The Efficacy of Traditional Korean Medicine on Atopic Dermatitis

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Introduction

It is known that atopic dermatitis is one of many chronic inflammatory skin diseases, which usually starts with a unique pattern of symptoms from as early as infancy. It has been suggested that atopic dermatitis is a kind of hereditary immunological disorder. Therefore changes in the composition of various immunological parameters are found in patients with atopic dermatitis. Clinically, patients with atopic dermatitis demonstrate typical lesion formation and have severe itching. Frequently patients suffer from other allergic diseases as well as a family history of allergic disease.

Topical corticosteroids have been used as a main therapy in the treatment of atopic dermatitis. But even low potency corticosteroids, if applied for long term, are associated with various adverse effects (skin atrophy, telangiectasia, depigmentation or hyperpigmentation), and increasing resistance to steroids. The prolonged use of corticosteroids followed by their sudden cessation results in exacerbation of the symptoms of eczema in area and severity. Also, even if used topically and applied to a large area for long term, symptoms like fatigue, fever, myalgia and anorexia can develop as a result of dysfunction of the adrenal glands.

Chungnoi Atopy Clinic has been trying to treat patients with atopic dermatitis with therapies of constitution acupuncture and herbal medicine combined with herbal ointments and bathing products, and has performed an evaluation based on the results of the treatment by measuring

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Abstract

This study was performed to evaluate the results of treatment by oriental medicine in Korea on 30 atopic dermatitis patients using the SCORAD index. The statistical evaluation was performed using the total IgE, ECP and acidophil count. Three months after initiation of treatment, the SCORAD index decreased from 42.04±18.09 to 25.44±18.24, with statistical significance (p<0.0001). ECP decreased from 91.70±64.27µg/l to 43.73±36.54µg/l significantly too (p<0.001). Initially, the acidophil count was 611.10±559.16/mm³, and 3 months later, it had decreased to 423.2±211.49/mm³ (p<0.05). The change of total IgE was not statistically significant. At the initiation of treatment, there was a close correlation between acidophil count and SCORAD (r=0.64). ECP did not correlate with the SCORAD index, and the change of ECP did not correlate with that of SCORAD (r=0.029, p=0.88).

Key Words: atopic dermatitis; oriental medicine in Korea; SCORAD
various blood parameters like acidophil count, total IgE and ECP (eosinophilic cationic protein).

**Methods**

1. **Subjects**
30 patients (13 male, 17 female) with atopic dermatitis were selected who had been treated for more than three months in our hospital from June to October of 2001.

2. **Laboratory examination**
On their first visit, acidophil count, leukocyte differential count, Total IgE (immunoglobulin E), and ECP (eosinophilic cationic protein) exams were done. The laboratory examination was repeated 3 months later.

3. **Diagnosis and evaluation**
Hanifin and Rajka criteria was used for the diagnosis of atopic dermatitis and the SCORAD index was used to evaluate the disease severity. The SCORAD index was recorded by observing photographs of the patient’s whole body and scoring extent and intensity every other week.

The correlation between the SCORAD index and acidophil count, differential count, total IgE, ECP was evaluated respectively.

4. **Therapeutic method**
Based on the diagnosis of constitution-type by two oriental medical doctors, constitution acupuncture (twice weekly) and herb intake were the main therapeutic methods used. Additional therapies, such as herbal bathing powder and ointment, were also used as complements. Herbal medicines used were Yuldahanso-tang, Chungsimyunja-tang, Taeumchowi-tang and Yangkyuk-sanhwa-tang according to patients’ constitutions and symptoms. Bathing powder and ointment were made of Baekban, Hwangkeum, Daehwang, Hwangbaek, Kosam, Chibuja and Injin, and were likewise used selectively according to patients’ constitutions, etc.

5. **Statistics**
Paired t-test was used to evaluate the therapeutic effect and the Spearman rank correlation was used to evaluate the relationships between SCORAD and laboratory data.

**Results**

The age of the 30 subjects (13 male, 17 female) ranged from 2.58 to 31.67 years old (mean age 18.83±8.59) (Table 1), and their mean symptomatic period was 15.75±8.70 (mean±SD) years, ranging from 1.00 to 29.58 years. There was no statistically significant correlation between the first SCORAD and age.

19 subjects (57%) had more than one other allergic disease, among them allergic rhinitis 12 (40%), asthma 2 (6%), and allergic conjunctivitis 5 (17%). Two subjects showed more than two other allergic diseases.

