An Observational Study on Immune-related Disorders and Their Treatment Response in Ayurveda- Case Series

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Authors’ contributions
This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.

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ABSTRACT

Immune-related disorders are common health problems in the world. Based on the principal immunologic mechanism they are classified into four types. One of the four types includes immediate hypersensitivity which is an IgE antibody and mast cell-mediated reaction. Ayurvedic treatments have sometimes delivered good results in the treatment of these disorders. This work is a humble effort to streamline Immune-related diseases in the settings of Govt Ayurveda Medical College, Tripunithura, Kerala, India. In this case series study patients with allergic rhinitis and urticaria were selected. Their symptoms and blood parameters were assessed both before and after the Ayurvedic treatment for one month. In both allergic rhinitis and urticaria, there was a significant reduction in the symptoms. In the case of blood investigations, only IgE showed a significant change in allergic rhinitis. Even though Ayurvedic immunology has a strong potential to treat allergic disorders with its pro-nature individualized holistic approach to make significant changes in immune parameters administration of rejuvenators for more than one month is very essential.

Keywords: Urticaria; allergic rhinitis; immune-related disorders and Ayurveda.

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1. INTRODUCTION

In this COVID-19 epoch, immunity and immune-modulators are the most discussed topics. Immunology is one of the fastest-growing disciplines in Medicine and Biology. Its increased significance is because of the emergence of a wide range of immunological diseases including allergy, autoimmunity, infections, cancer etc. It is interesting to observe that the ancient Ayurvedic texts show a vivid description of the foundations of immunology a thousand years ago. Ayurvedic immunology is essentially a unique holistic science that has inherent bonds with the genetic constitution, nutritional status, digestive power, ageing process etc. According to Ayurveda the entity which is acting as a protecting force behind an individual’s health is VyadhiKshamtvta [1]. It is of two kinds i.e., the one which attenuates the manifested disease and another variety prevents the manifestation of diseases. Ojas and Bala are the two terminologies that are used to discuss the concept of Vyadhiksamatwa and it also depends upon the equilibrium state of Kapha and Udana Vata. The bio-factor Ojas is the essence of all the seven Dhatus of the body [2]. This Oja is otherwise called the Bala of the body [3] and it is also considered as the factor that destroys Dosha i.e. the disease-causing factors [4,5]. This strength of the body depends on genetic factors, seasonal factors and healthy practices in the form of food and medicines [6]. Bala is the basic characteristic of Prakriti Kapha Dosha [7] and vata dosha [8] and it is the function of Prakrut Udana Vayu [9]. There are clear descriptions available in Samhitas about the three broad categories of immune disorders, namely Oja-vyapati, Oja-visrams, and Ojaksaya [10]. The Samhitas also describe Rasayana Chikita which is one of the eight branches of Ayurveda [11]. Taking Rasayana is helpful to increase the immunity of the person and to keep him away from opportunistic diseases. The possible mechanisms behind this action of Rasayana are nutritive function, immunomodulatory action, antioxidant action, anti-ageing action, neuroprotective action, haemopoietic effect etc.

Although descriptions of vyadhiKshmatwa, Ojas, bala etc are available in the literature, it is not enough to meet the needs of changing community. So, it is essential to be evidence-based. Immune-related disorders have recorded a peak in the last two decades especially in India. Ayurvedic treatments have sometimes delivered good results in the treatment of these disorders. It has also got a wide range of medicines which enhances the immunity of our body. This includes single drugs and Yogas (Compound medicines) which mainly includes Rasayanas. But, due to a lack of documentation and research works, the benefits of Ayurveda have been denied to a majority of people suffering from immune-related disorders ranging from mild infections to complicated autoimmune disorders. Also, the treatment options in Ayurveda fail to get standardized due to a lack of research works and protocol development. This work is a humble effort to streamline the immune-related practices in the settings of Govt Ayurveda Medical College, Tripunithura, Kerala, India.

This case series study mainly focuses on a few cases of commonly occurring immune-related disorders like urticaria and allergic rhinitis and their treatment response with ayurvedic medicines.

2. MATERIALS AND METHODS

Participants were selected using the diagnostic criteria for allergic rhinitis and urticaria. Ayurvedic treatment was given and their treatment response was assessed after one month using the blood parameters and symptom analysis

2.1 Objectives

- To study the variations in the immune profile by Ayurvedic management
- To study the variations in the response pattern

2.2 Settings

The study was conducted in Govt. Ayurveda Medical College, Tripunithura, Kerala, India.

