Original Research Article

Clinical and etiological profile of nephrotic syndrome in adults with assessment of response to treatment

Priya V Patil[1], Sujeet Kamtalwar[2*], Geetanshu Goel[3]

[1]Associate Professor, [2,3]Assistant Professor, Department of General Medicine, Grant Government Medical College and J J Hospital, Byculla, Mumbai 08, Maharashtra, INDIA.
Email: kamtalwars@yahoo.in

Abstract

Background: Nephrotic syndrome is defined as proteinuria 3 gms/24 hrs or more associated with spot urine albumin creatinine ratio of more than 300-350mg/mmol, sr.albumin <25g/l with evidence of peripheral edema with hyperlipidaemia This study was carried out to study clinical and etiological profile of nephrotic syndrome in adults including geriatric patients and by establishing diagnosis by renal biopsy wherever indicated and to assess the response to the treatment. **Methodology:** It was a prospective observational study carried out in patients admitted at a tertiary care centre. **Result:** This study comprised of total 84 patients with nephrotic syndrome and had male preponderance, minimal change disease (MCD) was the most common cause comprising 12 (18.18%) cases followed by focal segmental glomerulosclerosis (FSGS) 11 (16.16%) cases followed by 10 (15.15%) cases of membranous glomerulonephritis (MGN) followed by 5 (7.57%) cases of DPGN(diffuse proliferative glomerulonephritis) followed by 4 (6.06%) cases of IGAN(IgA nephropathy) followed by FPGN(focal proliferative glomerulonephropathy) and RPGN (rapidly progressive glomerulonephropathy) 2 (3.03%) cases of each followed by one case each of C3 glomerulopathy and PSGN.
Key Words: nephrotic syndrome.

[*]**Address for Correspondence:**
Dr. Sujeet Kamtalwar, Assistant Professor, Department of General Medicine, Grant Government Medical College and J J Hospital, Byculla, Mumbai 08, Maharashtra, INDIA.
Email: kamtalwars@yahoo.in
Received Date: 10/05/2018 Revised Date: 19/06/2018 Accepted Date: 12/07/2018
DOI: https://doi.org/10.26611/1021718

Access this article online

Quick Response Code:

Website: www.medpulse.in

Accessed Date: 27 July 2018

INTRODUCTION

Nephrotic syndrome is a common presentation of renal disease in India. Nephrotic syndrome is the term given to the constellation of heavy proteinuria (3-3.5gms/24hrs/1.73 sq m), hypoalbuminemia, hyperlipidaemia, lipiduria. Glomerular diseases are an important cause of chronic renal failure in developing countries. The spectrum of diseases causing nephrotic syndrome is changing globally in last few decades. Previous studies have shown that MGN was the most common cause of adult nephrotic syndrome in US and Europe[3,4]. however the trend is now changing and more recent studies have shown that FSGS is increasing significantly and had become the most common glomerular disease though some studies in India have shown that MCD is still the common cause of adult nephrotic syndrome. Most cases present with edema, proteinuria, hypoalbuminemia, hyperlipidemia, infections, hypercoagulability. Indian CKD registry established that both type I and II DM have shown to be the important cause of nephrotic range proteinuria[5]. Biopsy in cases of diabetic nephropathy is much debated. Many nephrologist do not biopsy patients with classic features such as retinopathy, duration of diabetes < 10 years, slow decline in GFR, gradual progression of proteinuria and lack of active urinary sediment. Many studies have accepted the view that one of the important

How to cite this article: Priya V Patil, Sujeet Kamtalwar, Geetanshu Goel. Clinical and etiological profile of nephrotic syndrome in adults with assessment of response to treatment. *MedPulse International Journal of Medicine.* July 2018; 7(1): 29-34.
https://www.medpulse.in/Medicine/

predictors of non diabetic renal diasease is the absence of diabetic retinopathy[6,7]. Also the important secondary causes of nephrotic syndrome in adults includes infections such as HIV,HBV and HCV and other causes such as light chain nephropathy, autoimmune disease comprises a big group.

MATERIALS AND METHODS

Study Design: It was a prospective and observational study

Study Centre: Study was carried out in patients admitted at a tertiary care centre

Study Period: This study was carried out over a period of 2 years after obtaining permission from the institutional ethical committee.

