

Original Article

Effect of *Sim-eui* Point on Allergic Rhinitis, Rhinosinusitis, and Other Causes of Nasal Obstruction

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국문초록

비폐색에 대한 心醫穴의 임상 효과

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목적 : 이 연구는 알레르기 비염 또는 비부비동염으로 인한 비폐색증에 대한 침치료의 효과를 입증하고, 신혈인 심의혈의 임상적 효과를 알아보고자 시도하였다.

방법 : 2009년 9월 22일부터 11월 3일까지 2회 이상 경희의료원 동서비염클리닉에 내원하여 침 치료를 받은 비염환자를 대상으로, 무작위배정방법에 따라 실험군 또는 대조군으로 배정하였다. 실험군은 routine 혈위인 신회 · 상성 · 신경 · 양두유 · 양찬죽 · 양지창에 심의혈을 추가하였고, 대조군은 routine 혈위에 양영향을 추가하였다. 유침 시간은 각 군에서 15분간으로 하였다.

유효성 평가 도구로는 SNOT-20를 사용하여 비염의 전반적 증상 점수 변화를 측정하였고, VAS를 사용하여 비폐색 완화 효과의 정도를 측정하였다. 평가시기는 치료 전후로 하였고, 통계분석은 치료 전후 SNOT-20 차이의 경우 Wilcoxon Signed Ranks Test로, VAS 비교는 Mann-Whitney Test를 이용하여 검정하였다.

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I. Introduction

Rhinitis is defined as the occurrence of annoying nasal symptoms including discharge, itching, sneezing, congestion, and pressure. It is classified into specific syndromes recognized by clinical patterns, such as allergic and non-allergic rhinitis, occupational rhinitis, atrophic rhinitis, etc. Allergic rhinitis is associated with a symptom complex characterized by paroxysms of sneezing, rhinorrhea, nasal obstruction, and itching of the eyes, nose, and palate. It is also frequently associated with postnasal drip, cough, irritability, and fatigue¹⁻³. Nasal inflammation associated with allergic rhinitis can also cause obstruction of the sinus osteomeatal complex, thereby predisposing to bacterial infection of the sinuses^{4,5}.

The occurrence of allergic rhinitis varies according to reports, but it is considered a common respiratory illness that 10-25% of the population experiences⁶.

Nasal obstruction is a major symptom of rhinitis that brings about sleep disorder, learning disability, decreased productivity, and low quality of life. Secretion of inflammatory material and activation of inflammation related cells cause nasal obstruction and this leads to sleep disorder and daytime sleepiness. Therefore it is crucial to reduce nasal obstruction without sedation in the treatment of rhinitis⁷.

The treatment of allergic rhinitis involves such modalities as allergen avoidance, pharmacologic therapy, and when appropriate, immunotherapy⁸. For satisfactory symptom control, many patients require pharmacotherapy such as glucocorticoids or antihistamines. Antihistamines can cause significant sedation, and 20 percent or more of patients report central nervous system symptoms.

With the increasing popularity of acupuncture treatment for rhinitis, Kyung Hee Medical Center has been operating an East-West medical collaboration system, centering on immunotherapy and acupuncture administered together. The center has

been in operation since 2000, treating around 2,600 patients. Acupuncture is administered on points commonly used for nasal problems, for example GV₂₂, GV₂₃, GV₂₄, ST₈, BL₂, ST₄, and LI₂₀. In the course of treatment, we have noticed excellent effect on nasal blockage using a novel acupuncture point, over the preexisting LI₂₀. We named the extra acupuncture point *Sim-eui* and thus report its clinical efficacy by verification through a randomized control study comparing with pre-existing acupuncture point.

