ISSN: 0975-8585

Research Journal of Pharmaceutical, Biological and Chemical Sciences

Etiological And Clinical Profile Of Glomerular Diseases In Adults.

A Vinoj[1]*, and Sheik Mohamed Raja[2].

[1]Assistant Professor, Department of General Medicine, Tirunelveli Medical College, Tirunelveli, Tamil Naud, India.
[2]Assistant Professor, Department of General Medicine, Tirunelveli Medical College, Tirunelveli, Tamil Naud, India.

ABSTRACT

Glomerulopathies constitute one of the important causes of morbidity and mortality. The objective of this study is to document the clinical and etiological profile of patients with Glomerular diseases by performing renal biopsy in them at Tirunelveli Medical college Hospital, Tirunelveli. We conducted a prospective study on 50 randomly selected patients of either sex, age >15 years who presented to our Medicine department proteinuria or hematuria. Patients with these features were clinically evaluated and subjected to tests like serum total protein urine PCR, Lipid profile, BUN and renal imaging. If results were suggestive of glomerular disease, percutaneous renal biopsy was done to characterize the exact pathology. Among the 50 patients, evaluated 26 were males and 24 males were females. The most common glomerular pathology encountered was IgA nephropathy 13/50 (26%). Among patients with IgA nephropathy proteinuria was seen in all the patients (100%), 31% had oliguria 38.5% had pedal edema, 54% had facial puffiness, 31% had extra renal manifestation but none (0%) had hematuria. Second common pathology encountered was Endocapillary proliferative glomerulonephritis (EPGN) 9/50 (18%). This EPGN was seen in 8 cases of post infective glomerulonephritis and 1 case of lupus nephritis. Membranous nephropathy and lupus nephritis each accounted for 5/50 (10%), followed by minimal change disease and proliferative glomerulonephritis each accounting for 4/50 (8%). It was followed by focal segmental glomerulosclerosis is present in 3/50(6%) followed by diabetic nephropathy, acute cortical necrosis and acute cell mediated rejection each accounting for 2/50 (4%). Finally, Diffuse proliferative glomerulonephritis was seen in 1/50 (2%). According to this study among the 50 patients evaluated IgA nephropathy was the most common condition noted. Proteinuria was present in all patients with IgA nephropathy while Volume overload state was present in nearly half of them. Second common condition was post infective glomerulonephritis. Urine quantification of protein remains a simple yet reliable test for picking up clinically significant glomerular diseases.

Keywords: Glomerulopathies, renal biopsy, IgA nephropathy.

https://doi.org/10.33887/rjpbcs/2024.15.3.16

Corresponding author

ISSN: 0975-8585

INTRODUCTION

Glomerulopathies constitute one of the important causes of morbidity and mortality. Studying about the Glomerular disease pattern in a given geographical area is of significance because it helps in identifying the etiology as well as the factors leading to the progression of end stage renal disease. Knowing the clinical profile of the glomerulopathies gives us an earlier insight regarding diagnosis which facilitate meticulous initiation of treatment [1, 2].

Renal biopsy followed by histopathological analysis is a sine qua non prerequisite for the diagnosis and management of most glomerular pathologies. The advent of ultrasonography has made the renal biopsy easier and safer compared to that in the pre sonography era. Renal biopsy data analysis acts as a framework for future research into renal parenchymal diseases [3, 4].

There is evidence of changing trend in the spectrum of renal diseases especially glomerulopathies with time in many parts of the world during the recent past. Many developed countries have established national renal biopsy registries to document such variations and changing trends in the disease spectrum. However, developing countries like India, we have very few such registries and there is very minimal data regarding renal diseases [5 - 7].

More research work is warranted in the field of glomerular diseases to get a thorough knowledge about the diseases so that earlier identification of the disease can be obtained and their progression to end stage can be halted [8, 9].

Analysing the renal biopsy data is useful in understanding the geographical prevalence of glomerular diseases in a area. In a developing country like India where there is no available renal biopsy, register there exists only minimal data regarding the epidemiological pattern of glomerular diseases [10].