Inclusion Criteria: This prospective study was conducted on patients with age >18 years with nephrotic range proteinuria (>3-3.5gms/24hrs). In our study total 84 subjects were enrolled after fulfilling the inclusion criteria, patients were investigated as per the proforma cited. Complete work up was done to rule out secondary cause which included blood sugar profile, viral markers, ANA and ANA Blot wherever indicated and as per case to case basis. Special investigations were performed like SPEP (serum protein electrophoresis) or bone marrow biopsy etc. Renal biopsy was performed wherever indicated, before biopsy coagulation profile and platelet counts were done. Biopsy was performed after taking consent and it was USG guided. These biopsy samples were sent for light microscopy, immune fluorescence and electron microscopy study. These patients were observed for 48 hours. All patients suspected to have primary glomerular diseases (with no secondary cause found on complete laboratory work) and in some secondary cases like LN (lupus nephritis), amyloidosis or multiple myeloma, to delineate the glomerular disease, renal biopsy was performed. In those patients with DM(diabetes mellitus) who had definite features of DN(diabetic nephropathy) with diabetic retinopathy, biopsy was not performed, while those with atypical features like hematuria, rapid progression of renal disease, biopsy was performed to rule out non diabetic cause of nephropathy. As per clinical presentation and other clinical and laboratory findings and taking into consideration of renal biopsy findings, these patients were initiated on treatment after taking nephrologists opinion at our institution which included steroids ± immunosuppression or any other disease specific treatment. Treatment for primary case of nephrotic syndrome was individualised as per KDIGO (Kidney Disease: Improving Global Outcomes) guidelines. In case of secondary glomerulopathy, patients were treated according to the illness. These patient's response to the treatment was monitored over the next 3 and 6 month in the form of urinary protein and 24 hours urinary protein levels.

RESULTS

Table 1:

Laboratory finding	Mean value ± SD
Hemoglobin gm%	9.77±2.4
Cholesterol mg%	233.63 ± 86.81
Albumin gms%	2.61 ± 0.6
Creatinine mg%	3.88 ± 4.0
24 hrs urinary protein (gms)	5.2 ± 2.4

Table 2:

REFERENCE	*Date et al [8]*	*Aggarwal et al [9]*	*Aggarwal et al [10]*	*DAS et al [11]*	*SANJAY et al[12]*	OUR STUDY
Place	VELLORE(1971-85)	DELHI(1987-98)	ROHTAK(2000)	HYDERABAD 1990-2008	Gwalior	mumbai
Sample size	1532	2250	404	1615	54	66/84 cases
FSGS	238(18.6%)	263 20%	56 17.6%	195 15.2%	20 37%	11 16.6%
MGN	174(13.6%)	263 20%	54 16.9%	129 10.1%	10 18.5%	10 15.15%
MPGN	177(13.9%)	153 11.6%	58 18.2%	73 5.7%	7 13%	5 7.57%
MCD	457(35.8%)	487 37%	106 33.3%	279 21.8%	3 5.5%	12 18.18%
DPGN	32(2.5%)	-	-	190 14.9%		5 3.03%
IGAN	57(4.5%)	147 11.2%	32 10%	177 13.8%	1 1.8%	4 6.06%
LN					5 9.3%	10 15.15%

Table 2a: Etiological and histopathological diagnosis among secondary causes of nephrotic syndrome

Aetiology	On Biospy	No of Cases
Diabetes Mellitus	N/I	8
Diabetes Mellitus	Fsgs	1
Tubercular	Mgn	1
Hivan	Mgn	1
Hbsag	Mpgn	1
Amyloidosis	Amyloid Kidney	3
Sle	Lupus Nephritis	10

Table 3: Shows distribution of subjects as per remission- partial/complete / no remission

Remission Partial/Complete	Frequency	Percent
Complete Remission	9	10.71%
No Remission	9	10.71%
Partial Remission	41	48.80%
Follow up not indicated	25	29.76%
Total	**84**	**100**

Table 3a: Showing histopathological and class wise assessment of response to the treatment among the groups

