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The Effects of Nasal Massage of the *Yingxiang* Acupuncture Point on Nasal Airway Resistance and Sensation of Nasal Airflow in Patients with Nasal Congestion Associated with Perennial Nasal Allergy

Hiromi Takeuchi, Satoshi Matsuo, Shigeru Higami, Yumiko Tanaka and Hisaaki Ikoma

Department of Oto-Rhino-Laryngology, Faculty of Medicine, Tottori University, Yonago 683-0826, Japan

The aim of the present study was to determine if nasal massage of the *yingxiang* acupuncture point in patients with nasal congestion associated with perennial nasal allergy had any effect on nasal airway resistance (NAR) measured by anterior rhinomanometry and sensation of nasal airflow on a visual analogue scale (VAS). Ten patients were recruited for this study. NAR and VAS were measured before (baseline), 2 min after and 10 min after massage. NAR had no ruled changes after massage although all patients felt their symptom of nasal congestion had improved. The results of this study, when taken together, indicate that nasal massage may provide some relief mainly from the sensation of nasal congestion.

key words: acupuncture; nasal airway resistance; perennial nasal allergy; *yingxiang*

In oriental medicine, acupuncture has been used to treat a variety of diseases, including nasal congestion. Nasal congestion is treated by acupuncture at the *yingxiang* point which lies just lateral to the nostril (Beijing College of Traditional Chinese Medicine, 1980). In Japan and China the *yingxiang* point is often chosen as a massage point because patients are able to easily identify the point and perform finger massage. In nasal allergy, nasal congestion is one of the most bothersome symptoms. Since massage of this acupuncture point seems to provide relief from nasal congestion, this simple technique can be a very useful treatment without medicine and surgery. The aim of the present study was to investigate the effects of nasal massage on nasal congestion associated with perennial nasal allergy using both objective and subjective measures for nasal congestion.

Subjects and Methods

Ten patients with perennial nasal allergy caused by house dust mites were recruited for the pres-

ent study. All had at least moderately blocked noses and therefore needed to breathe through the mouth at sometime during the day. Patients were examined by clinicians and excluded from the study if they had: anatomical nasal obstruction or gross anatomical deformity; suffered from acute upper respiratory tract infection; started immunotherapy within the year; or, taken any prescribed medication which the clinician deemed unsuitable.

Subjective scores of nasal congestion and measurements of nasal airway resistance (NAR) were made before (baseline), approximately 2 min after and 10 min after treatment. Patients scored the severity of their nasal congestion on a 100 mm visual analogue scale (VAS) with the extremes labeled “nose feels extremely blocked” and “nose feels extremely clear.”

NAR was measured using anterior rhinomanometry (rhinomanometer, MPR2100, Nihon Kohden Instrument, Tokyo, Japan) at an inspiratory reference pressure of 100 Pa. NAR

Abbreviations: NAR, nasal airway resistance; VAS, visual analogue scale

to airflow is calculated from the following equation:

$$R = \Delta P/V$$

where R = resistance to airflow, in Pa/cm³/s; ΔP = transnasal pressure, in Pa; and V = nasal airflow, in cm³/s. Transnasal pressure can be measured by relating the pressure at the posterior nares to that at the entrance of the nostril. With anterior rhinomanometry, nasal airflow and the pressure at the entrance of the nostril are measured one side at a time with the pressure at the posterior nares measured from the opposite side. Therefore, NAR is determined separately for each nasal passage and the total resistance is then calculated by summing the values using Ohm's law for parallel resistance.

Treatment

The *yingxiang* acupuncture point is part of the "large intestine channel of Hand-Yangming" and is described as point LI 20 which is an acupuncture point located in the nasolabial groove, at the level of the midpoint of the lateral border of the ala nasi. Acupuncture of this point is recommended for the treatment of nasal obstruction, epistaxis and rhinorrhea (Beijing College of Traditional Chinese Medicine, 1980). Each patient was instructed to massage the bilateral *yingxiang* points by drawing small circles with their index fingers at twice per second for 30 s.

Statistical analysis

The results are given as the mean percentage change from baseline with SE. A paired *t*-test was used for the comparison of NAR and VAS values. A *P* value of < 0.05 was considered significant. NAR values are given as median (interquartile range).

Results

The 10 patients with nasal congestion associated with perennial nasal allergy consisted of 7 males and 3 females, aged between 9 and 38 years (mean 19.1), with a baseline total NAR of 0.27 Pa/cm³/s (0.14).

