

# Renal Biopsy Findings in Lupus Nephritis and Their Correlation with Clinico-Biochemical Parameters

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## Abstract

**Background:** This is an observational analysis wherein we contemplated renal biopsy discoveries of 50 patients of lupus nephritis (LN) and these biopsy discoveries were associated with clinical and biochemical parameters of the LN patients. The study included 50 patients of SLE diagnosed to have renal involvement. Renal biopsy was done in every one of the 50 patients and the outcomes were ordered by the ISN/RPS arrangement of LN. Clinical and biochemical parameters were examined in all patients and they were corresponded with renal biopsy discoveries. The different biochemical parameters in our investigation were-proteinuria (100%), raised serum creatinine (56%). Mean 24 hour protein discharge was 2386+/- 1810 mg/day at presentation. 11(22%) patients had nephrotic range proteinuria and 8 (16%) patients had proteinuria <1gm/day. Nephrotic range proteinuria was seen in LN Class IV and Class V. Hematuria was available most ordinarily in LN Class IV (in 100%) while none of the Class II LN patients had hematuria. Hypertension was most ordinarily connected with Class III and Class IV LN. Mean serum creatinine was 2.53+/- 1.92 mg/dl. Mean serum creatinine was relatively higher on Class IV LN than in different classes of LN. In our examination most regular kind of renal biopsy finding in lupus nephritis was LN Class IV. Most serious kind of LN is Class IV LN. LN patients may have mixed lesions of Class IV and Class V LN, which was found in 2 patients (4%) in our investigation. LN Class I and LN Class VI are exceptionally uncommon at introduction of LN which were not found in renal biopsy in our examination.

**Keywords:** Renal biopsy, lupus nephritis, SLE, Clinical & biochemical parameters.

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## Introduction

Systemic lupus erythematosus (SLE) is a chronic relapsing multisystemic autoimmune disease of unknown aetiology that influences ladies of child bearing age.<sup>[1]</sup> It is described by exorbitant invulnerable complex arrangement, autoantibody generation, supplement initiation and immunologically-interceded tissue damage. It influences different organ systems, including the skin, joints, heart, lungs, kidneys, central nervous system and serous films.<sup>[2,3]</sup> Renal involvement is frequent in SLE.

Renal association is one of the significant prognostic variables for SLE. Lupus nephritis (LN) is seen in 20-75% of patients relying upon ethnicity and age. It is progressively regular in more youthful people and people of African or Asian lineage. The typical attribute in lupus nephritis is immune complex deposition, which shows as 'full house' in immune fluorescence observation.<sup>[4,5]</sup> The annual frequency of SLE, in generally low-to high-chance gatherings, shifts from 6 to 35 new cases for every 100,000 populace. The announced prevalence in the northern Indian population

ranges from 14 to 60 for each 100,000.<sup>[6,7,8]</sup> The assessments of event of the range of renal disease in SLE patients varies from 35% to over 90% mirroring the extraordinary assorted variety in the clinical manifestations and disease severity of lupus nephritis. In many patients, LN is restricted to asymptomatic, self-constraining low grade proteinuria. Proteinuria is found in about 42% of SLE patients. In others it advances towards end-stage renal failures in merely weeks to months, and reacts inadequately even to high-grade immunosuppressive treatment.<sup>[9]</sup> The International Society of Nephrology/Renal Pathology Society (ISN/RPS) 2003 classification will in general associate with the clinical disorder and give significant data in regards to anticipation and rule for treatment.<sup>[10]</sup> We tentatively considered 50 patients with lupus nephritis at our inside to evaluate the correlation between's the clinico-biochemical parameters and the histological sorts of renal debilitation.