ON RENAL BX		REMISSION PARTIAL/COMPLETE				Total
		Complete	Partial	No Remission	TREATMENT N/I	
FSGS	No	0	8	2	1	11
	%	0.0%	72.72%	18.18%	9.09%	100.0%
IgA Nephropathy	No	1	2	1	00	4
	%	25.0%	50.0%	25.0%		100.0%
MGN	No	1	9	0	00	10
	%	10%	90%	00%		100%
MPGN	No	1	4	0	00	5
	%	20.0%	80.0%	0.0%		100.0%
MCD	No	6	6	0	00	12
	%	50%	50%	0.0%		100.0%
LN	No	0	8	2	00	10
	%	0%	80%	20%		100.0%
DPGN	No	0	1	2	2	5
	%	00%	20%	40%	40%	100%
FPGN	No	00	1	00	1	2
	%	00%	50%	00%	50%	100
C3 glomerulopathy	No	00	00	1	00	1
	%	00%	00%	100%		100%
RPGN	No	00	1	00	1	2
	%	00%	50%	00%	50%	100%
PSGN	No	00	1	00	00	1
	%	00%	100%	00%	00%	100%

Table 4: Correlation between biopsy diagnosis and dialysis dependency

ON RENAL BX		Dialysis dependent cases	Total
FSGS	No.	2	11
	%	18.18%	100.0%
MGN	No.	0	10
	%	0.0%	100.0%
IgA Nephropathy	No.	2	4
	%	50.0%	100.0%
MPGN	No.	1	5
	%	20.0%	100.0%
MCD	No.	0	12
	%	0.0%	100.0%
LN	No.	0	10
	%	0.0%	100.0%
DPGN	No.	2	5
	%	40.0%	100.0%
RPGN	No.	1	2
	%	50.0%	100.0%
Biopsy not done	No.	9	9
	%	12.1%	100.0%

