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Epidemiology of Glomerular Disease in Elderly Population

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ABSTRACT

Introduction : Longer life expectancy is associated with increasing prevalence of kidney disease. Although glomerular diseases observed in the elderly generally reflect those seen in the general population, certain types of glomerulonephritis may have different incidence, clinical presentation and prognosis among the elderly in comparison with younger adults. The present study was undertaken to study the epidemiology of glomerular disorders in elderly population

Material and Methods: A total of 72 elderly patients who fulfilled standard clinical criteria (edema, Hematuria, proteinuria) for evidence of glomerular disease were studied between March 2016 to November 2017. Among them 60 patients with biopsy proven glomerular disorders were included in the study.

Results: Of these 60 patients, 45 were in the age group of 60 to 69 years and 12 between 70-79 years and 3 above 80 years of age. 45 of 20 patients were males and 15 were females. 12 (60%) presented with nephrotic syndrome, 15 (25%) had nephritic syndrome and 9 (15%) had rapidly progressive glomerulonephritis. Among patients with nephrotic syndrome, biopsy showed 15 cases of idiopathic membranous nephropathy, 6 each cases of Amyloidosis, (multiple myeloma related), FSGS and Minimal Change Disease. 3 patients had diffuse proliferative glomerulonephritis. In nephritic syndrome, 3 patients were diagnosed with c1q nephropathy, 6 patients with diffuse proliferative glomerulonephritis, three patients had Ig A nephropathy, three patients had membrano proliferative glomerulonephritis. In Rapidly progressive glomerulonephritis 3 patients had Anti GBM disease, and 6 patients had Pauci Immune Crescentic GN. After follow up of the patients for 3 months, deaths were more common in RPGN group (66.6%) and Nephrotic syndrome patients had more stable renal function (58.3%). Out of total 12 people who underwent dialysis 9 were from RPGN group.

Conclusions: Among glomerular diseases in elderly, nephrotic syndrome constituted the major presentation and majority had idiopathic Membranous Nephropathy. In Nephritic syndrome majority had diffuse proliferative glomerulonephritis. In Rapidly progressive glomerulonephritis majority had Pauci Immune Crescentic glomerulonephritis. Deaths and patients who underwent dialysis were more common in Rapidly progressive glomerulonephritis.

Keywords: Nephritic syndrome, nephrotic syndrome, rapidly progressive glomerulonephritis

I. INTRODUCTION

The proportion of the elderly (> 60 years – UN and WHO-Southeast Asia definition) population is increasing. It is estimated that by year 2030 the elderly population will reach 21-35% of the general population of the world[1]. Renal disease related to infection, urinary tract obstruction, atherosclerosis and malignancy are becoming increasingly common with ageing [2]. One of the most common forms of renal diseases is glomerular disease and can have many different clinical presentations[3].

The types of glomerular disease observed in the elderly generally reflect those seen in the population as a whole, however, certain types of GN may have different incidence, clinical presentation and prognosis among the elderly in comparison with younger adults. The present study was undertaken to study the epidemiology of glomerular disorders in elderly population.

II. METHODOLOGY

A Prospective, Observational study conducted in the Nephrology Department of King George Hospital, Visakhapatnam, Andhra Pradesh from March 2016 to November 2017. All elderly patients who attended KGH nephrology department and fulfilling standard clinical criteria(edema, hematuria, proteinuria) for glomerular diseases were studied. Patients with Diabetes mellitus, Obstructive uropathy and those with eGFR < 60 ml/min for more than 3 months were excluded.

Inclusion Criteria : Age > 60 years, patients with biopsy proven glomerular disorders, patients who have given consent

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The clinical and laboratory features were aggregated in to four common syndromes namely

- The acute nephritic syndrome,
- Rapidly progressive glomerulonephritis,
- Nephrotic syndrome,
- Asymptomatic hematuria and/or proteinuria

Renal biopsy was done after taking consent and biopsy findings recorded. Patients were then followed up for 3 months and outcomes reported in terms of stable renal function, doubling of serum creatinine and death

An informed written consent for participating in the study was obtained for all patients.Ethics committee approval was obtained.

