

Lupus Nephritis



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What is Systemic Lupus Erythematosus (SLE)?

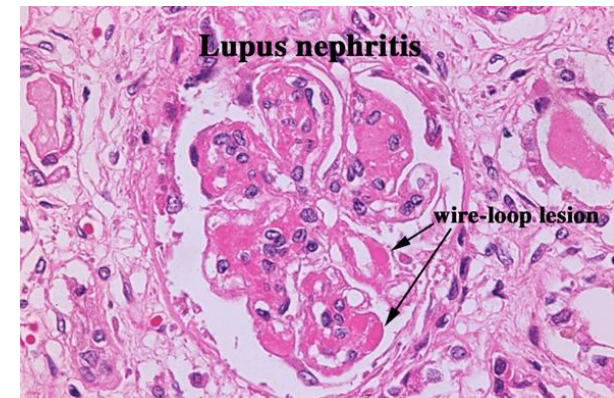
- **An Autoimmune Chronic Inflammatory Disease**
 - Immune System produces proteins called **autoantibodies** that turns against a part of the body it is designed to protect → Inflammation → Damage.
- Lupus can affect **joints, skin, heart, blood vessel, kidneys, lungs & brain**
- It is characterized by periods of illness (**flares**) & periods of wellness (**remissions**)

What is Systemic Lupus Erythematosus (SLE)? (Cont'd)

- Understanding how to **prevent flares** & how to **treat them** when they do occur → helps SLE patients maintain better health.
- More common in **Women**; African American & Hispanic & Asian.

What is Lupus Nephritis?

- A type of **Kidney Inflammation** (a common complication of SLE)
- It is **histologically evident** in patients with SLE even if no clinical involvement is yet detected.
- **Autoantibodies attack glomeruli** of kidneys (waste filters) → blood in urine (hematuria), Proteins in Urine (proteinuria), high BP & Kidney failure.



Classification of Glomerulonephritis in Lupus

As per Kidney Biopsy findings:

- **Class I disease (Minimal Mesangial LN)** → NL
Urine Analysis & Serum Creatinine concentration
- **Class II disease (Mesangial Proliferative LN)** →
Microscopic hematuria &/or proteinuria. HTN,
Nephrotic Syndrome and renal insufficiency are
rare.
- **Class III disease (Focal LN)** → Hematuria &
proteinuria (most patients). Elevated Cr conc.
HTN, Nephrotic syndrome (only some).
Progressive renal dysfunction is less common.

Classification of Glomerulonephritis in Lupus (Cont'd)

- **Class IV disease (Diffuse LN)** → Hematuria & Proteinuria (in all pts with active LN). Nephrotic Syndrome, HTN & Renal Insufficiency is common.
- **Class V disease (Lupus Membranous nephropathy)** → Nephrotic Syndrome mainly. Creatinine level is NL-slightly elevated.
- **Class VI disease (Advanced Sclerosing Lupus Nephritis)** → 'healing of prior inflammatory injury' slowly progressive renal dysfunction.

Symptoms of Lupus Nephritis

- **Active SLE symptoms:**

Brain → Persistent headaches, memory loss or confusion.

Mouth & Nose → Sores

Lungs/Heart → Shortness of breath, Chest Pain.

Fingers/Toes → may turn blue/white on cold exposure/stress

Fatigue & Unexplained Fever

Eyes → Dry or puffy

Skin → Butterfly malar rash on face, worsen with sun exposure.

Stomach → Nausea, vomiting, recurring Abdominal pain.

Bladder → Persistent Infections and blood in urine.

Joints → Persistent pain and swelling

Symptoms of Lupus Nephritis (Cont'd)

- **Asymptomatic Lupus Nephritis** detected in Lab results during regular follow up → more typical of mesangial or membranous LN
- **Active Nephritis:** Peripheral edema 2ry to HTN or Hypoalbuminemia.
- **Diffuse Lupus Nephritis:** Headache, dizziness, visual disturbances, symptoms of cardiac decompensation

Physical Findings

- **Focal & Diffuse LN: Generalized Active SLE**
 - Rash
 - Oral & Nasal Ulcers
 - Synovitis or Serositis
- **Active LN**
 - HTN
 - Peripheral edema
 - Cardiac decompensation occasionally.
- **Membranous LN**
 - No HTN
 - Peripheral edema
 - Ascites, Pleural & pericardial effusion.

Diagnosis of Lupus Nephritis

- Tests Conducted:
 - **Urine Analysis** → check for Protein, Red Blood Cells, & Cellular casts.
 - **Blood Test** → Blood Urea Nitrogen <BUN>, Creatinine <Cr>.
 - **Spot Urine Test** → for protein and Cr concentration. Calculate **Urine Albumin/Creatinine Ratio**.
 - **24 hr. urine test** for Cr clearance & Protein excretion.
 - **Kidney Biopsy** → in any pt with clinical/lab evidence to classify disease.
- Most common abnormality is **Proteinuria** (protein in urine)
- Hematuria & Proteinuria with or without elevated Creatinine level is observed in most SLE patients.

Diagnosis of Lupus Nephritis (Cont'd)

- Lab tests to detect SLE disease Activity:
 - Antibodies to double stranded DNA (dsDNA)
 - Complement (C3, C4 & CH50)
 - Erythrocyte Sedimentation Rate (ESR)
 - C-reactive protein (CRP)

Treatment of Lupus Nephritis

- There is no cure for lupus nephritis. Treatment goals aim to:
 - Induce remission of the active disease.
 - Keep the disease from getting worse.
 - Reduce symptoms (remission).
 - Avoid the need for dialysis or kidney transplantation.
 - Maintain remission.

Treatment of Lupus Nephritis (Cont'd)

- **Diet Alterations** (according to HTN & Hyperlipidemia)
 - Salt Restriction
 - Restrict Fat Intake
 - Restrict Protein Intake (if renal function significantly impaired)
- **Lipid Lowering Therapy**
 - **Statins** for hyperlipidemia 2ry to Nephrotic Syndrome.

Treatment of Lupus Nephritis (Cont'd)

- **Corticosteroid Therapy (1st line of therapy)**

If the patient has clinically significant renal disease.

- **Immunosuppressive Agents; Cyclophosphamide, Azathioprine, or Mycophenolate mofetil**

If pt has aggressive proliferative renal disease or no response to corticosteroids.

Treatment of Lupus Nephritis (Cont'd)

- **Hydroxychloroquine** → decreases flare rates

(background therapy in all pts unless contraindicated).

- **Angiotensin Converting Enzyme Inhibitors (ACEIs) &**

Angiotensin Receptor Blockers (ARBs) → ttt HTN

(maintain BP below 130/80) and proteinuria in lupus

nephritis

Treatment of Lupus Nephritis (Cont'd)

- **Calcium Supplementation** → for Osteoporosis 2ry to long term Corticosteroid therapy.
- **Biphosphonates**
- Avoid **NSAIDs** and other drugs that affect renal function.
- Avoid **Pregnancy** during active lupus → worsens renal disease & medication are teratogenic.
- **ESRD, Sclerosis** patients → unlikely to respond to aggressive therapy → focus therapy on extra-renal manifestations & possible kidney transplant.

Treatment of Lupus Nephritis (Cont'd)

- Investigational therapies for lupus nephritis & SLE:
 - Rituxmab
 - Other anti-CD20 monoclonal antibodies
 - Belimumab
 - Atacicept
 - Abetimus
 - Anticytokine therapies (monoclonal antibodies directed against interferon alpha, Interleukin 1,6,10 and TNF alpha.

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