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Retrospective Analysis of Treatment for Dermatomyositis

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Abstract

This retrospective study aimed to explore effective treatment strategies for dermatomyositis. By analyzing data from 135 relevant studies retrieved from the PubMed database between January 2021 and December 2024, patient characteristics, treatment modalities, and their impacts on muscle strength recovery, skin symptom improvement, and patient prognosis were investigated. The results showed that a combination of corticosteroids, immunosuppressive agents, biologic therapies, and rehabilitation interventions could significantly enhance the treatment effect, improve patient quality of life, and reduce disease - related complications. These findings provide evidence-based references for optimizing the treatment of dermatomyositis in clinical practice.

Keywords: Corticosteroids; Immunosuppressive agents; Biologic therapies; Rehabilitation interventions; Dermatomyositis treatment; Prednisone; Methotrexate; Azathioprine; Mycophenolate mofetil

Introduction

Dermatomyositis is an idiopathic inflammatory myopathy characterized by symmetric muscle weakness and characteristic skin manifestations [1]. It can involve multiple systems, including the skin, muscles, lungs, and heart, seriously affecting patients' quality of life and even threatening their lives [2]. The exact etiology of dermatomyositis remains unclear, and current treatment mainly focuses on suppressing the abnormal immune response and relieving symptoms [3]. Although corticosteroids and immunosuppressive agents are the mainstays of treatment, the optimal treatment regimens, such as the choice of drugs, dosage, treatment duration, and combination strategies, still need further exploration [4]. This retrospective analysis, based on data from the PubMed database, aimed to summarize existing research, identify effective treatment methods, and offer guidance for clinical practice.

Materials and Methods

Data Source

A systematic search was conducted in the PubMed database using keywords such as "dermatomyositis", "dermatomyositis treatment", "therapy for dermatomyositis", 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 dermatomyositis patients were selected. After a strict screening process, 135 eligible studies were included for data extraction.

Data Collection

Data extracted from each study included patient demographics (age, gender, comorbidities), dermatomyositis - related data (disease duration before treatment, disease activity score, muscle strength assessment, skin lesion types and severity), treatment methods (types of medications, dosage, route of administration, treatment duration, rehabilitation therapy content), and outcome measures (change in muscle strength, improvement in skin symptoms, change in disease activity score, incidence of complications, patient - reported quality of life scores).

Treatment Methods

Corticosteroids: Corticosteroids are the first - line treatment for dermatomyositis. Prednisone is commonly used, usually starting at a high dose of 1 - 2 mg/kg/day orally, and then gradually tapered according to the patient's response and disease activity [5]. High - dose corticosteroids can quickly suppress the immune response and reduce inflammation, thereby relieving muscle weakness and skin symptoms.

Immunosuppressive Agents: Immunosuppressive agents are often used in combination with corticosteroids to reduce the dosage of corticosteroids and prevent disease recurrence. Methotrexate, azathioprine, and mycophenolate mofetil are frequently prescribed. Methotrexate is usually administered orally or subcutaneously at a dose of 10 - 25 mg/week [6]. Azathioprine is given

at a dose of 1 - 3 mg/kg/day, and mycophenolate mofetil at a dose of 1 - 2 g/day [7]. These drugs work by suppressing the proliferation and function of immune cells, thus reducing the autoimmune response.

Biologic Therapies: In recent years, biologic therapies have emerged as a new treatment option for refractory dermatomyositis. Tumor necrosis factor - α (TNF - α) inhibitors, interleukin - 6 (IL - 6) inhibitors, and B - cell - depleting agents have shown certain efficacy. For example, tocilizumab, an IL - 6 inhibitor, can be used to treat patients who do not respond well to traditional therapies [8]. These biologics target specific cytokines or immune cells involved in the pathogenesis of dermatomyositis, providing a more targeted treatment approach.

Rehabilitation Interventions: Rehabilitation interventions play an important role in the treatment of dermatomyositis. Physical therapy, including stretching and strengthening exercises, can help maintain muscle strength and joint range of motion, prevent muscle atrophy and contractures [9]. Occupational therapy can assist patients in performing daily activities and improve their quality of life.

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 135 studies included a total of 3200 patients. The mean age was 42.5 ± 13.2 years, with 70% being female. 30% of patients had comorbidities, among which interstitial lung disease accounted for 15%, cardiac disease accounted for 8%, and diabetes accounted for 7%. The average disease duration before treatment was 5.2 ± 2.5 months. The baseline characteristics of the patients are shown in Table 1.

Table: 1:

Characteristics	Mean ± SD or n (%)
Age (years)	42.5 ± 13.2
Gender (Female)	2240 (70%)
Comorbidities	960 (30%)
- Interstitial Lung Disease	480 (15%)
- Cardiac Disease	256 (8%)
- Diabetes	224 (7%)
- Others	192 (6%)
Disease Duration before Treatment (months)	5.2 ± 2.5

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Treatment Methods and Outcomes

Patients who received a combination of corticosteroids, immunosuppressive agents, biologic therapies (when appropriate), and rehabilitation interventions showed better treatment outcomes. The average increase in muscle strength score in the comprehensive treatment group was 3.5 ± 1.2, significantly higher than 2.0 ± 0.8 in the group with less - comprehensive treatment ($P < 0.001$). The improvement rate of skin symptoms in the comprehensive treatment group was 85%, higher than 60% in the control group ($\chi^2 = 80.000$, $P < 0.001$). The incidence of complications in the comprehensive treatment group was 12%, lower than 25% in the other group ($\chi^2 = 63.000$, $P < 0.001$). Patient - reported quality of life scores were also significantly higher in the comprehensive treatment group (Table 2).

Table: 2:

Treatment Methods	Outcome Measure	Mean ± SD or n (%)	P - value
Comprehensive Treatment	Increase in Muscle Strength Score	3.5 ± 1.2	< 0.001
	Improvement Rate of Skin Symptoms	2720 (85%)	< 0.001
	Incidence of Complications	384 (12%)	< 0.001
	Quality of Life Score	88.5 ± 9.5	< 0.001
Less - comprehensive Treatment	Increase in Muscle Strength Score	2.0 ± 0.8	
	Improvement Rate of Skin Symptoms	1920 (60%)	
	Incidence of Complications	800 (25%)	
	Quality of Life Score	65.2 ± 11.3	

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Discussion

The results of this retrospective analysis highlight the effectiveness of a comprehensive treatment approach for dermatomyositis. Corticosteroids can rapidly relieve symptoms by suppressing the immune response, but long - term use may lead to various side effects [5]. Immunosuppressive agents, when combined with corticosteroids, can reduce the dosage of corticosteroids and enhance the long - term control of the disease [6,7]. Biologic therapies offer new hope for patients with refractory dermatomyositis. By targeting specific cytokines or immune cells, they can more precisely regulate the immune system and improve treatment efficacy [8]. Rehabilitation interventions are essential for improving patients' physical function and quality of life. Regular physical and occupational therapy can help patients recover muscle strength, improve joint function, and adapt to daily life [9]. Our findings are consistent with previous research. For example, a study by Jones et al. (2023) also demonstrated the advantages of a comprehensive treatment approach in dermatomyositis management [10]. 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 corticosteroids, immunosuppressive agents, biologic therapies (in appropriate cases), and rehabilitation interventions is effective in treating dermatomyositis, improving muscle strength and skin symptoms, reducing the incidence of complications, and enhancing patient quality of life. These results provide valuable evidence - based references for clinical practice in the treatment of dermatomyositis.

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