60% of subjects had a positive family history. Among them 9 (30%) had a family history of atopic dermatitis, 8 (27%) had a family history of

<table>
<thead>
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<th>age / sex</th>
<th>male</th>
<th>female</th>
<th>total(%)</th>
</tr>
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<tr>
<td>0-10</td>
<td>5</td>
<td>2</td>
<td>7(23.3)</td>
</tr>
<tr>
<td>11-20</td>
<td>3</td>
<td>7</td>
<td>10(33.3)</td>
</tr>
<tr>
<td>21-30</td>
<td>4</td>
<td>7</td>
<td>11(36.7)</td>
</tr>
<tr>
<td>Above 30</td>
<td>1</td>
<td>1</td>
<td>2(6.7)</td>
</tr>
<tr>
<td>Total(%)</td>
<td>13(43.3)</td>
<td>17(56.7)</td>
<td>30(100.0)</td>
</tr>
</tbody>
</table>

There was no significant difference of disease prevalence by age or sex.
allergic rhinitis, 1 (3%) subject had a family history of allergic asthma and 3 had family histories of more than two allergic diseases.

1. Change of SCORAD

The mean SCORAD index of all subjects was $42.04 \pm 18.09$ (17.47-79.24) at the first examination and decreased significantly after three months to $25.44 \pm 18.24$ (4.72-70.46) ($p < 0.0001$) (Fig. 1). According to the severity grading, 1 subject was mild, 21 subjects were moderate, and 8 subjects were severe at the first examination. After three months, the number of mild subjects increased to 14 while the number of severe decreased to 5, leaving 11 in the moderate category.

2. Correlation between ECP and SCORAD

Mean ECP decreased significantly from $91.70 \pm 64.27 \mu g/l$ (at first examination) to $43.73 \pm 36.54 \mu g/l$ (after three months) ($p<0.0001$) (Fig. 2). However, there was no correlation between SCORAD and ECP in the first examination. Also, there was no correlation between change of ECP and change of SCORAD after three months of treatments ($r=0.029$, $p=0.88$).

3. Distribution of IgE

The mean IgE of the first examination was $2031.34 \pm 2077.55$ IU/ml, and it changed to $2472.67 \pm 2509.67$ IU/ml three months later. This change was not statistically significant ($p>0.1$).

4. The distribution of acidophil count and leukocytic differential percentile

At first examination, the mean acidophil count was $611.10 \pm 559.16$ (90-3222)/mm$^3$, which is 9.0 $\pm$ 6.84% (1.0%-36.7%) of total leukocytes. After three months, mean acidophil count decreased to $423.2 \pm 211.49$ (33-775)/mm$^3$ ($p<0.05$), which is 6.22 $\pm$ 3.02% (0.7%-13.1%) of total leukocytes ($p=0.014$). There was a statistically significant correlation between acidophil count and SCORAD in the first examination ($r=0.64$) (Fig. 3).
5. The distribution of subjects Constitution
The constitution of the 30 subjects was as follows: 13 subjects (43%) showed hepatotonia, 9 (30%) showed cholecystotonia, 5 (17%) showed pancreotonia, 2 (7%) showed gastrotonia, and 1 (3%) showed pulmotonia. [The mean number of acupuncture therapy treatments was 72.3.]

Discussion
It is reported that patients with atopic dermatitis have a higher incidence of having family and personal histories of other atopic diseases (50-70%) than the general population. According to the study of Chungnoi Atopy Clinic, 57% and 60% of all patients with atopic dermatitis were known to have personal and family histories of other atopic diseases, respectively.

It is known that eosinophil plays a key role in the pathological mechanism of atopic dermatitis. Patients with atopic dermatitis demonstrate high numbers of eosinophils in the peripheral blood stream and significantly decreased apoptotic activity of eosinophils. Also, infiltration of many eosinophils and T-lymphocytes can be found in the lesion site of the skin. In the process of allergic reaction, a variety of cytokines and chemokines like RANTES, eotaxin, IL-5 and IL-3 produced by T-cells or antigen presenting cells can influence eosinophils to move to the lesion site and to secrete pro-inflammatory factors. Among these cytokines, IL-4 and IL-5 are suggested as promoting the proliferation and activity of eosinophils and to inhibit the apoptosis of it.

MBP (major basic protein), ECP (eosinophil cationic protein) and EPX (eosinophil protein x) are kinds of cytotoxic mediators secreted by eosinophils and associated with inflammation and tissue damage. Of these factors, ECP and EPX are regarded as indicators that reflect the activity of atopic dermatitis because they show reduced level as atopic symptom improves.

According to the clinical study conducted by Chungnoi Atopy Clinic, on first diagnosis ECP did not show a significant correlation with the clinical severity of atopic dermatitis and neither did the change of ECP and change of SCORAD index. Kapp, Czech, Furue and their colleagues reported that ECP was a sensitive indicator for clinical activity of atopic dermatitis, but the result of our study showed that ECP did not indicate disease severity at the first diagnosis, and that there was no significant correlation between the ECP and SCORAD indexes. However, after 3 months of treatment, blood ECP level decreased. This result is similar to that of Amon et al. and Wolkerstorfer et al., so we can suppose that eosinophilic activity does not decrease immediately after clinical improvement and that other parameters more closely related with clinical symptoms may exist. With respect to the present
result, it is not sufficient to determine the ECP levels as parameter of predicting recurrence.

