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Renal Disease in Systemic Lupus Erythematosus

Series Editor:

Janet F. Burkholder, MD

Assistant Professor of Medicine

Temple University Hospital

Philadelphia, PA

Contributor:

Gerri Schulman, MD

Associate Professor of Medicine

Attending Physician in Medicine and Nephrology

Temple University Hospital

Philadelphia, PA

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Renal Disease in Systemic Lupus Erythematosus

Gerri Schulman, MD

INTRODUCTION

Systemic lupus erythematosus (SLE) is the prototypical autoimmune disease. The most common renal manifestations of SLE are due to immune-complex glomerulonephritis (GN). Other types of renal involvement include interstitial nephritis, renal vasculitis, and drug-induced diseases. In patients with SLE and the antiphospholipid syndrome, kidney disease may be a function of hypercoagulability rather than immune-complex deposition. Renal disease may be the presenting feature in some patients with SLE. In most patients, however, early renal disease can be detected by laboratory and clinical monitoring before renal failure develops. This manual discusses the monitoring and treatment of lupus nephritis and the detection of antiphospholipid involvement in the kidney.

LUPUS NEPHRITIS

PATIENT PRESENTATION

A 28-year-old African-American woman presents with a malar rash, alopecia, arthritis involving the wrist and knees, and systemic complaints of fever and malaise. Results of laboratory workup include positive tests for anti-nuclear antibodies (ANA) (dilution of 1:1280) and antibodies to double-stranded (ds) DNA, depressed C3 and C4 levels, and a serum creatinine level of 0.9 mg/dL. Urinalysis by dipstick reveals 1+ proteinuria without hematuria. A diagnosis of SLE is made, and therapy with prednisone 15 mg/day is initiated to treat the arthritis. The patient's symptoms improve over the next 2 weeks, and the prednisone is tapered over the next 3 months. The creatinine level decreases to 0.6 mg/dL, but dipstick urinalysis still shows proteinuria (1+). The serologic abnormalities improve but do not normalize, and the patient continues to test positive for dsDNA antibodies and to have depressed C3 levels.

- What is this patient's risk for lupus nephritis?
- What laboratory tests are used to monitor patients for lupus nephritis?

DISCUSSION

Lupus nephritis is a common complication of SLE. The incidence of lupus nephritis varies depending on the population studied, the definition of renal disease, and the length of follow-up. Approximately 20% to 30% of patients will have clinical evidence of renal disease at presentation, and more than 50% will develop it within the first 5 years after diagnosis.¹ When pathological criteria are used, some studies find that more than 90% of patients with SLE have evidence of renal immune-complex deposition. Not all patients will undergo renal biopsy, however, so clinicians must recognize lupus nephritis based on readily available clinical tests (**Table 1**).

Laboratory Monitoring

Urinalysis. The most common laboratory abnormality in lupus nephritis is proteinuria.¹ The urine dipstick is an inexpensive technique to screen for proteinuria, but its limitations must be recognized. The dipstick detects protein *concentration*, not absolute amount. The absolute amount of protein excreted depends on urine output, which can vary considerably. The case patient initially had 1+ proteinuria. If her urine concentration remains unchanged throughout the day and if her urine production is 500 mL/24 hr, her 24-hr urinary protein excretion would be approximately 150 mg/dL, which is within normal limits. With a 24-hr urine output of 2 L, 1+ proteinuria would correspond to a urinary protein excretion of approximately 600 mg/24 hr, which is clearly elevated. A dipstick reading of 3+ or 4+ indicates that the amount of protein in the urine must be abnormal, although further testing is required for quantification.

The standard test for quantifying urinary protein excretion requires a 24-hr urine collection. However, patients find collection cumbersome, and inadequate collections are common because of patient noncompliance