Evidence from published articles across the world indicates a changing pattern of glomerular disease over the last few decades. From the limited data available we come to know that the prevalence of glomerular diseases differ according to geographical area, race, age and different histopathological pattern existing in different regions of the world [11].

Primary glomerulonephritis (PGN) has the maximum prevalence in India. Among the PGN cases Among the PGN cases, the most prevalent one is the minimal change disease followed by focal segmental glomerulosclerosis.

Secondary glomerular disease (SGN) is the second prevalent among which lupus nephritis followed by amyloidosis and diabetic nephropathy are the most prevalent diseases.

Other conditions like Tubulointerstitial disease and vascular diseases are less common. The incidence of FSGS and IgAN has been increasing since 1999.

Hence, aim of this study is to document the clinical profile and etiological profile of 50 randomly selected patients with clinically suspected Glomerular diseases by performing Renal biopsy in them at the Nephrology Department of Tirunelveli medical college and Hospital, Tirunelveli.

MATERIALS AND METHODS

50 randomly selected patients with clinically suspected Glomerular diseases in whom renal biopsy was performed at the Nephrology Department of Tirunelveli medical college and Hospital, Tirunelveli. Study was done for period of one year and done as descriptive study. Patients who were more than 15 years of age, Proteinuria >500mg/24 hrs., Hematuria (Microscopic/gross) were include in the study. Whereas patients less than 12 years of age and any coagulopathies were excluded from th study.

Patients with these features were clinically evaluated and subjected to tests like serum total protein, urine PCR, Lipid profile, BUN and renal imaging. If results were suggestive of glomerular disease, percutaneous renal biopsy was done to characterize the exact pathology. 50 cases were randomly selected and the clinical and laboratory profile of all the cases were studied and the results were analyzed statistically. Statistical analysis was done using simple percentage analysis.

ISSN: 0975-8585

RESULTS

In this study, the number of males (52%) and the number of females (48%) were nearly equal with male: female ratio of 1.08:1. In thus study people under the age of 30 years was maximum (36%) followed by the age group of 31 to 40 years (34%). People between the age group of 46 to 60 years was 22% and people greater than 60 years was the lowest in number (4%).

In this study, 6% of people are underweight, 84% have normal BMI and the remaining 10% are overweight. In our study, about 50% of people have normal blood pressure. About 22% of people have BP >140/90 mmHg. About 28% of people have BP > 160/90 mmHg. In this study, about 48% of people presented with pedal edema and the remaining 52% did not have pedal edema.

In our study about 44% of people presented with facial puffiness and in the remaining 56% facial puffiness was absent. In our study, there was no breathlessness in 82% of individuals at the time of presentation while 18% of individuals presented with breathlessness. In our study in 92% of people hematuria was absent while remaining 8% had hematuria. In our study, 20% of individuals presented with oliguria while remaining 20% had no hematuria. In our study, 66% of individuals had no extra renal manifestations while 34% of individuals had extrarenal manifestations.

In our study, joint pain (23%) and fever (24%) were the most common extra renal manifestations followed by ptosis (12%), abdominal pain and headache (6%).

In our study, 86% of individuals had no previous history of diabetes mellitus while remaining 14% had previous history of diabetes. In our study, 94% of people had no previous history of hypertension while remaining 6% had previous history of hypertension.

In our study, no individuals have previous history of rheumatoid arthritis, tuberculosis or asthma. While one individual each have previous history of SLE and have previous history of using natural medicines.

Table 1: Extra renal manifestation

EXTRA RENAL MANIFESTATION(N=17)	NO OF PATIENTS	PERCENTAGE
FEVER	4	23.50%
JOINT PAIN	4	23.50%
HEAD ACHE	1	5.90%
ABD PAIN	1	5.90%
PTOSIS	2	11.80%
OTHER	5	29.40%

In our study, only 2 individuals were alcoholic and only 1 individual was a smoker. In our study, 78% of individuals had haemoglobin less than 11 gm%. Only 22% of individuals had hemoglobin more than 11gm %. In our study blood, urea levels were less than 40mg/dl in 42% of individuals. More than 40mg/dl in 58% of individuals. In our study serum creatinine was greater than 1 in 72% of individuals. Less than 1 in 28% of individuals.

