Topical Herbal Application to Acupoints for Treatment of Allergic Rhinitis: A Randomized, Double-Blind, Placebo-Controlled Clinical Study

Li-Man Yang
Department of Chinese medicine, Tainan Municipal Hospital

Summary

In traditional Chinese medicine, topical dressing of herbs over specific acupoints to treat allergic rhinitis is frequently used and a certain degree of clinical benefit has been observed for several centuries. Many medical centers have their own herbs and acupoints formula. However, this treatment method usually accompanied by severe bullae formation over the applied acupoints and has indeterminable effect. In this randomized, double-blind, placebo-controlled study, we designed a new herbs and acupoints combination for treatment of allergic rhinitis. This report showed excellent treatment result and low complication rate.

Key word: allergic rhinitis, topical herbal application to acupoints, bullae

Introduction

In traditional Chinese medicine, treatment of allergic rhinitis with topical application of herbs mainly includes zingiberis rhizoma, corydalis ambigua, radix, kansui and sinapis semen\(^ {1,2} \). These herbs can be taken orally or made into topical application dressing, and are frequently used to treat upper respiratory symptoms or allergic symptoms of nose and eyes. When used as topical dressing, the herbs are applied over specific acupoints to improve their effectiveness. Many traditional medicine centers prefer using topical herbal application over oral form due to convenience and good
drug compliance.

Many different herbal components and acupoints are mentioned in ancient textbook references\(^{(1,2)}\). Although effective and convenient to use, application of these components are often accompanied by bullae formation over the applied site, affecting almost all the patients in our experience.

In current literature, we have not been able to find any effective, low complication rate treatment using topical herbal application for allergic rhinitis. This randomized, double-blind, placebo-controlled study was designed to develop a new combination of acupoints sites and topical application of herbs for allergic rhinitis, and to evaluate the effectiveness and side effects of this new method.

**Materials and Methods**

**Study design**

This study used a random, double-blind design and lasted for 21 days under well-defined conditions. The patients’ informed consents of medical study and legal permission by the government were obtained. The study included four visits by the patients, each at one-week interval. During the first visit, we performed a pre-study screening interview and assigned the patients to either experimental group or control group in a double-blind fashion. The experimental group received topical herbal application while the control group received placebo. The blood eosinophil count for each patient was checked before the first treatment. Before receiving topical herbal application, the patients were evaluated for symptoms and the resulting questionnaire scores served as the baseline. On the same day, patients received their first treatment application. On the 7th day (visit 2) and the 14th day (visit 3) patients returned to our clinic and received the 2nd and 3rd treatment. On day 21, patients were evaluated again by completing the questionnaire, and their blood eosinophil counts were checked.

**Inclusion and exclusion criteria**

The participants in this study were all patients who paid a clinical visit to Tainan Municipal Hospital during July and September 2004, with a documented history of allergic rhinitis for at least 2 years. The ages of the enrolled patients were between 3 and 74 years old. All patients were clinically symptomatic with at least 10 points of nasal symptom scores at the first screening visit. Any patients who had taken other medications for allergic rhinitis or stopped taking them for shorter than three months, patients with severe skin allergy or other lesions over herbal application sites, women at pregnancy or nursing, and patients with other diseases and had to take medications during the study period or with
any conditions that might influence their eosinophil count were excluded from this study.

Randomized, double-blind study

Following the first visit, the enrolled patients were divided into experimental or control group, using randomly generated numbers. Experimental group received herbs while control group received the placebo. Topical applications were administered by different physicians located in a separate room of the clinic.

Herbs and placebo

The herbs used in this study include zingiberis rhizoma, glycyrrhizae radix, corydalis ambigua, asari radix, borneo, euphorbiae kansui radixi and sinapis semen. The herbs were made into ointment for easy application. For placebo, we used ground rice powder, as it had a similar color as that of herbs. The topical use of rice powder had no known therapeutic effect.

Herbal application

We applied herbs on three acupoint: Du Mo (GV14) and bilateral bladder (B13) simultaneously. The application time was 4 hours. All the herbs were applied by our physician and nursing members, to avoid any problems with medical compliance or wrong acupoints. After the herbal application, the dressing was removed by our physician members.

Safety and tolerability evaluation

All patients received topical herbal application at our clinic. Patients were carefully evaluated by our physician members before and after the treatment. We recorded patients’ skin conditions, vital signs, and any adverse effects that might harm the patients. None of the patients needed to stop the treatment due to safety or tolerability consideration.

Evaluation of efficacy

The primary endpoint was the efficacy of the topical herbal application for a treatment period of 21 days by comparing the nasal assessment, global assessment and quality-of-life assessment score between the first and the fourth visits. The secondary endpoint was to compare the changes in the patients’ blood eosinophil count before and after the therapy.

