

**Histopathological Spectrum of Biopsy Proven Kidney Diseases in Patients of Rohilkhand Region- A Single Centre Study**Vidya Nand<sup>1</sup>, Sangeeta Kumari<sup>2</sup><sup>1</sup>Associate Professor, Department of Medicine, Division of Nephrology SRMS Institute of Medical Sciences, Bareilly.<sup>2</sup>Assistant Professor, Department of Radio-Diagnosis SRMS Institute of Medical Sciences, Bareilly.

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Corresponding Author: Dr. Sangeeta Kumari

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**Abstract:**

Glomerular disease (GD) is a common forms of renal diseases that can result from many inherited or acquired disorders. Renal biopsy plays an important role in the diagnosis of kidney disease. . Profiling the glomerular diseases from different areas in and around the country helps understand the spectrum and the trend of disease over a time period. The present study was done to evaluate the histopathological spectrum of biopsy proven kidney diseases in patients of Rohilkhand region. This was a retrospective single centre study done at Department of Medicine, Division of Nephrology, SRMS institute of Medical Sciences, Bareilly, Uttar Pradesh. Total 108 patients included in this study. The mean age of patients was 45.2± 14.3 year. Males outnumbered females; there were 62% males and 38% females. Most common indication for renal biopsy was Nephrotic syndrome in 43.54% (N=47) followed by Nephritic syndrome (28.7% (n=31). Primary glomerular disease was present in 71.3 % ( n=77) and secondary glomerular disease was present in 28.3 % ( n=31). IgA nephropathy (n=25, 32.46%) was the most common primary glomerular disease. Membranous nephropathy (n=21, 27.27%), Focal segmental glomerulosclerosis (n=12, 15.58%), Minimal change disease (n=9, 11.68%) and C3 glomerulonephritis/ immune complex MPGN (n=8, 10.38%) were the other common primary glomerular disease. Among secondary glomerular disease, lupus nephritis was most common (n=10, 32.25%). Thrombotic microangiopathy (n=8, 25.8%), diabetic nephropathy (n=5, 16.1%), ANCA associated vasculitis (n=4, 12.9%) and Amyloidosis (n=3, 9.67%) were the other common secondary glomerular disease. Spectrum of kidney biopsy from different part of country help to understand prevalence of glomerular disease and its geographical variation.

**Keywords:** Kidney Biopsy, Primary Glomerular Disease, Secondary Glomerular Disease.

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**Introduction**

Glomerular disease (GD) is a common forms of renal diseases that can result from many inherited or acquired disorders. It can manifest in various form. Patients can present as asymptomatic urinary abnormalities, nephrotic syndrome (NS), nephritic syndrome, rapidly progressive renal failure (RPRF), acute kidney injury (AKI), chronic kidney disease (CKD), macroscopic hematuria (MH), recurrent disease in the post-transplant kidney, as well as isolated proteinuria or haematuria [1]. Renal biopsy plays an important role in the diagnosis of kidney disease along with prognostications. Profiling the glomerular diseases from different areas in and around the country helps understand the spectrum and the trend of disease over a time period. Previous studies show that immunoglobulin A nephropathy (IgAN) was the most common cause of GN in Japan [2], China [3,4], Australia [5], Hungary [6], Italy [7,8], Spain [9] and France [10]. The prevalence of glomerular

diseases from different geographical areas in the Indian subcontinent has been done in a few studies as individual centres in the absence of a common renal registry. Focal and segmental glomerulosclerosis (FSGS) was reported as the most frequent cause of GN in India [11, 12, 13, 14], Pakistan [15] Brazil [16], Colombia [17] and USA [18]. Literature does highlight the occurrence of change in the prevalence of glomerular diseases Improvement in the socioeconomic status and decrease in the prevalence of infectious diseases in different geographical areas has also been contributory.

The present study was done to evaluate the histopathological spectrum of biopsy proven kidney diseases in patients of Rohilkhand region.

### Aims and Objectives

To evaluate the histopathological spectrum of biopsy proven glomerular diseases in patients of Rohilkhand region.

To compare the current glomerular disease pattern in different population from previous studies.

### Material and Methods

This was a retrospective single centre study done at Department of Medicine, Division of Nephrology, SRMS institute of Medical Sciences, Bareilly, Uttar Pradesh. All the patients admitted in Department of Medicine from January 2023 to Feb 2024 for suspected glomerular disease and underwent kidney biopsy were included.

### Exclusion Criteria-

Patients in which kidney biopsy was not done or biopsy sample was inadequate

(Less than 10 glomeruli) and Transplant kidney Biopsy was excluded. Patients with missing clinical details were also excluded. Patients who had multiple biopsies, only first biopsy study was recorded for this study.

Demographic profile of all patients were recorded from histopathology requisition form. Lab parameters (CBC, KFT, Urine r/m, spot urine protein, spot urine creatinine, 24 hour urinary protein, LFT, TSH, viral marker ) was recorded. Other specific test like serum c3, c4, ANA, Anti ds DNA, vasculitis profile, if available was also recorded. All the biopsies were performed under ultrasound guidance using Bard® Max-Core® disposable core biopsy instrument. All the biopsies were analyzed by light microscopy using hematoxylin and eosin, periodic acid–Schiff, Jone's

silver methenamine, and Gomori's trichrome stains, and immunofluorescence studies were performed using antihuman IgG, IgA, IgM, C3, C1q, and kappa and lambda

light chains. Electron microscopy was done in few cases. Indication for kidney biopsy and kidney disease reported in kidney biopsy was recorded. Glomerular diseases (GD) was further be subclassified as primary and secondary GD. Among primary glomerular diseases Minimal change disease(MCD), IgA Nephropathy, Focal and segmental glomerulosclerosis(FSGS), Membranous Nephropathy (MN), C3 Glomerulonephritis/ Immune complex mediated Membrano-proliferative glomerulonephritis (MPGN) was recorded. Among secondary glomerular diseases Lupus nephritis, Diabetic Nephropathy, Amyloidosis, ANCA associated vasculitis and any other secondary GN was recorded. The final diagnosis was made for each patient based on both clinical and histological investigation. If biopsy reveals more than one diagnosis, the more relevant to indication of kidney biopsy was recorded.