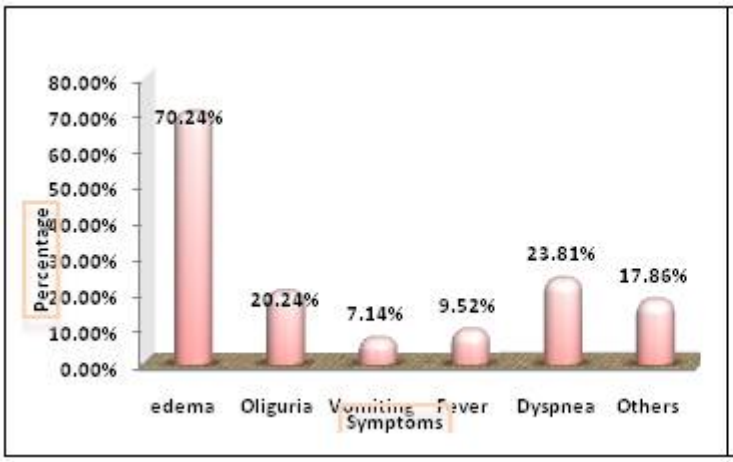

Figure 1: Distribution of symptoms among study groups

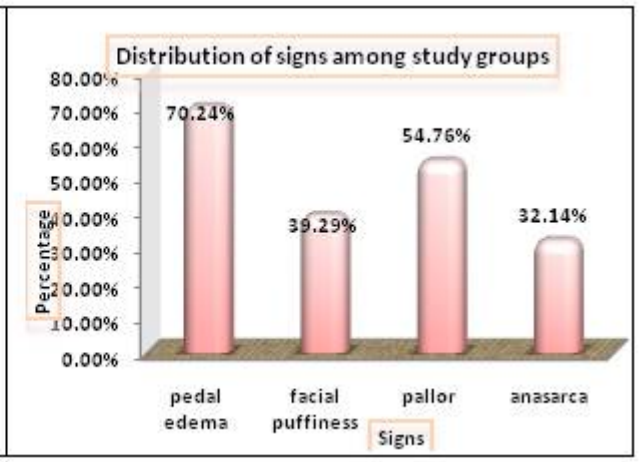

Figure 2: Distribution of signs among study groups

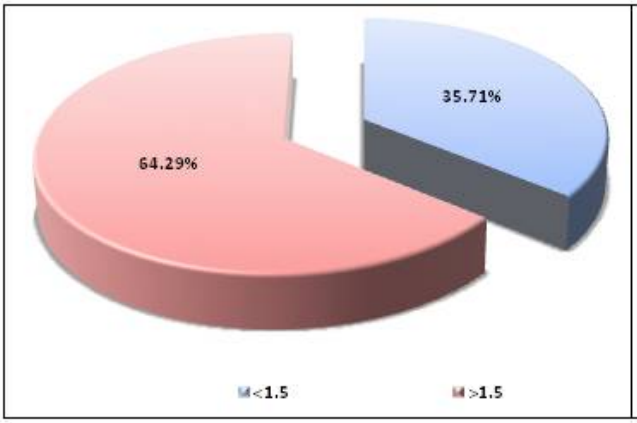

Figure 3 Distribution of study group as per Sr Creatinine

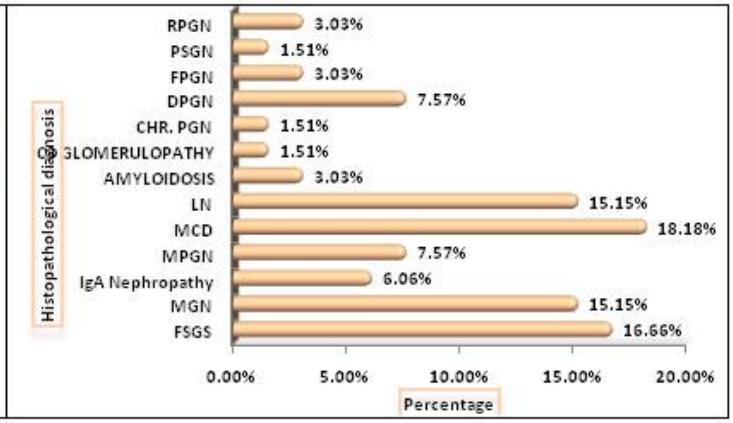

Figure 4: Distribution of Histopathological diagnosis among study group

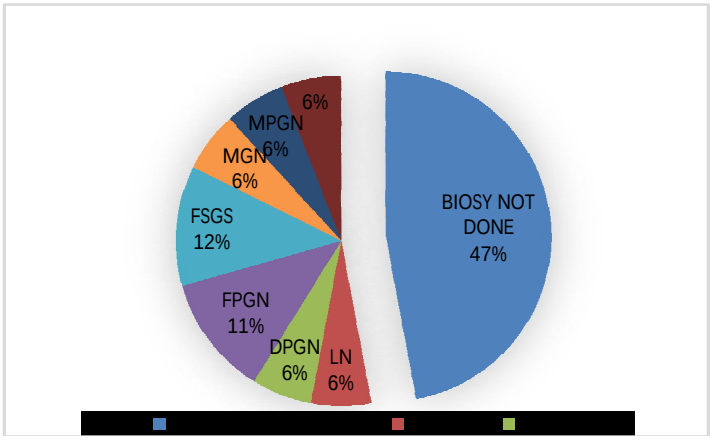

Figure 8: Biopsy finding among diabetic patients

DISCUSSION

In our study total 84 patients were enrolled which showed male preponderance of (68 cases) 80.95% as compared to (16 cases) 19.05% of females (diagram 1). The Male: female ratio of 2.61:1. The study population was divided in three groups according to the age. Maximum number of cases were in the age group of 18-40 years contributing to total of 52(61.90%)cases followed by 22(26.19%) of 41-60 years of age followed by 10 (11.9%) of >60years of age, with mean age of presentation 38.69±15.83 years(diagram 2). In our study, most common presenting symptom was oedema observed in 59 (70.23%) cases followed by dyspnoea in 20 (23.8%) cases, decreased urinary output in 17(20.23%) cases, fever in 8 (9.5%) and vomiting in 6 (7.1%) and 15(17.85%) cases had other symptoms like arthralgia, abdominal pain, malar rash,

