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Case Report

Clinical approach to Mixed Connective Tissue Disease in a Pediatric Patient: Case Report

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ABSTRACT

Mixed Connective Tissue Disease (MCTD) is a rare systemic autoimmune disorder characterized by the overlap of clinical manifestations typical of systemic lupus erythematosus, systemic sclerosis, and polymyositis, associated with high titers of anti-U1 ribonucleoprotein (anti-U1 RNP) autoantibodies. In the pediatric population, MCTD represents an additional diagnostic and therapeutic challenge due to its low prevalence, clinical heterogeneity, and the particularities of immune response in children, which differ from those observed in adults. Clinical manifestations may vary widely, including Raynaud phenomenon, arthritis, myositis, skin changes, and pulmonary involvement, often delaying diagnosis. In this context, early recognition of the disease and understanding its pediatric-specific features are essential to optimize clinical management, reduce complications, and improve long-term prognosis.

Keywords: Autoimmune disease; Antibodies; Corticosteroids; Connective tissue; Rheumatology

Introduction

Mixed Connective Tissue Disease (MCTD) was first described in 1972 as a distinct systemic autoimmune condition characterized by the coexistence of clinical manifestations typical of systemic lupus erythematosus, systemic sclerosis, and polymyositis, consistently associated with high titers of anti-U1 ribonucleoprotein (anti-U1 RNP) autoantibodies. Since its description, MCTD has been recognized as a heterogeneous clinical entity with a broad spectrum of presentations and variable disease course. In the pediatric population, MCTD is considered even rarer, contributing to the scarcity of specific studies and difficulties in establishing well-defined diagnostic and therapeutic criteria[1-3]. Affected children may present diverse clinical manifestations such as Raynaud phenomenon, inflammatory arthritis, myositis, skin changes, vascular involvement, and interstitial lung disease, the latter being an important prognostic determinant. Variability in disease severity and progression reinforces the need for individualized management and rigorous longitudinal follow-up. Despite advances in the understanding of systemic autoimmune diseases, significant gaps remain regarding the pathogenesis of pediatric MCTD, response to different therapeutic regimens, and long-term outcomes. Therefore, improving knowledge of this condition in childhood is essential to promote early diagnosis, appropriate management, and improved quality of life for affected patients[4,5].

Objectives

The present study aims to report a clinical case of a pediatric patient with Mixed Connective Tissue Disease, highlighting diagnostic challenges and resistance to treatment.

Study Design and Methods

This is a retrospective case report based on electronic medical record review, complemented by a brief literature review for theoretical support.

Case Report

A 4-year-old female patient was referred for rheumatologic evaluation due to Raynaud phenomenon since the neonatal period, which had worsened over the previous year, associated with recurrent episodes of inflammatory edema in the extremities, particularly the hands and knees, with favorable response to corticosteroids. Family members reported significant morning stiffness. Physical examination in October 2023 revealed large-volume bilateral knee arthritis. Laboratory tests showed positive ANA at high titer (1:640, coarse speckled nuclear pattern), high-titer anti-RNP (>240), negative other ENAs, normal serum complement, mildly elevated rheumatoid factor (17), mild anemia, thrombocytosis (800,000/mm³), elevated CRP (64 mg/L), and elevated ESR (104 mm/h). Nailfold capillaroscopy revealed a scleroderma pattern. The patient was diagnosed with pediatric Mixed Connective Tissue Disease and started treatment in November 2023 with subcutaneous methotrexate (0.6 mg/kg/week, later adjusted to 0.8 mg/kg/week), folic acid, hydroxychloroquine (4.5 mg/kg/week), and prednisone initially at full dose (1 mg/kg/day), with subsequent tapering and complete discontinuation in October 2024.

After six months of optimized immunosuppressive therapy, the patient showed partial improvement, with significant reduction of systemic and inflammatory symptoms (VAS score improved from 9 to 5 according to parents), but persistent knee edema and abnormal inflammatory markers, indicating ongoing disease activity. Due to the lack of established pediatric MCTD guidelines, therapeutic escalation was considered. Given partial response to methotrexate, additional immunosuppressive agents such as azathioprine, mycophenolate mofetil, or biologic therapies were discussed. Adalimumab (anti-TNF) was chosen due to accessibility and safety profile, at a dose of 20 mg subcutaneously every 14 days, initiated in June 2024. After four months, progressive improvement was observed (VAS reduced from 5 to 2) with normalization of inflammatory markers, although knee edema persisted[6-8]. The regimen was adjusted to 20 mg every 10 days, resulting in complete clinical and laboratory remission by March 2025[9,10].

Conclusion

Pediatric Mixed Connective Tissue Disease is a rare and complex condition marked by wide clinical heterogeneity and significant diagnostic and therapeutic challenges. Overlapping manifestations with other systemic autoimmune diseases often delay diagnosis, directly impacting prognosis. Management should be multidisciplinary, individualized, and patient-centered, addressing not only inflammatory control and prevention of organ complications but also psychosocial aspects related to chronic illness in childhood and adolescence. Immunomodulatory and biologic therapies represent promising options, although robust pediatric-specific evidence remains limited. Further research is essential to clarify pathogenesis, identify prognostic factors, and evaluate long-term outcomes in pediatric MCTD. The development of specific diagnostic and therapeutic guidelines for children is crucial to improve care and quality of life for these patients.

References

1. Sharp GC, Irvin WS, Tan EM, et al. Mixed connective tissue disease-an apparently distinct rheumatic disease syndrome associated with a specific antibody to an extractable nuclear antigen (ENA). American J Med 1972.
2. Kasukawa R, Tojo T, Miyawaki S. Mixed connective tissue disease. Berlin: Springer-Verlag 1987.
3. Schmidt J. Advances in the immunopathogenesis of myositis. Nature Reviews Rheumatology 2017;13(6):321-334.
4. Hochberg MC. Updating the American College of Rheumatology revised criteria for the classification of systemic lupus erythematosus. Arthritis & Rheumatism 1997.
5. Swanton J, Isenberg D. Mixed connective tissue disease: Still crazy after all these years. Rheumatology 2005.
6. Singsen BH, Bernstein BH, Kornreich HK. Mixed connective tissue disease in childhood. J Pediatrics 1986.
7. Hoffman RW. Autoantibodies and the pathogenesis of mixed connective tissue disease. Current Rheumatology Reports 2009.
8. Fayyaz A, et al. Understanding the role of anti-U1 RNP antibodies in connective tissue disease. Frontiers in Immunology 2021.
9. Alarcón-Segovia D, Villareal M. Classification and diagnostic criteria for mixed connective tissue disease. Rheumatic Disease Clinics of North America 1996.
10. Reiff A, Shaham B, Wood J. Pediatric mixed connective tissue disease. Current Opinion in Rheumatology 2015.