In our study, EGFR was greater than 90 in 20% of individuals, 60 to 89 in 18% of individuals, 45 to 59 in 18%, 30 to 44 in 12%, 15 to 29 in 14% and less than 15 in 18% of individuals.

Table 2: Estimated Glomerular filtration rate

STAGE	EGFR	NO OF PATIENTS	PERCENTAGE
1	> 90	10	20%
2	60 – 89	9	18%
3a	45 – 59	9	18%
3b	30 – 44	6	12%
4	15 – 29	7	14%
5	< 15	9	18%

In our study in 20% of individuals sodium levels were less than 135 mEq/L , between 135 to 145 mEq/L in 80% of individuals. In our study 72% of individuals had serum potassium between 3.5 to 5mEq/L. 28% of individuals had serum potassium > 5mEq/L. In our study urine albumin was 3+ in 52% of individuals, albumin was 2+ in 34% of individuals, 1+ in 14% of individuals.

In our study serum albumin was normal in 42% of individuals, <3.5 to 2.5 g/dl in 40% of individuals, <2.5 g/dl in 18% of individuals. In our study, total cholesterol was less than 200mg/dL in 66% of individuals. Greater than 200 mg/dl in 33% of individuals. In our study LDL was less than 130mg/dl in 70% of individuals. More than 130mg/dl in 30% of individuals. In our study triglycerides levels were <200 mg/dl in 88% of individuals, >200 mg/dl in 22% of individuals. In our study, HDL was normal in 80% of individuals. Low in 20% of individuals.

Table 3: Renal biopsy findings

BIOPSY FINDING	NO OF PATIENTS	PERCENTAGE
CAN	2	4%
ACMR	2	4%
CLASS IV LN	3	6%
CLASS V LN	2	4%
DN	2	4%
DIFFUSE PGN	1	2%
EPGN	9	18%
FSGS	3	6%
IgA NEPHROPATHY	13	26%
MEMB NEPHROPATHY	5	10%
MCD	4	8%
PGN	4	8%

In our study, IgA nephropathy was most common 26%, followed by Endocapillary proliferative glomerulonephritis that was about 18% .Next common was membranous nephropathy about 10% followed by minimal change disease and PGN, which was 8% each. In patients with IgA nephropathy, everyone presented with proteinuria. 54% of them had facial puffiness and 38 % had pedal edema. Nearly 31% had oliguria and extra renal manifestations. None of them had hematuria.

DISCUSSION

The various forms of glomerulopathies have been discussed earlier. In this study, in 50 randomly selected patients, renal biopsy has been done and the exact glomerular pathology has been ascertained. The etiological and clinical profile of the glomerular diseases has been evaluated.

Among the 50 patients, 26 are males and 24 males are females. Most of the patients fall under 45 years of age, with maximum number under 30 years. This suggests the higher incidence of glomerular pathology in young age. Majority of patients have normal BMI. About half of the people have normal Blood pressure while the remaining half have raised BP (> 140/90 mmHg).

Nearly half have volume overload features like pedal edema and facial puffiness. However, Breathlessness is seen in only 18% of patients. Hematuria is present in 4% of patients. Oliguria is noted in only 20 % of patients.

Extra renal manifestations include fever, joint pain, abdominal pain and headache. As whole extra renal manifestations are present in only 34% of individuals. Among them, most prevalent extra renal manifestation is joint pain and fever. Nearly 10% have previous history of Diabetes mellitus and Hypertension. Only one patient is a known case of SLE.