2.3 Type of Study

Observational study – Case Series
Sample size – 30

2.4 Inclusion Criteria

- Age group 10-70
- Both male and female
Diagnosed as; Allergic rhinitis and urticaria

2.5 Exclusion Criteria
- Unwilling for follow up
- Multiple illnesses and on other medications

2.6 Assessment
Assessment is done before treatment and after treatment (after four weeks).

2.7 Data Analysis
Statistical analysis was done using SPSS and EXCEL software, Descriptive statistics, Wilcoxon signed-rank test and paired t-test was done.

3. RESULTS

3.1 Allergic Rhinitis
In allergic rhinitis, 42.9% were male patients and 57.1% were female patients.

Table 1. Diagnostic criteria

| Allergic rhinitis | Urticaria |
|-------------------|-----------|
| 1. Running nose   | Wheals    |
| 2. Sneezing       | Itching   |
| 3. Nasal obstruction |       |
| 4. Itching        |           |
| 5. Headache       |           |
| 6. Loss of smell  |           |
| 7. Watering of eyes |       |
| 8. Dyspnea        |           |
| 9. Cough          |           |

Table 2. Blood investigations

| Investigations | Allergic rhinitis | Urticaria |
|---------------|-------------------|-----------|
| CBC           | ✓                 | ✓         |
| ESR           | ✓                 | ✓         |
| AEC           | ✓                 | ✓         |
| IgE           | ✓                 | ✓         |
| LFT           | ✓                 | ✓         |

Fig. 1. Distribution of sex

Fig. 2. Prakriti and allergic rhinitis
When the symptoms of allergic rhinitis were analyzed both before and after treatment using Wilcoxon signed ranked test, it was found to be statistically significant.

### 3.1 Blood investigations – analysis

When the routine blood investigations were analyzed both before and after the treatment, there was no significance. It may be due to the lesser sample size taken for the study. But statistically significant p-value was obtained in the case of IgE.

### 3.2 Urticaria

75% of the urticaria patients were females.

### Table 3. Symptom analysis

| Symptom                  | AT - BT | Z      | Asymp. Sig. (2-tailed) |
|--------------------------|---------|--------|------------------------|
| Running Nose             | AT - BT | -3.111b| 0.002                  |
| Sneezing                 | AT - BT | -3.305b| 0.001                  |
| Nasal Obstruction        | AT - BT | -2.558b| 0.011                  |
| Nasal Itching            | AT - BT | -2.859b| 0.004                  |
| Headache                 | AT - BT | -3.071b| 0.002                  |
| Diminished smell         | AT - BT | -1.890b| 0.059                  |
| Watering of Eye          | AT - BT | -2.850b| 0.004                  |
| Dyspnea                  | AT - BT | -1.633b| 0.102                  |
| Cough                    | AT - BT | -1.633b| 0.102                  |

### Table 4. Haemoglobin and differential count

| Parameter | Hb AT - BT | TC AT - BT | N AT - BT | L AT - BT | E AT - BT |
|-----------|------------|------------|-----------|-----------|-----------|
| Z         | -1.291b    | -0.631c    | -1.300b   | -1.227c   | -0.804b   |
| Asymp. Sig. (2-tailed) | 0.197 | 0.528 | 0.194 | 0.22 | 0.422 |

### Table 5. ESR, Platelet count, Absolute eosinophil count & IgE

| Parameter | ESR AT - BT | Platelet AT - BT | AEC AT - BT | IgE AT - BT |
|-----------|-------------|-----------------|-------------|-------------|
| Z         | -0.734b     | -0.318b         | -0.974b     | -2.605b     |
| Asymp. Sig. (2-tailed) | 0.463 | 0.75 | 0.33 | 0.009 |

*a. Wilcoxon Signed Ranks Test
b. Based on positive ranks.*
Table 6. Various medicines given in allergic rhinitis

| Name of Medicines                  |
|------------------------------------|
| 1. Dasamoolakatutrayam kashayam    |
| 2. Pathyashadamgam kashayam        |
| 3. Amrutotharam kashayam           |
| 4. Pachanamrutam kashayam          |
| 5. Panchatikthakam kashayam        |
| 6. Guluchyadi kashayam             |
| 7. Varanadi kashayam               |
| 8. Padolakatu rohinyadi kashayam   |
| 9. Gandharvahastadi kashayam       |
| 10. Indukantham kashayam           |
| 11. Rajanyadi churnam              |
| 12. Haridra-khandam                |
| 13. Vaiswanaram churnam            |
| 14. Avipatty churnam               |
| 15. Thaleesapatradi churnam        |
| 16. Amrutaarishtam                 |
| 17. Vasarishtam                    |
| 18. Draksharishtam                 |
| 19. Abhayarishtam                  |
| 20. Dhanwantaram gulika            |
| 21. Dooshivishari Gulika           |
| 22. Vilwadi gulika                 |
| 23. Sudarshanam gulika             |
| 24. Kanchanara Guggulu             |
| 25. Anu tailam                     |
| 26. Rasnadi churnam                |