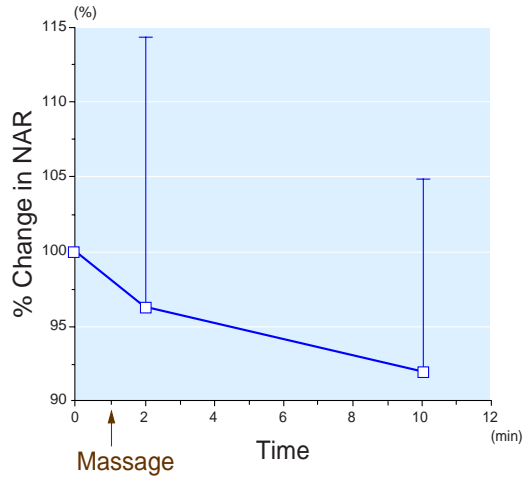


Fig. 1. Mean percentage changes in total nasal airway resistance (and SE bars) in 10 patients treated with nasal massage. The arrow represents the time of treatment. NAR, nasal airway resistance.

Figure 1 illustrates the percentage changes in total NAR from baseline. There was no significant difference in percentage changes in total NAR at any time point during the study.

Figure 2 illustrates the percentage changes in VAS score from baseline. There were significant changes in VAS scores between baseline and the 2 min or 10 min time point (*P* < 0.05).

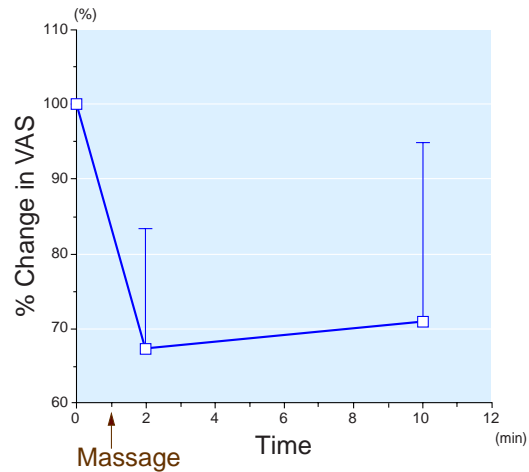


Fig. 2. Mean percent changes in nasal sensation of airflow (and SE bars) in 10 patients treated with nasal massage. The arrow represents the time of treatment. Nasal sensation of airflow was scored on a 100 mm visual analogue scale with the extremes labeled "nose feels extremely clear" and "nose feels extremely blocked." VAS, visual analogue scale.

Discussion

The aim of the present study was to determine if nasal massage of the *yingxiang* acupuncture point had any effect on NAR or sensation of nasal airflow in patients with nasal congestion associated with perennial nasal allergy.

The measurement of sensation has proved a difficult task in many fields of human research, and nasal physiology is no exception. The 100 mm VAS which was used in this study was first introduced into medicine by Aitken who used the scale to investigate mood changes in airline pilots and the degree of asphyxia in volunteers breathing through mouth pieces of different resistance (Aitken, 1964). The VAS was introduced as an instrument to measure nasal sensation of airflow in 1988 in a study on the effects of D and L isomers of menthol on nasal sensation of airflow (Eccles et al., 1988). The VAS has since been used in many similar experiments and has become a standard measure of nasal sensation of airflow (Jones et al., 1989; Fairley et al., 1993; Roithmann et al., 1994; Simola and Malmberg, 1997).

The results for NAR show that there was no significant difference between pre- and post-massage. However, the sensation of nasal airflow measured using VAS improved post-massage in all patients. These findings, when taken together, indicate that nasal massage may provide some relief from nasal congestion. Nasal massage could provide relief from nasal congestion by stimulation of the branches of the trigeminal nerve which supply the massage area. The infra-orbital branches of the trigeminal nerve have been implicated in serving the sensation of nasal airflow and the control of sneezing (Davies and Eccles, 1985; Hensel et al., 1974; Wallois et al., 1991) so there is a reasonable basis for hypothesizing that mechanical stimulation of the branches of the infra-orbital nerve could provide some relief from nasal congestion.

The present study demonstrates that there is no relationship between the changes in objective and subjective measures of nasal conges-

tion used in the study. This supports other studies which have found no correlation between objective and subjective measures of nasal congestion (Eccles et al., 1987; Naito et al., 1988; Sipila et al., 1995; Takeuchi et al., 1999).

The results of this study when taken together, indicate that nasal massage of the acupuncture point may provide some relief from nasal congestion and that further studies involving a larger patient population are warranted to investigate the efficacy of nasal massage in the treatment of nasal disease.

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