hair loss, skin lesion, menorrhagia, chest pain, giddiness, cough cold and paraparesis (diagram 3). On clinical examination 59 (70.24 %) patients had pedal oedema, facial puffiness in 33 (39.29%) cases, 27 (32.14%) cases had anasarca while 46 (54.76%) patients had pallor. Most common finding on clinical examination was pedal oedema followed by pallor (diagram 4). In this study, mean haemoglobin levels was 9.77±2.4 gm%, mean cholesterol levels in the study was 233.63±86.81mg%, with mean albumin levels of 2.61±0.6gm and mean creatinine of 3.88±4.0mg%. In our study mean creatinine was higher due to inclusion of established CKD cases with nephrotic range proteinuria in the study in whom biopsy could not be performed due to small contracted kidneys in 9 patients and also inclusion of DN with ESRD. Thus 30% of our patients had creatinine >3.0 (diagram 5). Patients had a mean proteinuria of 5.2±2.4gms every 24 hrs (table 1). In our study of 84 patients, 66 renal biopsies were indicated. Biopsies were done and subjected to light microscopy and immunofluorescence and electron microscopy. In our group study MCD was the most common cause comprising about 12 (18. 18%) cases followed by FSGS 11(16.16%) cases and MGN comprising 10 (15.15%) cases f/b 5 (7.57%) cases of MPGN and 5 (7.57%) cases of DPGN f/b IGAN 4(6.06%) cases F/B FPGN 2(3.03%) cases and RPGN2(3.03%) cases, followed by 1 (1.51%) case of PSGN and 1 case (1.51%) of C3 GLOMERULOPATHY (diagram 6). Our series had one patient with glomerulus showing C3 deposition with no staining for any immunoglobulins suggestive of C3 glomerulopathy and C3 levels in that case was normal. However C3 levels are low in only 62% of cases of C3 glomerulopathy[13] Among the secondary causes (table 2) LN was the most common cause 10 (15.15%) followed by amyloidosis. We had 3 cases of amyloidosis among the cases with secondary glomerulonephritis, we had a patient who was a known case of retroviral disease with diagnosed HIV myeloneuropathy and was having nephrotic range proteinuria. He was investigated and renal biopsy was done which was showed features of MGN. Here the cause for MGN was kept secondary to HIV infection. Another case was of a young girl with tubercular meningitis and CNS tuberculomas who was having deranged creatinine and proteinuria. When further investigated, she was found to be having nephrotic range proteinuria and renal biopsy was done which showed MGN. In view of presence of disseminated Koch's along with presence of choroid tubercle and PLA2R antibody negative, nephrologist opinion suggested MGN secondary to Kochs more likely. This patient responded to AKT and had partial remission of proteinuria with AKT only. Another case of a patient with nephrotic range proteinuria and HbsAg positive status with high HBV viral loads was showing MPGN on renal biopsy, features were s/o MPGN secondary to HBV infection. In cases of diabetic patients out of 17 only 9 underwent renal biopsy taking into consideration the presence / absence of retinopathy and course of the disease along with clinical and laboratory findings and only patients with atypical presentation were biopsied. Among the performed biopsies 8 (88.89%) cases had non diabetic nephropathy while one case showed features of FSGS secondary to DM on renal biopsy. This was significant finding noted in our study because if in all these patients, it would have been presumed the cause of nephrotic syndrome was DN and biopsy would not have been performed inspite of the atypical features then the primary glomerulopathies and causes like lupus nephritis would have been completely missed, in our series biopsy revealed different pathologies like RPGN, MPGN, DPGN, LN etc (diagram 7).Most of which required immunosuppression with / without steroids. This treatment would reverse or slow down the progression of nephropathy which otherwise would not have been treated. Among the patients who were followed up at 3 and 6 months in the form of 24 hours urinary protein and urine routine microscopy, 41 (48.80%) cases had partial remission, 9 (10.71%) had complete remission and 9 (10.71%) had no remission(table 3). Complete remission was seen in 6 cases (50%) of MCD, one case each of IGAN (25%), MPGN (20%) and MGN (10%). Partial remission at the end of six months was seen in 8 cases (72.72%) of FSGS, 9 cases (90%) of the MGN, 2 cases (50.0%) of IgA nephropathy, 4 cases (80.0%) of MPGN, 6 cases (50.0%) of MCD, 8 cases (80%) of LN, 1 case (20.0%) of DPGN, 1 case (50.0%) of FFGN, 1 case (50%) of RPGN, 1 case (100%) of PSGN. No remission at end of 6 months was seen in 1 case (25%) of IGAN, 2 cases (18.18 %) of FSGS, 2 cases (20%) of LN, 1 case (100.0%) of C3 Glomerulopathy and 2 cases (40.0%) of DPGN.(table 3a) Among the included subjects 2 cases (50%) of IGAN, 1 case (50%) of RPGN, 2 cases (40%) of DPGN, 1 cases (20%) of MPGN and 2 cases (20%) of FSGS patients were dialysis dependent. None of lupus nephritis cases were dialysis dependent, similarly in classes of MGN, MCD no dialysis dependent cases were seen. (table 4) Remaining 9 cases with dialysis dependency, biopsy was not performed.

