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Original Article

# A clinical study of lupus nephritis in a tertiary care hospital in northeast India

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ABSTRACT

*Background:* Renal involvement is very common in SLE, with proliferative form being commonest type of lupus nephritis (LN), which is amenable to aggressive treatment.
*Objectives:* To determine the prevalence and clinical profile of LN in northeast India.
*Methods:* Fifty-two patients with LN, ≥12 years, were selected. Patients with overlap syndromes, end-stage renal disease, and other contraindications for renal biopsy were excluded. All selected patients underwent renal biopsy.
*Results:* LN was more common in younger females (mean age 24.5 years; female:male ratio 12:1). Histologically, International Society of Nephrology and Renal Pathology Society (ISN/RPS) Class-III was the commonest type of LN (32.69%), followed by class-IV (30.76%), with proliferative LN (Class III + IV) found in 63.45%. Renal manifestations included hypertension – 63.5%, renal insufficiency – 57.6%, nephrotic syndrome – 51.9%, and nephritic syndrome – 48.1%. Renal manifestations increased proportionately with the histological type of LN. Proliferative LN was significantly higher in younger females ($p < 0.001$).
*Conclusion:* Proliferative LN was most common type of LN, which was significantly higher in younger females. Higher the histological class, more severe were the renal manifestations. Considering the higher incidence of proliferative LN in younger females necessitating aggressive treatment, there is need for early histological diagnosis of LN, especially in younger females, to initiate aggressive treatment, where indicated, for better long-term outcome.


## 1. Introduction

Systemic lupus erythematosus (SLE) is a multisystem autoimmune connective tissue disorder with various clinical presentations.[1] Nephritis is the leading cause of morbidity and mortality among patients with SLE.[2] Lupus nephritis (LN) is one of the major causes of end-stage renal failure requiring renal replacement therapy. It is estimated that up to two-

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thirds of SLE patients may develop renal disease at some stage of their illness, with manifestations varying from mild proteinuria to rapidly declining renal function.[3]

LN has been extensively studied during the last two decades, and renal biopsy results have been classified according to World Health Organization (WHO)-1995 and International Society of Nephrology and Renal Pathology Society (ISN/RPS-2003) classifications.[4] Most published clinical studies of LN have used the WHO-1995 classification of LN.[5] However, the ISN/RPS-2003 has published a new, similar classification that replaces the WHO standards.[4] Proliferative forms (classes III and IV) are the commonest types of LN, and are also the most life-threatening forms requiring aggressive form of therapies.[4] There is some evidence that renal involvement in SLE may be more common in Indians, the commonest pattern being diffuse proliferative glomerulonephritis.[6] However, there are very few published studies on LN from this part of the country, even though there are large number of cases of SLE with multisystem involvement attending our institution.

## 2. Method and material

The present study was a hospital-based prospective observational study, carried out between July 2011 and June 2013, in consecutive patients of LN attending Gauhati Medical College & Hospital, Guwahati, a tertiary care hospital in northeast India catering to several northeastern states of the country. The LN patients for the present study were selected from among all consecutive patients with SLE, attending the Departments of Medicine and Nephrology of the institution in the aforesaid period of time, with clinical and/or laboratory evidence of renal involvement (i.e. LN), and satisfying the following inclusion and exclusion criteria, and after obtaining ethical clearance from the Institutional Ethical Committee and informed consent from the patients.

### 2.1. Inclusion criteria

1. Age 12 years and above
2. Diagnosed cases of SLE[7] with evidence of renal involvement (LN)[4]:

a. Abnormal urine microscopy: (i) presence of cellular casts (ii) clinically significant hematuria (>3 RBCs/HPF) (iii) overt proteinuria (>500 mg/24 h) and/or
b. Evidence of renal insufficiency as suggested by decreased e-GFR (<60 ml/min/1.73 $m^2$) using the Cockcroft-Gault equation.[8]

### 2.2. Exclusion criteria

1. SLE without renal involvement
2. Contraindications for renal biopsy, e.g., patients with bleeding diathesis, on regular anticoagulants, and solitary kidney
3. Advanced or end-stage renal disease with bilaterally small kidneys
4. Features suggestive of Overlap Syndromes [e.g. MCTD, t-RNA synthetase associated Overlap Syndromes, SLE/Sjogren's Syndrome Overlap defined by Anti-La(SS-B)].

Detailed history, clinical examination and laboratory tests (complete blood counts, urine analysis, blood urea, serum creatinine), inflammatory markers (ESR/CRP), and immunological tests [Antinuclear antibody (ANA) and Anti-ds DNA] were done in all cases to establish the diagnosis of SLE and to determine the presence or absence of renal involvement (LN). Further, relevant tests comprising abdominal ultrasonography, e-GFR, coagulogram, and immunological markers [Anti-La (SS-B), Anti-U-1-RNP] were done to exclude those with advance/end-stage renal disease, solitary kidney, bleeding diathesis and overlap syndromes, respectively. All the patients of LN, satisfying the inclusion and exclusion criteria, were subjected to renal biopsy after obtaining written informed consent and were classified into different types of LN as per the ISN/RPS-2003 criteria.[4]

### 2.3. Statistical analyses

Statistical analyses have been done using Statistical Package for Social Survey (SPSS) for Windows version 17.0. Fisher's Exact test has been used for comparing ratios. A '$p$ value' <0.05 has been considered as statistically significant. The results have been tabulated and graphically represented using Microsoft Office for Windows 2008.

## 3. Results

Based on the selection criteria, 52 consecutive patients with LN were included in the present study. Majority of the patients (67.3%) were in the age group 21–30 years with a mean age of presentation of 24.5 years (Table 1). Forty eight of the 52 patients (92.3%) were females with a female:male ratio of 12:1. The clinical presentations, renal manifestations, and immunological profile of the patients are shown in Table 2. The common types of clinical manifestations in descending order of frequency included constitutional symptoms, musculoskeletal, mucocutaneous, hematological, neurological, cardiopulmonary, and gastrointestinal features. Features of renal manifestations included hypertension (63.5%), renal insufficiency (57.6%), and features of nephrotic (51.9%) and nephritic (48.1%) syndromes. Of the immunological markers ANA was positive in all the patients, while Anti-ds-DNA antibodies were positive in 88.5%. The various histopathological types of LN (ISN/RPS classification) are shown in Table 3. Class III was the commonest type of LN closely followed by Class IV (32.7% and

**Table 1 – Age and sex distribution of lupus nephritis patients.**

| Age in years | Number of patients | | | | | |
|---|---|---|---|---|---|---|
| | Male | | Female | | Total | |
| | *n* | % | *n* | % | *n* | % |
| 12–20 | 0 | 0 | 4 | 7.7 | 4 | 7.7 |
| 21–30 | 3 | 5.8 | 32 | 61.6 | 35 | 67.4 |
| 31–40 | 1 | 1.9 | 10 | 19.2 | 11 | 21.1 |
| >40 | 0 | 0 | 2 | 3.8 | 2 | 3.8 |
| Total | 4 | 7.7 | 48 | 92.3 | 52 | 100.0 |