We used a 7-point scale to score the severity of nasal symptoms, global symptom severity, and quality-of-life assessment. The nasal symptom severity scale included sneezing, runny nose, stuffiness, itchy nose, postnasal drip and total nasal symptoms. The scale was defined as none to an occasional limited episode symptom (score 1) to unbearably severe symptom (score 7). The global assessment scale and quality-of-life
assessment were defined as excellent (score 1) to severely affected (score 7).

Statistical analysis

For baseline comparisons, patients’ characteristics were statistically examined by independent t-tests for all the continuous variables and \( \chi^2 \) tests for the categorical variables (gender and complication) between experiment and control groups. These variables of symptom assessments were then treated as dependent variables of linear regressions separately for their differences or ratio (eosinophil count), before and after the treatment of topical herbal application on acupoints or placebo (univariate analyses). Afterwards, age, gender and duration of illness were controlled for potential confounders in the advanced statistical explorations for estimating the effect of the treatment. With such an attempt of analysis, we could check the effect of treatment about the increase/decrease of symptom scores and eosinophil ratio. SPSS 12.0 for Windows was utilized to perform all the statistical analyses and the significance level (\( \alpha \) value) was set as 0.05.

Results

Demographic characteristics and baseline comparability

A total of 320 patients were enrolled in this study which lasted from July 2004 to Sep 2004. Five patients were excluded from this study due to failure of a follow-up visit at our clinic, while another 8 patients were excluded due to other illness that might influence their eosinophil count. The mean ages of the 154 patients in experimental group and 153 patients in control group were 22.1±16.1 and 23.8±17.9, respectively (p=0.38). The patient’s gender in experimental was 80/74 (male/female) and 75/78 in control group, also showed no significant difference.

The nasal symptom scores, global assessment scores, quality-of-life scores and eosinophil count at the first visit were not significantly different between the two groups (Table 1).

Efficacy

Symptom assessment - nasal symptoms. No significant differences in the nasal symptom score at baseline between the two groups. After the third treatment, significant differences were observed in the scores for each symptom in experimental group: sneezing \( p<0.00 \), runny nose \( p<0.00 \), nasal stuffiness \( p=0.02 \), itchy nose \( p=0.04 \), postnasal drip \( p=0.02 \), and total nasal symptom \( p<0.00 \). In the control group, there were no statistically significant differences before and after treatment in all symptoms: sneezing \( p=0.66 \), runny nose \( p=0.89 \), nasal stuffiness \( p=0.69 \), itchy nose \( p=0.31 \), postnasal drip \( p=0.31 \),
and total nasal symptom (p=0.81).

**Global assessment and quality-of-life assessment**

The total global assessment score and quality-of-life assessment score at baseline showed no significant differences between the 2 groups (p=1.00). No significant differences were observed in global assessment between baseline and after 3 treatments in control group (p=1.00). In experimental group, the global assessment scores before and after treatment were significantly different from each other (p<0.01). However, the quality-of-life assessment score in experimental group showed no significant different (p=0.08).

**Eosinophil count assessment**

The patients’ eosinophil counts before treatment (visit 1) served as baseline. We compared their eosinophil counts by their decreasing ratio between pre-treatment (visit 1) and post-treatment (visit 4). There were no significant differences between these two groups in the baseline results (p=0.12). After full course of treatment, the eosinophil count in control group showed no significant differences between pre-treatment and post-treatment (p=0.42). Significant differences were observed between pre-treatment and post-treatment (p<0.01) in experimental group (Fig 1).

**Adverse events**

A total of 20 adverse events were reported in this study. Eighteen patients in experimental group reported bullae formation over herbal application site and 2 patients reported dry mouse for hours. There was no adverse event reported in control group.

**Discussion**

In traditional Chinese medicine, topical herbal application over acupoints is widely used in many diseases. However, few evidence-based studies have been reported. Almost all of our references were derived from ancient textbooks\textsuperscript{1,2,4,5}. In these references, for the treatment of allergic rhinitis, many different herb components and acupoints are mentioned. However, currently there is no universal agreement on any major components for treatment of allergic rhinitis.

*Zingiberis rhizoma*, *Glycyrrhizae radix*, *Asari radix* and *Sinapis semen* are frequently used herbs due to their powerful effects on treating upper respiratory symptoms or allergic symptoms of nose and eyes. Unfortunately, when used as topical applications, they are always accompanied by severe bullae formation. Before this study, we tried to change the herbs and acupoints composition to avoid this complication. We added *Glycyrrhizae radix* and borneol. This change resulted in a dramatic improvement concerning the bullae complication.
This double-blind, randomized, placebo-controlled clinical study attempted to demonstrate the efficacy and safety of our topical herbal applications over acupoints in the treatment of allergic rhinitis. The results showed that the eosinophil count, nasal symptom scores were all reduced significantly from baseline after three weeks of treatment. Quality-of-life was also improved significantly.

