

Lupus Nephritis: Pathogenesis, Clinical Features, and Evolving Therapies

Introduction

Lupus nephritis is a severe and potentially life-threatening manifestation of systemic lupus erythematosus (SLE), an autoimmune disease characterized by the production of autoantibodies and immune complex deposition. The kidneys are among the most commonly affected organs, and lupus nephritis significantly contributes to morbidity and mortality in affected patients. Early diagnosis and appropriate management are critical to preserving renal function and improving long-term outcomes.

Pathogenesis and Classification

The pathogenesis of lupus nephritis involves the deposition of immune complexes in the glomeruli, leading to inflammation and tissue damage. Autoantibodies, particularly anti-double-stranded DNA antibodies, play a central role in triggering complement activation and inflammatory cascades. Genetic susceptibility, environmental factors, and hormonal influences also contribute to disease development.

Lupus nephritis is classified into six histological classes based on renal biopsy findings, ranging from minimal mesangial involvement (Class I) to advanced sclerosing disease (Class VI). This classification guides treatment

Clinical Features and Management

Patients with lupus nephritis may present with proteinuria, hematuria, hypertension, and varying degrees of renal impairment. In severe cases, it can progress to end-stage renal disease. Diagnosis typically involves laboratory tests, including urinalysis and serological markers, along with a kidney biopsy for definitive classification.

Treatment strategies depend on disease severity and class. Immunosuppressive therapies such as corticosteroids, cyclophosphamide, and mycophenolate mofetil are commonly used to control inflammation. More recently, biologic agents targeting specific immune pathways have shown promise in improving outcomes and reducing relapse rates.

Conclusion

Lupus nephritis remains a major challenge in the management of systemic lupus erythematosus due to its complex pathogenesis and variable clinical course. Advances in understanding immune mechanisms and the development of targeted therapies have significantly improved patient prognosis. Continued research and early intervention are essential to optimize treatment strategies and reduce the burden of kidney disease in lupus patients.

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