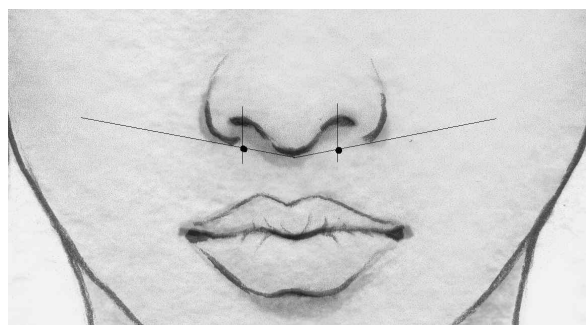


Fig. 1. Diagram of *Sim-eui* point

Sim-eui point is a novel extra acupuncture point developed by Professors Kim Chang-hwan and Kim Yong-suk in 2006, with the effect of relieving nasal obstruction, located underneath the nostrils, between the top of the philtrum and the bottom of the ala of nose.

II. Methods

1. Participants

1) Inclusion criteria

Rhinitis patients visiting the East-West Collaboration Center from September 22, 2009 to November 3, 2009 were considered for the study experiment. Male and female patients of over ten years of age who are able to fill in a simple questionnaire, who visited the clinic more than twice during the study period were selected.

2) Exclusion criteria

Acute development of symptomatic sinusitis in between two treatments, and oral intake of any

inappropriate medicine judged to act directly on rhinitis (i.e. cold medication, steroids or anti-histamines) in 30 days were excluded from the study.

3) Randomization

The selected subjects were randomized into experiment and control groups. 50 envelopes were prepared with 25 allocations of experimental group and control group in each.

2. Intervention

Traditional Chinese medical approach was used for the acupuncture treatment, choosing points such as GV₂₁, GV₂₂, GV₂₃, bilateral ST₈, bilateral BL₂, and bilateral ST₄, as documented in ancient oriental medical texts for the treatment of nasal symptoms^{2,3}. Bilateral *Sim-eui* point was added for the experiment group.

Stainless steel needles manufactured by Dong Bang, 40 mm in length and 0.25 mm in diameter, were used. A total of eleven acupuncture needles were inserted at the depth of 0.5 cun, on the subcutaneous layer of the skin. No typical response, or de qi, was required. Needles were manually stimulated for a second, and retained for 15 minutes.

At least two treatment sessions were done with an interval of a week. No other intervention was performed. The practitioner who administered acupuncture had more than thirty years of clinical experience and expertise in treating allergic syndromes with acupuncture.

For the control group, the same points were used except for bilateral *Sim-eui*, instead bilateral LL₂₀ was added. Since LL₂₀ is also commonly used for nasal symptoms, active comparison with *Sim-eui* was expected.

3. Outcome measures

Each subject completed the survey questionnaire at the initial and final visits. The survey included SNOT-20 which is a symptoms score scale and an

improvement level scores that is a kind of visual analogue scale. The blinded assessor helped the subjects with filling in the questionnaire including SNOT-20 and the VAS. The group allocation is known to the assessor after data collection at the last step of processing for statistics.

1) SNOT-20

SNOT-20 questionnaire is a valid patient-based tool for assessing rhinosinusitis health status and quality of life. Each of the 20 individual items are scored from 0 to 5, with 0 indicating no problem and 5 indicating that the particular item had the greatest burden. The 20 items are: 'Need to blow nose'; 'Sneezing'; 'Runny nose'; 'Cough'; 'Post-nasal discharge'; 'Thick nasal discharge'; 'Ear fullness'; 'Dizziness'; 'Ear pain'; 'Facial pain/pressure'; 'Difficulty falling asleep'; 'Wake up at night'; 'Lack of a good night's sleep'; 'Wake up tired'; 'Fatigue'; 'Reduced productivity'; 'Reduced concentration'; 'Frustrated/restless/irritable'; 'Sad'; and 'Embarrassed'.

The total SNOT-20 score was calculated by adding up the response values of each individual item and dividing by the total number of items answered. The difference in total score between initial and final visit is a measure of the change in rhinosinusitis health status and quality of life. A negative change score implies improvement in rhinosinusitis health status, and based on previous research, a change of -0.8 or greater indicates a clinically significant improvement⁹.