Descriptive statistics will be used and results will be expressed as frequencies, percentage and mean± standard deviation. Statistical package for the social sciences (SPSS) was used for statistical analysis.

### Results-

A total of 110 biopsies were performed during the study period. Total 108 patients included in this study and 2 transplant kidney biopsy were excluded.

The mean age of patients was 45.2± 14.3 year. Males outnumbered females; there were 67 males and 41 females (Table 1).

**Table 1: Age And Gender Distribution**

Age Group	Male	Female	Total
10 – 20	5	7	12
21 – 30	18	13	31
31 – 40	17	8	25
41 – 50	11	10	21
51 – 60	7	2	9
61 – 70	8	0	8
71 – 80	1	1	2
Total	67	41	108

Patient's age ranged from 12 years to over 75 years, with most patients biopsied coming under 20–50 years of age category (Table 1). Indication for renal biopsy was Nephrotic syndrome in 43.54% (N=47) followed by Nephritic syndrome (28.7% (n=31) and acute kidney injury/ unexplained renal failure in 27.78% (n=30) (Table 2).

**Table 2: Indication For Kidney Biopsy**

Nephrotic syndrome	47 (43.52%)
Nephritic syndrome	31 (28.7%)
AKI /unexplained renal failure	30 (27.78%)
Total	108 (100%)

Primary glomerular disease was present in 71.3 % (n=77) and secondary glomerular disease was present in 28.3 % (n=31).

IgA nephropathy (n=25, 32.46%) was the most common primary glomerular disease. Membranous

nephropathy (n=21, 27.27%), Focal segmental glomerulosclerosis (n=12, 15.58%), Minimal change disease (n=9, 11.68%) and C3 glomerulonephritis/ immune complex MPGN (n=8, 10.38%) were the other common primary glomerular disease. (Table 3)

**Table 3: Distribution Of Primary Glomerular Disease**

Diagnosis	Number of Cases (%)
IgA Nephropathy	25 (32.46%)
Membranous Nephropathy	21 (27.27%)
FSGS	12 (15.58%)
MCD	9 (11.68%)
C3GN/Immune Complex MPGN	8 (10.38%)
Others	2 (2.59%)
Total	77 (71.93%)

Among secondary glomerular disease, lupus nephritis was most common (n=10, 32.25%). Thrombotic microangiopathy (n=8, 25.8%), diabetic nephropathy (n=5, 16.1%), ANCA associated vasculitis (n=4, 12.9%) and Amyloidosis (n=3, 9.67%) were the other common secondary glomerular disease. (Table 4)

**Table 4: Distribution of secondary Glomerular disease**

Diagnosis	Number of Cases (%)
Lupus nephritis	10 (32.75%)
TMA	8 (25.8%)
Diabetic Nephropathy	5 (16.13%)
ANCA – associated Vasculitis	4 (12.9%)
Amyloidosis	3 (9.67%)
Others	1 (3.22%)
Total	31 (28.7%)

## Discussion

Glomerulonephritis is the most common renal biopsy proven disorder and a frequent cause of end stage renal disease. [19]

In this study, we highlighted the demographics of patients with biopsy proven kidney disease and primary and secondary glomerular disease. Mean age of patients at biopsy was 45.2± 14.3 year and we have male predominance in our study like other studies. [20,21,22]. In our study primary glomerular disease was more common than secondary glomerular disease like other study. [20] .71.93% had primary glomerular disease and 28.7% had secondary glomerular disease.

In our study most common indication for kidney biopsy was nephrotic syndrome (43.52%) followed by nephritic syndrome (28.7%) and deranged renal function (27.78%). Our finding was in consistent with previous published studies from India and abroad. [ 23,24]

Among primary glomerular disease IgA nephropathy (32.46%) was most common followed by MN (21%), FSGS (15.58%) and MCD (11.68%). This observation was similar to study published by Bhawane et al [25] and different from Chug et al (26) where MCD was most common primary glomerular disease followed by FSGS.

The most common secondary glomerular disease in our study was lupus nephritis (32.75%) which is in consistent with previous published studies (20, 22). TMA (25.8%), diabetic nephropathy (16.13%), ANCA vasculitis (12.9%) and amyloidosis were other common causes of secondary glomerular disease. We found more cases of ANCA vasculitis and thrombotic microangiopathy cases than previous study [25]. This observation may be because we have many patients (27.78%) who underwent kidney biopsy due to AKI or unexplained renal failure.

## Conclusion

The spectrum of primary and secondary glomerular disease is gradually changing. IgA nephropathy is most common primary glomerular disease now and prevalence of membranous nephropathy is more than FSGS and MCD. Renal biopsy data from various part of country will to better understand the epidemiology of glomerular disease.

## Limitation

The main limitation of our study is that it is a single centre study and has small sample size. Multicentre study will help to more understanding of epidemiology of renal glomerular diseases.

Conflict of interest-

None.

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