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MODERN TREATMENT METHODS OF SYSTEMIC SCLERODERMA

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Abstract:

Systemic scleroderma, a complex autoimmune disease characterized by fibrosis and vasculopathy, poses significant challenges in its management. Significant progress has been made in the development of new therapeutic approaches for systemic scleroderma in the past few decades. This article provides a comprehensive review of current approaches to the treatment of systemic scleroderma, including pharmacological, non-pharmacological, and emerging therapies. The review emphasizes the importance of early diagnosis, multidisciplinary care, and personalized treatment strategies in improving the outcomes of patients with systemic scleroderma.

Keywords: Systemic scleroderma, skin and internal organs, immune system, specific pathways, occupational therapy.

INTRODUCTION:

Systemic scleroderma, also known as systemic sclerosis, is a chronic autoimmune disease that primarily affects the skin and various internal organs. Systemic scleroderma is characterized by excessive collagen deposition, leading to fibrosis of the skin and internal organs, along with microvascular abnormalities. The disease is heterogeneous in its presentation and can cause significant morbidity and mortality.

Current treatment strategies:

1. Pharmacological treatments:

- Immunosuppressive agents: Drugs such as methotrexate, mycophenolate mofetil, and cyclophosphamide are commonly used to suppress the immune system and reduce inflammation in systemic scleroderma.
- Biological treatments: Biologic agents such as rituximab and tocilizumab target specific pathways involved in the pathogenesis of systemic scleroderma.
- Antifibrotic agents: Nintedanib, an antifibrotic agent, has shown promising results in slowing the progression of pulmonary fibrosis in patients with systemic scleroderma.

2. Non-pharmacological interventions:

- Physical therapy: Exercise and physical therapy play a crucial role in maintaining joint mobility, muscle strength, and overall physical function in patients with systemic scleroderma.
- Occupational therapy: Occupational therapy helps patients adapt to the limitations caused by scleroderma and improve their quality of life.

3. Emerging treatments:

- Stem cell transplantation: Autologous hematopoietic stem cell transplantation has shown the potential to induce remission and improve long-term outcomes in patients with severe systemic scleroderma.

Stem cell transplantation in systemic scleroderma:

Autologous hematopoietic stem cell transplantation is a new approach to the treatment of severe systemic scleroderma. This innovative therapy has shown the ability to induce remission and improve various manifestations of the disease, including skin fibrosis, lung involvement, and overall quality of life in selected patients.

The procedure involves harvesting the patient's own stem cells, usually from bone marrow or peripheral blood, followed by high-dose chemotherapy to suppress the existing immune system. The harvested stem cells are then reinfused to regenerate a new immune system with a reactivated immune response. This immune system regeneration aims to stop the autoimmune attack on healthy tissue and restore immune balance, thereby slowing the progression of systemic scleroderma.

Clinical trials have shown that autologous hematopoietic stem cell transplantation can lead to significant improvements in skin involvement, with many patients experiencing reduced fibrosis and increased skin elasticity. In addition, this approach has been associated with stabilization or even improvement in lung function, particularly in people with pulmonary complications of systemic scleroderma.

While autologous hematopoietic stem cell transplantation holds promise as a potential curative therapy for severe systemic scleroderma, it is important

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to note that the procedure is not without risks. Patients undergoing stem cell transplantation may experience side effects associated with high-dose chemotherapy, such as infections, cytopenias, and gastrointestinal complications. Close monitoring and comprehensive supportive care are necessary to manage these potential adverse effects and optimize patient outcomes.

- Gene therapy: Gene editing technologies hold promise in correcting genetic abnormalities associated with systemic scleroderma and modulating immune responses.

Conclusion:

In summary, the treatment landscape for systemic scleroderma has evolved significantly in recent years, with an increasing focus on targeted therapies and personalized medicine. Comprehensive treatment of systemic scleroderma requires multidisciplinary care involving rheumatologists, dermatologists, pulmonologists, and other specialists. Continued research efforts to unravel the underlying mechanisms of the disease and develop innovative treatments are essential to improve outcomes and quality of life for patients with systemic scleroderma.

Autologous hematopoietic stem cell transplantation is a transformative approach for the treatment of severe systemic scleroderma, offering the potential to induce disease remission and improve various clinical parameters. Further research, including larger randomized controlled trials and long-term follow-up studies, is warranted to clarify optimal patient selection criteria, treatment protocols, and long-term efficacy of stem cell transplantation in systemic scleroderma. Collaborative efforts between researchers, clinicians, and patients are essential to advance this advanced therapy and improve care and outcomes for individuals affected by this complex autoimmune condition.

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