It was eosinophil that showed a close correlation with SCORAD at first diagnosis and also showed significantly decreased levels after 3 months of treatment, so eosinophil is thought to be a simple and useful clinical marker of atopic dermatitis.

The serum level of IgE is higher in patients with atopic dermatitis than in normal ones, and the increased level of IgE is higher when patients have more severe dermatitic symptoms or have another respiratory atopy\textsuperscript{17,18}. According to our study, the total IgE is 2031.34±2077.55 IU/ml (mean±SD) on initiation of treatment, which is higher than the result of Park et al.\textsuperscript{9} and Chung et al.\textsuperscript{19}. This is supposed to be due to the fact that most of the patients we studied had severe atopic dermatitis (mostly moderate to severe grade of disease). Nevertheless, IgE did not correlate with the improvement of symptoms as presented in other studies because there was not a significant difference in the level of IgE between the first diagnosis and after 3 months of treatment. Like other studies\textsuperscript{11,20}, IgE levels do not correlate with clinical improvement. Corticosteroids have been preferred as a conventional therapy in the treatment of atopic dermatitis, but prolonged use can result in various local or systemic adverse events such as skin atrophy, depigmentation, purpura, telangiectasia, acne-like eruption, delayed wound healing, secondary infection, high blood sugar, growth problems, malfunction of suprarenal gland etc.

Topical tacrolimus is a recently developed drug that is reported to suppress the activity of T-cells and can inhibit the secretion of pro-inflammatory cytokines. It is reported to cause few local side effects, except a mild burning sensation, and no systemic side effects when applied for a short term.

It can reduce the risk of severe adverse events that can result from the use of systemic immunosuppressive agents or prolonged use of steroids. Tacrolimus does not result in delayed wound healing or skin atrophy, which is a great advantage compared to steroids\textsuperscript{21,22,23,24}.

Nevertheless, there is yet little data with respect to the safety and efficacy of prolonged use of topical tacrolimus, so more research is needed to find the proper dose or application period. Nothing has been determined yet concerning combined therapy or prevention of recurrence with tacrolimus. Besides that, ultraviolet ray (UVA, UVB) therapy\textsuperscript{25} and a wet wrap technique\textsuperscript{26} have been tried, but in terms of the mechanism and long term effects, further studies need to be carried out. Treatments using acupuncture with herbal medication have been tried in various modalities and showed relatively good results, but the current situation is that there are few studies presenting the results of treatment on the basis of objective standards, and the fact that many herbal prescriptions comprise one omnibus concoction (which is one of the characteristics of oriental medicine in Korea) makes it difficult to get the exact assessment of the result of these treatments.

According to the experiment in vitro conducted by Novak\textsuperscript{27}, it was proposed that the herbal extracts demonstrated the effect of reducing the sensitivity of dendritic cells against the triggering elements of atopic dermatitis. It is thought that this experiment can help us gain a wider understanding of the mechanisms of herbal medicine and hopefully a full understanding of it will be possible through further research in the future.

According to the investigation by Chungnoi Atopy Clinic, it was seen that the SCORAD index was reduced with statistical significance by using
constitution acupuncture and herbal extracts, and, among the lab data, the eosinophil count showed the closest correlation with the SCORAD index. Therefore it is possible to achieve a clinically relevant improvement of atopic dermatitis without using steroids, and there were no adverse events in the process.

However, the treatment period was relatively short and most patients studied are still in a course of treatment, so it is necessary to follow up the long-term progress of the patients.

Treatment according to the patient’s constitution is regarded as an effective treatment for atopic dermatitis, but the diagnosis of constitution is not easy to confirm and environmental factors (diet, psychological stress, weather etc.) that may affect treatment results cannot be controlled strictly. Further research is needed about the effect of a single prescription on the immunological process of atopic dermatitis.

**Conclusion**

Atopic dermatitis is an allergic disease with a high prevalence, but its etiology and pathological mechanisms are not clear, and therapeutic methods are still mainly dependent on topical corticosteroids. We have been trying to treat atopic dermatitis patients with Korean medical therapies only, which include constitutional acupuncture, herbal medication, topical herbal ointment and bathing products.

The final results are as follows
1. The proportion of patients and their parents affected by other allergic diseases was 57% and 60% respectively.
2. There was a statistically significant decrease in the level of SCORAD, ECP, and eosinophil between the initiation of treatment and after 3 months of treatment.
3. There was no significant difference in total IgE between before treatment and after 3 months of treatment.
4. It was eosinophil that showed the most significant correlation with the reduction of the SCORAD.
5. Constitutional acupuncture and herb extracts were statistically significantly effective in improving atopic dermatitis.

**References**

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