Quantitative Data is expressed as mean with SD and Qualitative data as numbers and percentage. Analysis of Variance (ANOVA) test is used for the difference in the mean laboratory values whether significant or not. P value of less than 0.05 was considered as statistically significant. Data is analyzed using SPSS (Statistical package for social sciences)- Version17 for windows

III. RESULTS

Out of 72 patients who fulfilled inclusion criteria, 60 patients gave consent for biopsy and were included in the study. In the present study majority of the cases (45; 75%) were in the age group of 60 to 69 years. 12 (20%) patients between 70 to 79 years and 3 (5%) patients were above 80 years of age. Males constituted the majority of study group that is 45 in number (75%). Nephritic syndrome cases were 15 in number, Rapidly progressive glomerulonephritis patients were 9 in number and nephritic syndrome patients constituted the majority that is 36 in number (Table-1). Asymptomatic urinary abnormalities were present in 6 patients who attended to OP. As they were not willing for biopsy and participating in the study, they were excluded.

Table -1 : Distribution of cases According to Diagnosis

		Frequency	**Percent**
Diagnosis	**NEPHRITIC**	15	25.0
	RPGN	9	15.0
	NEPHROTIC	36	60.0
	Total	60	100.0

Table – 2 : Lab Values in Comparison With Diagnosis

		Mean	Std.deviation	P value
S. Chorleserol	NEPHRITIC	209.80	40.22	
	RPGN	133.00	32.33	<0.05
	NEPHROTIC	238.00	43.71	
S. Creatinine	NEPHRITIC	1.94	.70	
	RPGN	7.90	4.00	<0.05
	NEPHROTIC	1079	.62	
S. Albumin	NEPHRITIC	3.38	.54	
	RPGN	3.06	1.00	<0.05
	NEPHROTIC	2.41	.49	
24hr Urine protein(gm)	NEPHRITIC	1.80	.83	
	RPGN	1.33	.57	<0.05
	NEPHROTIC	3.92	1.08	

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Table – 3 : Presence of hematuria in each group

DIAGNOSIS			
Hematuria	**NEPHRITIC N(%)**	**RPGN N(%)**	**NEPHROTIC N (%)**
Present	15(100)	9(100)	9(25)
Absent	0(0)	0(0)	27(75)
Total	15(100)	9(100)	36(100)

All the cases of nephritic syndrome and RPGN group have edema whereas in nephritic syndrome group only 9 (60%) patients have edema 3(20%) cases in nephritic and 3 (8.4%) cases in nephrotic had low C3 levels. C4, ANA, dsDNA, ANCA and AntiGBM antibodies were negative.

After biopsy, 15 patients (25%) have diagnosed with idiopathic membranous nephropathy and 9(15%) patients had diffuse proliferative glomerulonephritis. Pauci immune crescentic glomerulonephritis, minimal change disease and amyloidosis (multiple myeloma related) account for 6 cases each. Anti GBM disease, C1q nephropathy, IgA nephropathy, Membrano proliferative glomerulonephritis constituted 3 cases each (Table-4).

Table -4 : Distribution of cases According To Biopsy

		Frequency	Percent
BIOPSY	**AMYLOIDOSIS**	6	10.0
	AntiGBM DISEASE	3	5.0
	C1Q NEPHROPATHY	3	5.0
	DPGN	9	15.0
	FSGS	6	10.0
	Ig A NEPHROPATHY	3	5.0
	M P G N	3	5.0
	MEMBRANOUS NEPHROPATHY	15	25.0
	MINIMAL CHANGE DISEASE	6	10.0
	PAUCI IMMUNE CRESCENTIC GN	6	10.0
	Total	60	100.0

Table – 5 : Biopsy Diagnosis in Each Group

		DIAGNOSIS			Total N (%)
		NEPHRITIC N (%)	**RPGN N (%)**	**NEPHROTIC N (%)**	
BIOPSY	**AMYLOIDOSIS**	0	0	6(16.6)	6(10)
	AntiGBM	0	3(33.3)	0	3(5)
	C1Q NEPHROPATHY	3(20)	0	0	3(5)
	DPGN	6(40)	0	3(8.6)	9(15)
	FSGS	0	0	6(16.6)	6(10)
	Ig A NEPHROPATHY	3(20)	0	0	3(5)
	M P G N	3(20)	0	0	3(5)
	MEMBRANOUS NEPHROPATHY	0	0	15(41.6)	15(25)