78% are anemic. This shows the correlation between renal pathology and anemia. Blood urea is elevated (above 40) in 58% of individuals. Serum creatinine is more than 1 in 72 % of individuals.

eGFR is less than 15mL/min/1.73m^2 in 18% of patients. Hyponatremia is present in 20% and

hyperkalemia is present in 28% of patients. Albuminuria is present in half of the patients, which is pathognomonic of glomerular injury. Serum albumin is reduced in 58% of patients. On reviewing the lipid profile total cholesterol is raised in 34% , LDL raised in 30% and Triglycerides raised in 12% of patients. Serum HDL is normal in 80% of people.

Renal biopsy was done. The most common glomerular pathohlogy is IgA nephropathy seen in 13 patients (26%). Among patients with IgA nephropathy volume overloaded states like pedal edema and facial puffiness is seen in most of the patients. Proteinuria is seen in all the patients. About 31% have oliguria. However, none has hematuria. Extra renal manifestations is present in 31% of patients.

Second common pathology encountered is Endocapillary proliferative glomerulonephritis (EPGN) which is seen in 9 patients (18%). EPGN is a histopathological entity seen in lupus nephritis, post infective glomerulonephritis and MPGN. In our study, EPGN is seen in 8 cases of post infective glomerulonephritis and 1 case of lupus nephritis.

The next common pathologies are membranous nephropathy and lupus nephritis each present in 10% of patients. It is followed by minimal change disease and proliferative glomerulonephritis (8% each). Focal segmental glomerulosclerosis is present in 6% of patients. Diabetic nephropathy, acute cortical necrosis and acute cell mediated rejection are each present in 4 % of patients. Finally, diffuse proliferative glomerulonephritis is seen in 2% of patients.

CONCLUSION

In this study among the 50 patients, evaluated IgA nephropathy is the most common presentation noted. Proteinuria is present in all patients with IgA nephropathy. Volume overload state is present in nearly half of patients with IgA nephropathy. Second common presentation is post infective glomerulonephritis. Urine quantification of protein remains a simple yet reliable test for picking up clinically significant glomerular diseases.

REFERENCES

[1] Arthur H. Cohen Richard J. Glassock, Primary glomerulopathies Chapter 2.
[2] Http://www.clevelandclinicmeded.com/medicalpubs/diseaseman agement/nephrology/primary-glomerular-diseases/Brian Stephany
[3] Joe Devasahayam, Gowrishankar Erode-Singaravelu, Zeenat Bhat, Tony Oliver, Arul Chandran, Xu Zeng, Paramesh Dakshinesh and Unni Pillai. C1q Nephropathy: The Unique Under recognized Pathological Entity, Anal Cell Pathol (Amst) 2015:2015:490413.
[4] Hala Kassouf Kfoury. Fibrillary glomerulonephritis: A diagnosis not to be missed. Saudi J Kidney Dis Transpl 2012;23(6):1246-50.
[5] David C Kluth, And Andrew J. Rees Anti-Glomerular Basement Membrane Disease J Am Soc Nephrol 1999;10(11):2446-53.
[6] Brenner and Rector, The Kidney , Glomerular diseases , 6th edition
[7] Essentials Of Clinical Nephrology, Edited by Mohamed A. Sobh , 1st edition , 2000
[8] Https://www.northwell.edu/find-care/services-we-offer/kidney-disease-and-hypertension/conditions/glomerular-disease
[9] Http://www.phschool.com/atschool/florida/pdfbooks/sci_Marieb/pdf/Marieb_ch25.pdf.
[10] Das U, Dakshinamurty KV, Prayaga A. Pattern of biopsy- proven renal disease in a single center of south India: 19 years' experience. Indian J Nephrol 2011;21:250-257
[11] Sonal Jain, Shivangi Chauhan, Sonali Dixit, Neha Garg, and Sonal Sharma. Role of Direct Immunofluorescence Microscopy in Spectrum of Diffuse Proliferative Glomerulonephritis: A Single-Center Study. J Microsc Ultrastruct 2021; 9(4): 177–182.