2) VAS

A Visual Analogue Scale of range from 0 to 4 was used to measure the degree of nasal blockage symptom relief. 0 meant there was no improvement of symptom; 1 meant symptom relief was insignificant; 2 meant there was moderate relief from nasal obstruction; 3 meant there was much relief; and 4 meant no obstruction was felt during acupuncture treatment.

Since patients replied the questionnaire twice, the two VAS scores were averaged.

4. Statistical analysis

The program used for statistics process was SPSS 15.0 for Windows. Kruskal-Wallis Test was done to get the demographics of study subjects and to verify the homogeneity between groups. To compare symptom scores in each group before and after treatment, Wilcoxon Signed Ranks Test was done. Comparing the effect of the two kinds of acupuncture points on relief from nasal blockage was done using Mann-Whitney Test. All the statistics were verified at a significance level of 5%.

III. Results

1. Patients characteristics

The 36 patients consisted of 19 male(52.8%) and 17 female(47.2%) patients. In each group the gender ratio(male:female) was 10:7 in the experiment group and 9:10 in control group. The average age of the experiment group was 30.12±13.53, and that of the control group was 32.74±18.24.

The initial SNOT-20 scores before treatment was 2.76±0.99 in the experiment group and 2.91±1.05 in the control group. There was no significant difference of gender, age, and initial rhinosinusitis health status between two groups(Table 1).

2. Treatment effects

1) Treatment effects on SNOT-20

The SNOT-20 score before treatment was mean 2.84±1.01 in total patients, 2.76±0.99 in the experi-

ment group, and 2.91±1.05 in the control group. The SNOT-20 score after treatment was mean 2.08±1.08 in total patients, 2.08±0.96 in the experiment group, and 2.10±1.20 in the control group. The overall effect showed significant improvement after acupuncture in both groups as well as in the whole

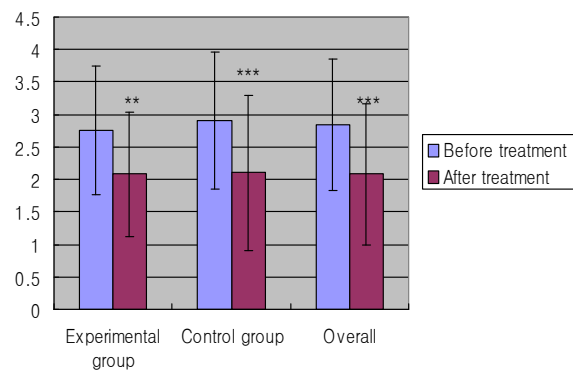


Fig. 2. Change of SNOT-20 scores compared with before and after treatment

** : $p < 0.01$. *** : $p < 0.001$.

package(Fig. 2).

The difference of SNOT-20 scores between before and after treatment in total patients was mean 0.75(±0.79), in the experiment group a mean of 0.68(±0.80), and in the control group was mean 0.81(±0.80). There was no significant difference in the results between groups. (p -value=0.80) Although the Wilcoxon Signed Ranks Test showed significant difference of results after treatment, generally a change of -0.8 or greater indicates clinically significant improvement, so the results closely miss the meaningful level except for the control group.

Of the 20 entries of SNOT-20, 18 categories showed significant improvement in the total patients according to Wilcoxon Signed Ranks Test. The two entries that did not show significant

Table 1. General Characteristics

	Age(year)		Gender(n)		Initial SNOT-20	
	Mean	S.D.	Male	Female	Mean	S.D.
Experiment(n=17)	30.12	13.53	10	7	2.76	0.99
Control(n=19)	32.74	18.24	9	10	2.91	1.05
Total(n=36)			19	17		