Table 7. Symptom analysis

| Wheals | Pruritus |
|--------|----------|
| AT – BT| AT - BT  |
| 0.002  | 0.002    |

When the symptoms were analysed both before and after treatment it was found that the p-value is <0.05 which shows that the results were statistically significant.
4. BLOOD INVESTIGATIONS – ANALYSIS

Table 8. Blood routine

|                | AT - BT | AT - BT | AT - BT | AT - BT | AT - BT | AT - BT | AT - BT |
|----------------|---------|---------|---------|---------|---------|---------|---------|
| Hb             | -0.890b | -1.413b | -0.982b | -0.446c | -1.349c | -1.224c | -1.736c |
| TC             | -1.428c | -1.620c | -0.000d | -1.027b | -2.238c | -1.692b |
| N              | 0.373   | 0.158   | 0.326   | 0.656   | 0.177   | 0.221   | 0.083   |
| L              | 0.328   | 0.153   | 0.105   | 1       | 0.304   | 0.025   | 0.091   |
| E              | 0.373   | 0.158   | 0.326   | 0.656   | 0.177   | 0.221   | 0.083   |
| ESR            | 0.373   | 0.158   | 0.326   | 0.656   | 0.177   | 0.221   | 0.083   |
| Platelet       | 0.373   | 0.158   | 0.326   | 0.656   | 0.177   | 0.221   | 0.083   |
| AEC            | 0.373   | 0.158   | 0.326   | 0.656   | 0.177   | 0.221   | 0.083   |

Asymp. Sig. (2-tailed)

In blood routine investigations platelet count showed statistically significant change, but other blood parameters were not significant.

Table 9. IgE test results

|                | IgE (AT-BT) |
|----------------|-------------|
| Z              | -1.472b     |
| Asymp. Sig. (2-tailed) | 0.141 |

IgE was not statistically significant.

Table 10. Liver function test results

|                | AT-BT | AT-BT | AT-BT | AT-BT | AT-BT | AT-BT | AT-BT | AT-BT |
|----------------|-------|-------|-------|-------|-------|-------|-------|-------|
| SGOT           | -0.280\(b\) | -0.350\(c\) | -1.428\(c\) | -1.620\(b\) | -0.000\(d\) | -1.027\(b\) | -2.238\(c\) | -1.692\(b\) |
| SGPT           | 0.779 | 0.726 | 0.153 | 0.105 | 1     | 0.304 | 0.025 | 0.091 |
| ALP            | 0.779 | 0.726 | 0.153 | 0.105 | 1     | 0.304 | 0.025 | 0.091 |
| Total Bilirubin| 0.779 | 0.726 | 0.153 | 0.105 | 1     | 0.304 | 0.025 | 0.091 |
| Direct Bilirubin| 0.779 | 0.726 | 0.153 | 0.105 | 1     | 0.304 | 0.025 | 0.091 |
| Total Protein  | 0.779 | 0.726 | 0.153 | 0.105 | 1     | 0.304 | 0.025 | 0.091 |
| Albumin        | 0.779 | 0.726 | 0.153 | 0.105 | 1     | 0.304 | 0.025 | 0.091 |
| Globulin       | 0.779 | 0.726 | 0.153 | 0.105 | 1     | 0.304 | 0.025 | 0.091 |

Asymp. Sig. (2-tailed)

In Liver function tests no significant results were observed, but Albumin and globulin showed statistically significant change.

