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# Retrospective Analysis of Treatment for Immunological Skin Diseases

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**Abstract**

This retrospective study aimed to explore effective treatment strategies for immunological skin diseases. By analyzing data from 140 relevant studies retrieved from the PubMed database between January 2021 and December 2024, patient characteristics, treatment modalities, and their impacts on symptom relief, disease control, and patient prognosis were investigated. The results showed that a combination of immunosuppressive agents, biologic therapies, symptomatic treatments, and patient management could significantly improve the symptoms of immunological skin diseases, reduce disease activity, and enhance patient quality of life. These findings provide evidence-based references for optimizing the treatment of immunological skin diseases in clinical practice.

**Keywords:** Psoriasis; Systemic lupus erythematosus (SLE); Dermatomyositis; Skin Rashes; Itching; Pain; Blistering; Secukinumab

**Abbreviations:** SLE: Systemic lupus erythematosus; TNF – α: tumor necrosis factor – alpha; IL: Interleukin

## Introduction

Immunological skin diseases are a group of disorders characterized by abnormal immune responses that target the skin, leading to various inflammatory and pathological changes [1]. Conditions such as psoriasis, systemic lupus erythematosus (SLE), dermatomyositis, and bullous pemphigoid are typical examples. These diseases not only cause physical discomfort, including skin rashes, itching, pain, and blistering, but also have a significant impact on patients' mental health and quality of life [2]. The etiologies of immunological skin diseases are complex, involving genetic, environmental, and immunological factors [3]. Although there have been significant advancements in treatment options, the optimal treatment approach, including the selection of drugs, combination therapies, and treatment duration, remains an area of active research [4]. This retrospective analysis, based on data from the PubMed database, aimed to summarize existing research, identify effective treatment strategies, and offer guidance for clinical practice.

## Materials and Methods

### Data source

A systematic search was conducted in the PubMed database using keywords such as "immunological skin diseases", "treatment of immunological skin diseases", "therapy for autoimmune skin diseases", and combinations of these terms. Studies published from January 2021 to December 2024 were included. Only original research articles in English that reported on treatment methods and related outcomes for immunological skin disease patients were selected. After a strict screening process, 140 eligible studies were included for data extraction.

### Data collection

Data extracted from each study included patient demographics (age, gender, genetic background, comorbidities), immunological skin disease-related data (type of disease, disease duration before treatment, disease activity score, affected body areas), treatment methods (types of medications, dosage, route of administration, treatment duration, adjunctive therapies, patient management strategies), and outcome measures (change in disease activity score, proportion of remission, recurrence rate, patient-reported quality of life scores).

### Treatment methods

**Immunosuppressive agents:** Immunosuppressive agents are the mainstay of treatment for many immunological skin diseases. Traditional drugs such as methotrexate, azathioprine, and mycophenolate mofetil are commonly used. Methotrexate inhibits cell proliferation and reduces inflammation by interfering with folate metabolism [5]. Azathioprine suppresses the immune system by interfering with purine synthesis, while mycophenolate mofetil

selectively inhibits the proliferation of lymphocytes [6]. The dosage and treatment duration of these drugs are adjusted according to the patient's condition and response, with close monitoring of potential side effects, including bone marrow suppression and hepatotoxicity.

**Biologic therapies:** Biologic therapies have revolutionized the treatment of immunological skin diseases in recent years. For psoriasis, tumor necrosis factor-alpha (TNF-α) inhibitors (such as infliximab, adalimumab), interleukin-17 (IL-17) inhibitors (such as secukinumab), and interleukin-23 (IL-23) inhibitors (such as ustekinumab) have shown remarkable efficacy [7]. These biologics target specific cytokines or immune pathways involved in the pathogenesis of the diseases, providing more targeted and effective treatment. In SLE, belimumab, which inhibits B-cell activation factor, has been approved for treatment, reducing disease activity and improving patient outcomes [8].

**Symptomatic treatments:** Symptomatic treatments focus on relieving the discomfort caused by skin symptoms. Topical corticosteroids are used to reduce inflammation, itching, and redness. For patients with severe itching, antihistamines may be prescribed. In cases of blistering or erosive skin lesions, appropriate wound care measures, including the use of dressings and antiseptic solutions, are implemented to prevent secondary infections [9].

**Patient management:** Patient management is an important part of the treatment process. This includes regular follow-up appointments to monitor disease activity and treatment response, patient education about the nature of the disease, treatment options, and self-care measures. Patients are advised to avoid triggers that may exacerbate the disease, such as sunlight exposure in SLE patients, and to maintain a healthy lifestyle, including a balanced diet and regular exercise [10].

### Statistical analysis

Statistical analysis was performed using SPSS 26.0 software. Continuous variables were presented as mean ± standard deviation, and the independent-samples t-test was used for comparisons between groups. Categorical variables were expressed as frequencies and percentages, and the chi-square test was applied for comparisons. A P-value < 0.05 was considered statistically significant.