## Subjects and Methods

The study included 50 patients of SLE diagnosed based on systemic lupus international clinical collaboration (SLICC)

with renal involvement. Renal biopsy was done in all 50 patients. Renal biopsy were categorised according to ISN/RPS classification of LN. Criteria for clinical diagnosis of Lupus Nephritis was as below

Class I and II are clinically asymptomatic. Class III Microscopic hematuria + Sub nephrotic Proteinuria + Normal serum Creatinine ± Hypertension. Class IV Microscopic Hematuria + Sub nephrotic Proteinuria + Increased serum Creatinine ± Hypertension. Class V Nephrotic syndrome Class III+V Microscopic hematuria + Nephrotic range Proteinuria + Normal serum Creatinine ± Hypertension. Class IV+V Microscopic hematuria + Nephrotic range Proteinuria + Increasedserum Creatinine ± Hypertension.

Clinical, biochemical and immunological parameters were studied in all patients and they were correlated with renal biopsy findings.

## Results

Total 50 patients who fulfilled the American Rheumatism Association criteria for SLE and underwent renal biopsy were included in the study. The study included 50 patients, with a mean age of  $28.68 \pm 9.28$  years (Table. 1) , female to male ratio in patients of lupus was 10:1.

**Table 1: Distribution of age in groups (n=50)**

Age in groups' (years)	Frequency (%)
<20 Total	11 (22)
21-40	33 (66)
>40	6 (12)
Total	50(100)

**Table 2: ISN RPS class of lupus nephritis and clinico-biochemical parameters**

	ISN RPS CLASS OF LUPUS NEPHRITIS					Total	
	II	III	IV	V	IV + V	Case	%
No. of Patients	4	10	25	9	2	50	100
Hypertension	0	2	16	2	2	22	44
Pedal Edema	2	6	22	9	2	41	82
Hematuria	0	8	25	0	2	35	70
Proteinuria							
<1gm	2	2	4	0	0	6	12
1-3.5gm	2	8	17	3	1	31	62
>3.5gm	0	0	4	6	1	11	22
24 Hour Urinary Protein	1070±240	1647±670	2243±1783	4342±1986	3789±560	2386±1810	
S. Albumin	3.5±0.14	3.56±0.32	2.65±0.72	2.14±0.96	2.34±0.8	2.79±0.77	
S.Creatinine	0.75±0.21	1.1±0.63	3.6±1.815	0.88±0.192	2.1±0.82	2.53±1.92	
GFR	92.5±4.17	80.32±32.2	26.45±14.7	91.2±13.61	34.2±12.5	50.79±35.79	

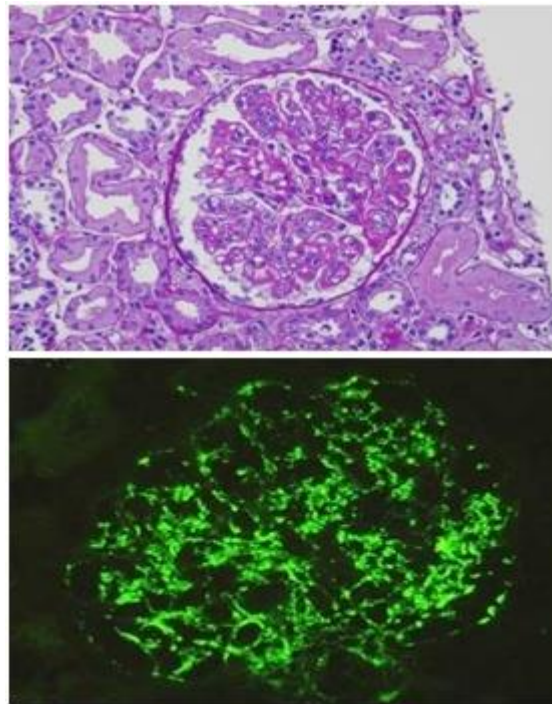
In renal biopsy there were 4 cases of LN Class II , 10 cases of LN Class III , 25 cases of LN Class IV , 2 cases of LN Class IV & V and 9 cases of LN Class V. There were no cases of LN Class I or LN Class VI noted in our study. LN Class IV was the most common type of renal biopsy finding in our study (Fig. 1). Most common presentation of LN was

nephritic syndrome in our study. The various clinical parameters noted were- pedal edema (84%), hematuria (76%) & hypertension (48%). The various biochemical parameters in our study were- proteinuria (100%), elevated serum creatinine (56%).