Table 11. Various medicines given in Urticaria

| Name of Medicines                  |
|------------------------------------|
| 1. Amritarajanyadi kashayam        |
| 2. Guluchyadi kashayam             |
| 3. Punarnavadi kashayam            |
| 4. Haridra- khandam                |
| 5. Lohasavam                       |
| 6. Avipatti churnam                |
| 7. Asta churnam                    |
| 8. Aragwada Mahatiktaka ghrtam     |
| 9. Mahatiktaka ghrtam ointment     |
| 10. Pinda tallam                   |
| 11. Nalpamaradi keram              |

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5. DISCUSSION

Immunity, as we understand it through modern science, is the function of certain cells, enzymes and immunomodulatory chemicals that attack pathogens and prevent them from creating diseases. The concept of immunity is explained in Ayurveda under multiple topics. The most important ones are Vyadhikshamathwa, Ojas and Bala. In Ayurveda Ojo Visrampa, Ojo Vyapat and Oja Kshaya are explained as disorders that are caused by the vitiation of Ojas. Some diseases like Prameha, Pandu, Rajayakshma etc are also explained concerning Ojas. In modern science disorders of the immune system include allergic diseases, autoimmune disorders, immune deficiency disorders, cancers etc.

In the present study most commonly occurring diseases like allergic rhinitis and urticaria, was included. Relation of these diseases with immunity is not directly available in Ayurvedic literature. According to modern science allergic rhinitis, and urticaria comes under immune-related disorders.

Ayurvedic treatment given sensibly can certainly relieve the patient from the problem of Allergic rhinitis. All the oral medicines played a positive effect on the digestive and metabolic process as well, thereby improving the systems biology. Thus, nourishing the mucosa of the upper respiratory tract improving the immune system by oral medication and altering the quality of blood comprehensively giving such desired outcomes in Allergic rhinitis.

Most of the symptoms of Allergic Rhinitis correspond to Vataja Pratishhaya [12]. But the frequent attacks of symptoms and unexpected disappearance of these either mature or immature hints its inclusion in Sannipaataja Pratishhaya which is also the case with Allergic Rhinitis. So, we can select drugs by considering the Dosha predominance and the treatment should be given accordingly.

As per Ayurveda, Urticaria can be considered as Sheetapitta, Udarada and Kotha [13].

Treatment for Sheetapitta pitta according to Ayurveda includes both Shodhana and Shamana chikitsa. Acharya has suggested that treatment can be done as of Kushtha, Amlapitta etc. Various Aushadha yogas are mentioned for Udarada, Kotha which also can be used for Sheetapitta. The main advantage of Ayurvedic treatment is that it helps to stop the recurrence of Sheetapitta (Urticaria) with the correct use of Shodhana, Shamana Chikitsa and Pathyapathya. When we consider these diseases mostly it is Kapha and Vata predominant, but in some cases, there will be Pitta Dosha involvement too. So, the treatment given here is by assessing the Dosha involvement.

There are three unique characteristic features of Ayurvedic medicine. These three features have now emerged as most relevant today because of the changing paradigms of health-care systems and new knowledge-base. These features are 1. The pro-nature approach, 2. The holistic approach and 3. The personalized health care strategy based on its fundamental concept of constitution and pathological manifestation (Prakriti- Vikriti). Both constitution and pathological manifestation are largely genetically determined processes and are to be tackled individually because no two individuals are similar and there should be individualized health care [14].

According to the severity of symptoms, disease duration, family history, age and other adjoining diseases, the severity of involvement of vitiating factors (Dosha), vitiated factors (Dushya) in disease pathology also differs. The choice of both classical and patent medicines differed among physicians according to their views and also according to the condition of the patient. In total the treatment should incorporate holistic and personalized health care strategy and finally the use of immune-enhancing agents like rejuvenators (Rasayana) for more than one month for the non-recurrence of the disease and also for the significant changes in immunological parameters.

6. CONCLUSION

This study showed that Ayurvedic drugs can be effectively used in immune-related disorders. To generate more evidence each disease should be studied individually with more samples. We can see that most of the drugs used here were immune-modulatory and it had helped to improve the symptoms, even though blood parameters were not statistically significant. Few blood parameters showed statistically significant results, few don’t, this may be due to the short treatment period. All the diseases were treated by considering the type of dosha involvement and considering the dosha Prakriti and other factors like agni. To make more precise
individual diseases has to be studied by developing a protocol and also the compound drugs have to be considered individually for studying the immuno- modulatory effect. Ayurveda deliberates extensively on positive health measures such as rejuvenation therapy with the help of a range of micro- medicinal nutrients called rejuvenators (Rasayana ). Even though Ayurvedic immunology has a strong potential to treat allergic disorders with its individualized holistic approach administration of rejuvenators for more than one month is essential to make significant changes in blood parameters.

CONSENT AND ETHICAL APPROVAL

As per international standard or university standard guideline participant consent and ethical approval has been collected and preserved by the authors.

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COMPETING INTERESTS

Authors have declared that no competing interests exist.

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