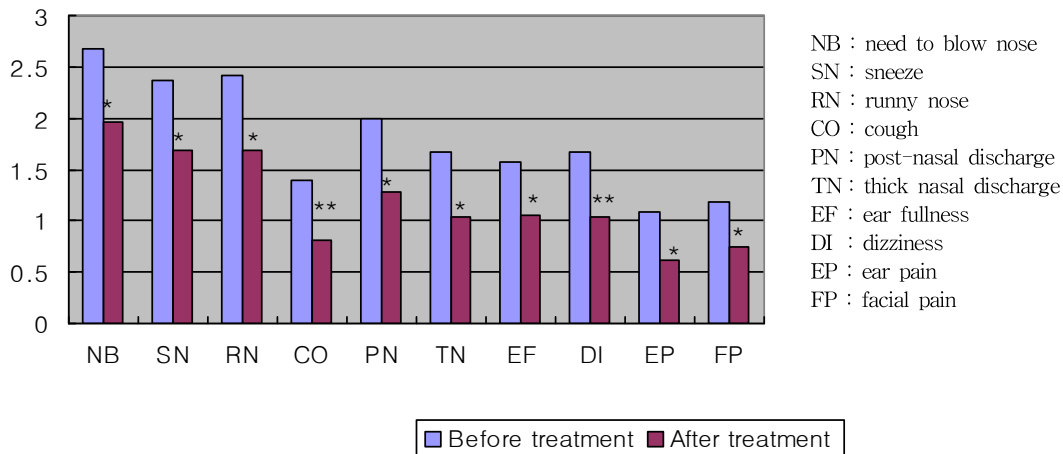


Fig. 3. Change of item scores of SNOT-20 compared with before and after treatment
 * : $p < 0.05$. ** : $p < 0.01$.

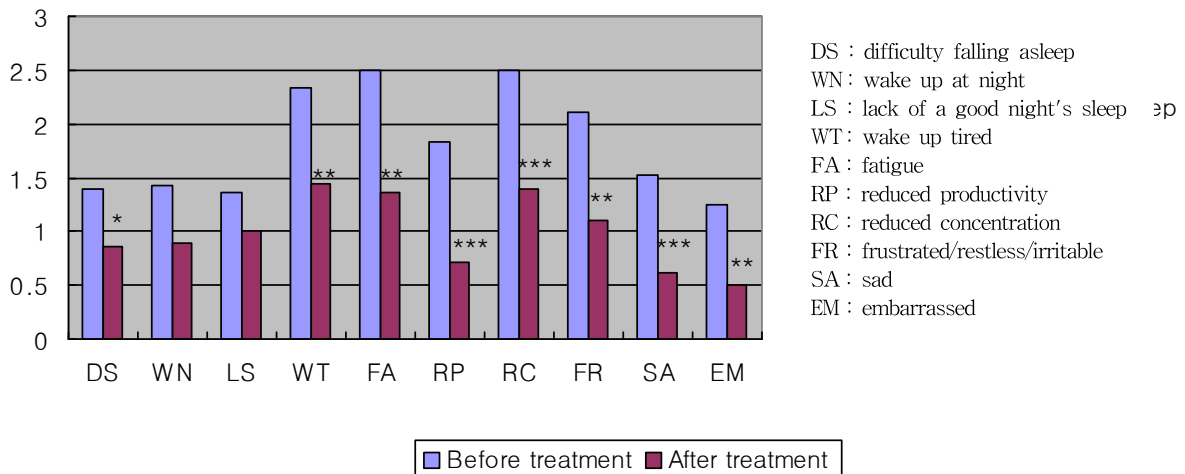


Fig. 4. Change of item scores of SNOT-20 compared with before and after treatment
 * : $p < 0.05$. ** : $p < 0.01$. *** : $p < 0.001$.

differences were 'Wake up at night' and 'Lack of a good night's sleep'(Fig. 3, 4).

