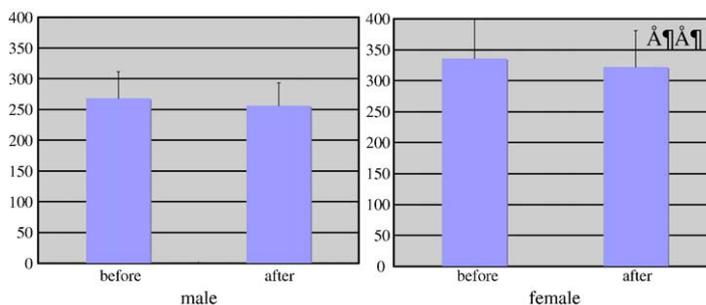


Fig. 2. d-ROMs test before and after acupuncture by gender.

interpreted to represent the antioxidant potency, which is expressed in μM or $\mu\text{Eq/l}$. The normal value is over 2000 μM .

The *t*-test was employed for data analysis.

3. Results

There were no significant differences in age between the males and females subjects. The results of the d-ROMs test were significantly reduced after acupuncture (Fig. 1, left). The results were significantly reduced among females, but no difference was noted in males (Fig. 2).

No significant changes were noted in the results of the BAP test after acupuncture. Neither was there a difference between males and females (Fig. 1, right).

4. Discussion

These results indicated that acupuncture reduces the oxidative stresses but it had no effects on antioxidant potentials. When a comparison by gender was made, the effect of the procedure on antioxidative stress was noted in females.

It is generally believed that acupuncture is preferred by females more frequently than by males [5]. Although the reason has not been given, the results of the current study also substantiated this trend.

No significant changes were noted in the results of the BAP test before and after acupuncture. These results were based on a single application of the procedure. For substantial improvement in the antioxidant potential, the evaluation should include the effects of repeated acupuncture treatment. This also awaits future studies.

Recently, there has been a trend for an increasing number of women visiting outpatient psychosomatic clinics. Acupuncture should be actively utilized as a therapeutic modality in this area where many are expected to suffer from psychosomatic disorders unique to women (such as menopausal disorders). It is believed that acupuncture will make a notable contribution to the clinical practice of psychosomatic medicine.

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