In our experience, topical herbal application over acupoints for treatment of allergic rhinitis is a challenging topic. Results of this study showed that our herbal and acupoint formulae are a safe, effective, convenient, and cost effective (less than 1 US dollar for each treatment course) way to treat allergic rhinitis.

Reference

1. 張璐: 張氏醫通，中國中醫藥出版社，1995：85。
2. 王小平: 中國外治療法，江蘇科學技術出版社，1997：79-80。
4. 宋・王執中：針灸資生經，上海科學技術出版社，1959；4：34-40。
5. 孫思邈：備急千金要方，人民衛生出版社，2002：109-112。

Fig 1

After full course of treatment, the eosinophil count in control group showed no significant differences between pre-treatment and post-treatment (p=0.42). Significant differences were observed between pre-treatment and post-treatment (p<0.01) in experimental group.
### Table 1

<table>
<thead>
<tr>
<th></th>
<th>Experimental group</th>
<th>Placebo group</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sneezing</td>
<td>3.51±1.45</td>
<td>3.54±1.47</td>
<td>0.90</td>
</tr>
<tr>
<td>Runny nose</td>
<td>3.55±1.5</td>
<td>3.55±1.5</td>
<td>0.99</td>
</tr>
<tr>
<td>Nasal stuffiness</td>
<td>4.01±1.66</td>
<td>3.86±1.69</td>
<td>0.43</td>
</tr>
<tr>
<td>Nasal itching</td>
<td>3.35±1.55</td>
<td>3.36±1.61</td>
<td>0.47</td>
</tr>
<tr>
<td>Post-nasal drip</td>
<td>3.27±1.63</td>
<td>3.32±1.69</td>
<td>0.41</td>
</tr>
<tr>
<td>Total nasal symptom</td>
<td>3.78±1.50</td>
<td>3.73±1.55</td>
<td>0.55</td>
</tr>
<tr>
<td>Global assessment</td>
<td>4.79±1.38</td>
<td>4.49±1.46</td>
<td>0.60</td>
</tr>
<tr>
<td>Quality of life</td>
<td>3.56±0.76</td>
<td>3.64±0.77</td>
<td>0.85</td>
</tr>
</tbody>
</table>

Before treatment, no significant difference between experimental and control group

### Table 2

<table>
<thead>
<tr>
<th></th>
<th>Experimental group</th>
<th>Placebo group</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sneezing</td>
<td>2.97±1.16</td>
<td>3.48±1.60</td>
<td>0.00</td>
</tr>
<tr>
<td>Runny nose</td>
<td>2.86±1.23</td>
<td>3.56±1.49</td>
<td>0.00</td>
</tr>
<tr>
<td>Nasal stuffiness</td>
<td>2.85±1.44</td>
<td>4.04±1.53</td>
<td>0.02</td>
</tr>
<tr>
<td>Nasal itching</td>
<td>2.01±1.19</td>
<td>3.28±1.44</td>
<td>0.04</td>
</tr>
<tr>
<td>Post-nasal drip</td>
<td>2.10±1.30</td>
<td>3.19±1.50</td>
<td>0.02</td>
</tr>
<tr>
<td>Total nasal symptom</td>
<td>3.11±1.17</td>
<td>3.79±1.45</td>
<td>0.00</td>
</tr>
<tr>
<td>Global assessment</td>
<td>3.70±1.24</td>
<td>4.79±1.36</td>
<td>0.04</td>
</tr>
<tr>
<td>Quality of life</td>
<td>3.56±0.76</td>
<td>3.75±0.68</td>
<td>0.06</td>
</tr>
</tbody>
</table>

After treatment, the symptom score showed significant difference between experimental and control group
穴位貼藥治療過敏性鼻炎：隨機雙盲的臨床研究

楊麗滿
台南市立醫院中醫部

摘要

在傳統中醫治療，局部敷藥治療過敏性鼻炎已有悠久的歷史，目前許多醫療中心也有獨自所使用的藥物配方，這個治療方法常伴隨局部穴位大水泡的形成，因此設計了一個臨床研究使用隨機雙盲的治療方式，組合一個新的藥物配方及穴位，再與安慰劑的對照組作統計，可以得到新藥物配方的有效評估，及較低的水泡形成率。
關鍵詞：過敏性鼻炎、穴位貼藥、水泡