2) Treatment effects on VAS

The level of immediate relief from nasal blockage during acupuncture needle maintenance was measured by a kind of VAS scoring system. The mean of results from the total patients was 2.51 ± 0.98 , which is a score between "moderate relief" and "much relief". The mean of results from the experiment group was 3.29 ± 0.61 , positioned between "much relief" and "no symptom felt". The result from the control group implied somewhat

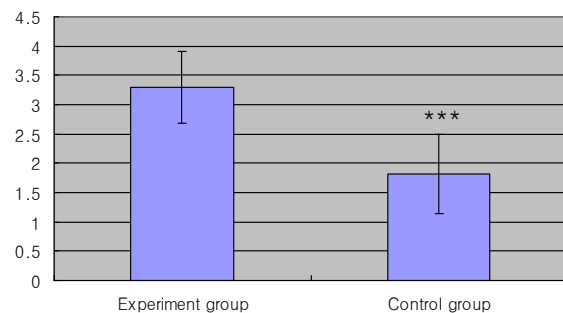


Fig. 5. Mean VAS scores
 *** : $p < 0.001$.

less improvement with a mean of 1.82 ± 0.67 , between "little relief" and "moderate relief". The

difference between the results of the experiment group and the control group was statistically significant(Fig. 5).

IV. Discussion

Nasal obstruction is a condition with various facets. It can be an unwelcome guest of bedtime depriving one of a sound night's sleep, or it can cause sleep disorders or nutritional disorders in young children by disabling normal breathing. Continued oral respiration can cause disorders in development of the maxilla. Elongated nasal blockage can bring about depressed mood, loss of interest, lack of attention and memory failure, and can manifest as falls in academic achievement in students, called nasal apnoea¹⁰.

There are numerous causes for nasal obstruction because of the complex anatomy of the nose and paranasal sinuses and the physiology of normal airflow through the nose¹¹. Structural problems that result in nasal obstruction are divided into congenital and acquired abnormalities and tumor. Congenital abnormalities include congenital pyriform aperture stenosis, choanal atresia, and deviation of the septum^{12,13}. Deviation of the septum is also one of the most common causes of nasal obstruction, for the septum is easily injured and result in alteration in the cartilage and/or bone of the septum. Enlarged adenoids, nasal polyps and mucocoeles are other acquired abnormalities of the nose causing obstruction. Benign or malignant tumors in the nasal cavity and sinuses may cause nasal obstruction and discharge¹¹.

Occasionally, patients notice normal nasal reflexes that cause periodic nasal congestion, rhinorrhea, or sneezing. Increased congestion with supine position and increased congestion in the lower nasal passage when lying on one side are called postural reflexes. Hot and cold cutaneous temperature reflexes, and visible and infrared light reflexes are among other normal nasal reflexes¹⁴.

Common functional causes of nasal obstruction are rhinitis and sinusitis. Rhinitis is the inflammation of the nasal passages with the presence of one or more of nasal symptoms from sneezing, anterior or posterior rhinorrhea, nasal congestion, and nasal itching. It is a common disease affecting nearly everyone at one time or another. Rhinosinusitis is a term that encompasses disorders affecting both the nasal passages and paranasal sinuses. Symptoms of sinus involvement include nasal congestion, posterior nasal drainage, facial pressure and pain, headache, fatigue, and reduced sense of smell¹⁵.

Allergic rhinitis is reported in About 10% of children and 10~15% of adolescents in Korea. The occurrence of perennial allergic rhinitis is reported to be 1.14% and rising¹⁶. The cause for the increase of allergic rhinitis is thought to be due to environmental pollution, increased time spent indoors, and decreased chance for acquired immunity from lack of exposure¹⁷.

The treatment of allergic rhinitis is largely divided into Western medical treatments including allergen avoidance, pharmacotherapy and immunotherapy, and Eastern medical treatments such as acupuncture, herbal medicine, and topical treatment. Allergen avoidance is the most safe treatment, but it is insufficient to get satisfactory results. Pharmacotherapy is the most commonly used means used for the treatment of allergic rhinitis, using intranasal glucocorticoids and antihistamines relatively without side effects, but the mechanism is through mitigation of symptoms and not fundamentally resetting the patient's immune system¹⁸. The immunotherapy used today is a method of using immune tolerance by injecting the antigen subcutaneously, but it has problems of long period of treatment, expensive cost, the fact that it has to be injected and the possibility of anaphylaxis¹⁹.