Mean 24 hour protein excretion was  $2386 \pm 1810$  mg/day at presentation. 11(22%) patients had nephrotic range proteinuria and 8 (16%) patients had proteinuria <1gm/day.

Nephrotic range proteinuria was seen in LN Class IV and Class V. Hematuria was present most commonly in LN Class IV (in 100%) while none of the Class II LN patients had hematuria. Hypertension was most commonly associated with Class III and Class IV LN. Mean serum creatinine was  $2.53 \pm 1.92$  mg/dl. Mean serum creatinine was comparatively higher on Class IV LN than in other classes of LN. [Table-2].

The immunological parameters studied in our patients ANA, Anti-dsDNA, C3 and C4. In our study ANA was positive in 100% patients of LN, anti-dsDNA was positive in 78%, C3 was low in 72% and C4 was low in 72% LN patients.



**Figure 1: Histopathological picture of renal biopsy**

## Discussion

LN stays one of the most extreme manifestations of SLE and related with significant morbidity and mortality. The glomerular injuries that every now and again go with SLE have been the subject of intense examination by clinicians and pathologists for about a portion of century. This investigation was led to discover the recurrence of appropriation of different phases of LN and to relate distinctive clinicobiochemical parameters with these stages.

In our observation female to male proportion in patients of lupus was 10:1. Expanded recurrence of SLE among ladies might be credited to contrasts in the metabolism of sex hormones or potentially gonadotropin-releasing hormones. Different investigations additionally demonstrated female dominance in the examination populace.<sup>[11-13]</sup> Essentially

mean age of the examination bunch patients at introduction was seen as  $28.68 \pm 9.28$  years. Roughly comparative outcomes were gotten in various pieces of India by Shobha et al. [14], where mean period of SLE patients was seen as  $28.31 \pm 10.62$  years and Sanker et al. [15] (mean age = 28.42). Infact, SLE is a disease of childbearing age. A few scientists, for example, Esdaile et al. and Austin et al. have discovered that more youthful age (<23 years) is one of the markers related with expanded pace of renal failure and an increasingly quick dynamic course.<sup>[12,16]</sup>

In renal biopsy there were 4 cases of LN Class II, 10 cases of LN Class III, 25 cases of LN Class IV, 2 cases of LN Class IV & V and 9 cases of LN Class V. There were no cases of LN Class I or LN Class VI noted and also we got LN Class IV was the most common type of renal biopsy finding in our study (Table. 2). This finding is in concurrence with some past investigations where Group IV was seen as the most well-known assortment.<sup>[14, 17]</sup> Neumann et al. in his observation on 150 LN patients discovered a recurrence of 10%, 17%, 53%, and 14% for the Class of II, III, IV, and V, individually.<sup>[18]</sup> Additionally we got proteinuria (100%), raised serum creatinine (56%). Nephrotic range proteinuria was seen in LN Class IV and Class V. Serum urea level was seen as higher, though serum creatinine was seen as altogether higher in Class IV like the investigation by Nezhad and Sepaskhah.<sup>[19]</sup> and Mok et al.<sup>[20]</sup>, who likewise watched a huge relationship of WHO grouping and renal capacity. This could be clarified by the seriousness of renal sore in Class IV. One past study detailed that creatinine >2.4 mg/dl is related with poor endurance result reflecting increasingly serious renal harm.<sup>[21]</sup> Mean serum creatinine was nearly higher on Class IV LN and every single other protein also. Connection between's 24 hrs urine protein discharge and ISN/RPS 2003 classes was seen as statistically significant and is in agreement with the study by Nezhad and Sepaskhah<sup>[19]</sup> who also found significantly elevated 24 hrs urine protein excretion.

## Conclusion

In conclusion, our examination recommends some significant relationship between's lab discoveries and histopathological lupus characterization on renal biopsy. This investigation likewise proposes that renal biopsies are as yet gainful for better assessment of renal status and assurance of LN classes. In any case, there are a few limitations of the present examination chiefly the little size of the investigation populace, and patients were not followed up for long to see further clinical, renal and histopathological changes of renal status.

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