CONCLUSION

In our group study MCD was the most common cause comprising about 12 (18. 18%) cases followed by FSGS 11(16.16%) cases and MGN comprising 10 (15.15%) cases f/b 5 (7.57%) cases of MPGN and 5 (7.57%) cases of DPGN f/b IGAN 4(6.06%) cases F/B FPGN 2(3.03%) cases and RPGN2(3.03%) cases, followed by 1 (1.51%)

case of PSGN and 1 case (1.51%) of C3 GLOMERULOPATHY. In the diabetic cases included in our study, those with nephrotic range proteinuria and atypical presenation were biopsied and 88% cases shown non diabetic nephropathy depicting that renal biopsy should be done in cases of diabetics with atypical presentation and absent retinopathy. To our knowledge, very few studies had been carried out in cases of nephrotic syndrome and assessment of response to the treatment.

REFERENCES

1. Das U, Prayaga A, Dakshinamurty K. Pattern of biopsy-proven renal disease in a single center of south India:19years experience. Indian J Nephrol. 2011;21(4):250
2. By Richaard h et al Nephrotic syndrome in adults BMJv.336(7654); 2008 May 24
3. Changing etiologies of unexplained adult nephrotic syndrome: a comparison of renal biopsy findings from 1976-1979 and 1995-1997.Haas M, Meehan SM, Karrison TG, Spargo BH Am J Kidney Dis. 1997 Nov; 30(5):621-31.
4. Trends in the epidemiology of focal segmental glomerulosclerosis. Kitiyakara C, Kopp JB, Eggers P SeminNephrol. 2003 Mar; 23(2):172-82
5. What do we know about chronic kidney disease in India: first report of the Indian CKD registry. Rajapurkar MM, John GT, Kirpalani AL, Abraham G, Agarwal SK, Almeida AF, Gang S, Gupta A, Modi G, Pahari D, Pisharody R, Prakash J, Raman A, Rana DS, Sharma RK, Sahoo RN, Sakhuja V, Tatapudi RR, Jha V BMC Nephrol. 2012 Mar 6; 13():10.
6. Evaluation of renal biopsies in type 2 diabetic patients with kidney disease: a clinicopathological study of 216 cases.Zhuo L, Ren W, Li W, Zou G, Lu JIntUrolNephrol. 2013 Feb; 45(1):173-9.
7. The modern spectrum of renal biopsy findings in patients with diabetes.Sharma SG, Bomback AS, Radhakrishnan J, Herlitz LC, Stokes MB, Markowitz GS, D'Agati VD Clin J Am SocNephrol. 2013 Oct; 8(10):1718-24.
8. Date A, Raghavan R, John TJ, Richard J, Kirubakaran MG, Shastry JCM. Renal disease in adult Indians: a clinicopathological study of 2827 patients. QJM. 1987;64(3):729–37
9. Agarwal SK, Dash SC. Spectrum of renal diseases in Indian adults. J Assoc Physicians India. 2000; 48(6):594–600.
10. Aggarwal HK, Yashodara BM, Nand N, Sonia Chakrabarti D, Bharti K. Spectrum of renal disorders in a tertiary care hospital in Haryana. J Assoc Physicians India. 2007; 55:198–202.
11. Das U, Prayaga A, Dakshinamurty K. Pattern of biopsy-proven renal disease in a single center of south India:19years experience. Indian J Nephrol. 2011;21(4):250
12. Sanjaydhawale et al international journal of applied research 2015;545-549
13. Acquired and genetic complement abnormalities play a critical role in dense deposit disease and other C3 glomerulopathies. Servais A, Noël LH, Roumenina LT, Le Quintrec M, Ngo S, Dragon-Durey MA, Macher MA, Zuber J, Karras A, Provot F, Moulin B, Grünfeld JP, Niaudet P, Lesavre P, Frémeaux-Bacchi V.

Source of Support: None Declared
Conflict of Interest: None Declared