Acupuncture has been studied for the treatment of allergic rhinitis. Lee et al. identified 116 potentially relevant articles in a systematic review, of which 12 met criteria for inclusion by studying needle acupuncture, examining clinically relevant

outcomes, and including a control, sham, or comparator treatment group. The results were different for seasonal and perennial allergic rhinitis. There were no effects on seasonal symptoms, although some benefit was apparent for perennial symptoms. The magnitude of effect could not be estimated. Drug therapy could not be reduced as a result of acupuncture in either type of rhinitis²⁰.

In a Korean journal published in 2004, Kim et al. observed 16 papers published abroad and searched from PubMed, and concluded that compared with a 1992 report denying the effect of acupuncture on rhinitis symptoms, recent reports have been more favorable towards acupuncture, reserving judgement and not tabooing acupuncture although not recommending it enthusiastically²¹.

Park et al. carried out an RCT to verify the effect of acupuncture administered on LI₂₀, GV₂₃, and LI₄ points compared with minimal subcutaneous stimulation for nasal blockage, by measuring the volume of the nasal cavity with an ultrasound rhinomanometer²².

The nose is anatomically closely related to LI (large intestine) Meridian, ST(stomach) Meridian, SI(small intestine) Meridian, and it is also in the passway of the GV(governing vessel) and Yin heel vessel. Of the organs the nose is related to lung, spleen, heart, stomach, large intestine and bladder. In classic texts of oriental medicine, the most frequently used meridians for nose problems are GV, LI, BL(bladder) and ST in order. The most commonly used acupuncture points are LI₂₀, LI₄, GV₂₃, GV₂₀, ST₃₆, EX-HN₃(located at the glabella), GV₁₆, BL₁₀, GB₂₀, and LI₁₉ in order²³.

LI and ST Meridians are widely used because of the link between Yangming and the causes of nasal disorder. The usage of BL Meridian and GV is explained by the relationship with external causes of the illness²⁴. Large intestine is the Yang organ of lung, and stomach is where the body receives qi. In Neijing all problems of the body's orifices come from gastro-intestines. Clear qi comes from heaven and the nose controls its intake, therefore without stacked fire or heat in the guts, upward clear qi

does not develop any disease. Nasal obstruction and sneeze happens when a person who originally has stagnated heat contacts cold wind²⁵.

Extra acupuncture points are located elsewhere from the passage of meridians. But the body is covered with meridian system in every part, such as the collateral vessels. Therefore the "extra" in "extra acupuncture point" does not mean it is outside of meridian system, but means that it has special healing effect on some illnesses²⁶.

The theoretical evidence for the effect of *Sim-eui* point can be argued thus. It is located near useful acupuncture points for nose problems. As an effort to eradicate the existence of the meridians Chinese scientists studied the passage of electric current in the body, and found that the lines were relatively clustered in the limbs but distributed widely in the trunk and head. Compared with ancient diagrams of the meridians, the acupuncture points of the head differed from the sensitive parts of electric test. This means that there may be acupuncture points with more powerful effects than the existing acupuncture points of the meridians²⁶. Around *Sim-eui* point are LI₂₀, GV₂₆, EX-HN₉ (through the mucous membrane under the inferior nasal concha) and LI₁₉. LI₂₀ and LI₁₉ both have effects of ventilating nostrils. EX-HN₈, an extra point on the rounded sides of the nose before EX-HN₉, also ventilates the nose. Long acupuncture needle is inserted in EX-HN₉ through the nasal mucosa, which is an effective treatment procedure for nasal blockage.

In our study, the difference of effects between *Sim-eui* and LI₂₀ on nasal obstruction was definite, clearly showing that *Sim-eui* point is a very useful means of treatment as well as the subject of future studies.

V. Conclusion

In this study of 36 rhinitis patients, acupuncture turned out to be an effective means of treatment,

showed by SNOT-20 scores.

A novel acupuncture point, named *Sim-eui* turned out to be more effective in relieving nasal obstruction symptom at the time of treatment, compared with the preexisting LL₂₀.

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