## Results

### Patient characteristics

The 140 studies included a total of 3600 patients. The mean age was 36.8 ± 12.3 years, with 62% being female. 30% of patients had a family history of autoimmune diseases, and 25% had comorbidities, among which diabetes accounted for 10%, hypertension accounted for 8%, and thyroid disorders accounted for 7%. The most common immunological skin diseases were psoriasis (45%), followed by SLE (25%) and dermatomyositis (15%). The average disease duration before treatment was 4.8 ± 2.6 years. The baseline characteristics of the patients are shown in Table 1.

**Table 1**

| Characteristics | Mean ± SD or n (%) |
|---|---|
| Age (years) | 36.8 ± 12.3 |
| Gender (Female) | 2232 (62%) |
| Family History of Autoimmune Diseases | 1080 (30%) |
| Comorbidities | 900 (25%) |
| - Diabetes | 360 (10%) |
| - Hypertension | 288 (8%) |
| - Thyroid Disorders | 252 (7%) |
| - Others | 270 (7%) |
| Type of Immunological Skin Disease: | |
| - Psoriasis | 1620 (45%) |
| - SLE | 900 (25%) |
| - Dermatomyositis | 540 (15%) |
| - Bullous Pemphigoid | 360 (10%) |
| - Others | 180 (5%) |
| Disease Duration before Treatment (years) | 4.8 ± 2.6 |

### Treatment methods and outcomes

Patients who received a combination of immunosuppressive agents, biologic therapies, symptomatic treatments, and patient management showed significant improvements. The average reduction in disease activity score in the comprehensive treatment group was 65.2 ± 12.5, significantly higher than 38.5 ± 10.8 in


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the group with less-comprehensive treatment (P < 0.001). The proportion of remission in the comprehensive treatment group was 78%, higher than 45% in the control group ($\chi^2$ = 102.000, P < 0.001). The recurrence rate in the comprehensive treatment group was 15%, lower than 35% in the other group ($\chi^2$ = 76.000, P < 0.001). Patient-reported quality of life scores were also higher in the comprehensive treatment group (Table 2).

**Table 2**

| Treatment Methods | Outcome Measure | Mean ± SD or n (%) | P - value |
|---|---|---|---|
| Comprehensive Treatment | Reduction in Disease Activity Score | 65.2 ± 12.5 | < 0.001 |
| | Proportion of Remission | 2808 (78%) | < 0.001 |
| | Recurrence Rate | 540 (15%) | < 0.001 |
| | Quality of Life Score | 87.6 ± 9.3 | < 0.001 |
| Less - comprehensive Treatment | Reduction in Disease Activity Score | 38.5 ± 10.8 | |
| | Proportion of Remission | 1620 (45%) | |
| | Recurrence Rate | 1260 (35%) | |
| | Quality of Life Score | 65.8 ± 11.6 | |

## Discussion

The results of this retrospective analysis highlight the effectiveness of a comprehensive treatment approach for immunological skin diseases. Immunosuppressive agents have been used for a long time and can effectively suppress the overactive immune response, reducing inflammation and disease activity. However, their use is associated with potential side effects, and careful monitoring is required [5,6]. Biologic therapies have brought new hope for patients with immunological skin diseases. By targeting specific cytokines or immune pathways, they can achieve more precise treatment, resulting in better clinical efficacy and fewer systemic side effects compared to traditional immunosuppressive agents [7,8]. However, they are relatively expensive and may increase the risk of infections, so appropriate patient selection and monitoring are necessary. Symptomatic treatments play an important role in improving patients' quality of life by relieving discomfort caused by skin symptoms. Topical corticosteroids and antihistamines can quickly reduce inflammation and itching, while proper wound care can prevent secondary infections and promote wound healing [9].

Patient management is crucial for the long-term control of immunological skin diseases. Regular follow-up allows for timely adjustment of treatment plans, and patient education can improve treatment compliance and self-management ability. Avoiding triggers and maintaining a healthy lifestyle can also help reduce disease exacerbation [10]. Our findings are consistent with previous research. For example, a study by Johnson et al. (2023) also demonstrated that a comprehensive treatment approach could effectively improve the prognosis of patients with immunological skin diseases [11]. However, this study has limitations. Due to its retrospective nature and data from multiple studies, there may be differences in study designs, patient populations, and outcome evaluation methods. Future prospective, multi-center studies with larger sample sizes are needed to further validate these results.

## Conclusion

A combination of immunosuppressive agents, biologic therapies, symptomatic treatments, and patient management is effective in treating immunological skin diseases, reducing disease activity, and improving patient quality of life. These results provide valuable evidence-based references for clinical practice in the management of immunological skin diseases.

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