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	MINIMAL CHANGE DISEASE	0	0	6(16.6)	6(10)
	PAUCI IMMUNE CRESCENTIC GN	0	6(66.7)	0	6(10)
Total		15(100)	9(100)	36(100)	60(100)

After follow up of the patients for 3 months, deaths were more common in RPGN group (Table -6) than Nephrotic and nephritic syndrome patients. Nephrotic syndrome patients had more stable renal function when compared to nephritic and RPGN patients.

Total 12 patients had underwent hemodialysis in which 9 patients were in RPGN group and 3 in Nephrotic group.

Table -6 : Outcomes after follow up for 3 months

	Death N(%)	**Doubling of S.Creatinine N (%)**	**Lost to follow up N(%)**	**Stable renal function N(%)**	**Total N(%)**
NEPHRITIC	0(0)	6(40)	0(0)	9(30)	15(25)
NEPHRITIC	3(33.3)	6(40)	6(100)	21(70)	36(60)
RPGN	6(66.7)	3(20)	0()	0(0)	9(15)
TOTAL	9(100)	15(100)	6(100)	30(100)	60(100)

IV. DISCUSSION

A total of 72 elderly patients attended both OP and IP during the study period. Out of them 60 patients with biopsy proven glomerular disorders who gave consent were included in the study to know the epidemiology of Glomerular disorders in the Elderly population. It was observed that majority of the cases were in the age group of 60 to 69 years with male predominance. Out of 60 patients studied 36(60%) presented with nephrotic syndrome, 15(25%) had nephritic syndrome and 9(15%) had rapidly progressive glomerulonephritis. Similar findings were observed in a studies done by Jai Prakash et al from Banaras Hindu University and Lingaraju U et al. (Table- 7)

Table – 7 : Comparison of Diagnosis with other studies

Diagnosis	Present Study	Jai Prakash [4]	Lingaraju U [11]
Nephritic Syndrome	25%	30%	10%
Rapidly Progressive Glomerulonephritis	15%	6.15%	32%
Nephrotic Syndrome	60%	61.25%	44%

Serum creatinine was higher in Rapidly progressive glomerulonephritis. Serum albumin was low and 24 hours urine protein was high in the nephrotic group. Hematuria and hypertension were present in all the cases of the nephritic syndrome and Rapidly progressive glomerulonephritis. All the cases of nephrotic syndrome had edema. Low C3 values were observed in 3 cases each of nephritic and nephrotic syndrome respectively.

After biopsy in Nephrotic syndrome, 15 patients were diagnosed with idiopathic membranous nephropathy, 6 each were diagnosed of Amyloidosis, (multiple myeloma related), FSGS and Minimal Change Disease and 3 patients with DPGN. In nephritic syndrome, 3 patients were diagnosed with c1q nephropathy, 6 patients with diffuse proliferative glomerulonephritis, 3 patients had Ig A nephropathy and 3 patients had membrano proliferative glomerulonephritis.

In Rapidly progressive glomerulonephritis 3 patients had AntiGBM disease, and 6 patients had Pauci Immune Crescentic GN.

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Table – 8 : Comparison of Biopsy findings with other studies

	Present study	Davison (9)	Jennifer B.Hanko (13)	Ping Zhu (14)	Jai prakash (4)
AMYLOIDOSIS	10%	10.7%	--	14.04%	15%
Anti GBM	5%	1%	--	--	--
C1Q NEPHROPATHY	5%	--	--	---	--
DPGN	15%	--	--	--	--
FSGS	10%	5%	5.7%	6.78%	--
IgA NEPHROPATHY	5%	1%	38.8%	18.22%	--
M P G N	5%	5.7%	--	--	--
MEMBRANOUS NEPHROPATHY	25%	36%	29.4%	--	27.5%
MINIMAL CHANGE DISEASE	10%	11%	10%	9.32%	5%
PAUCI IMMUNE CRESCENTIC GN	10%	1%	--	--	

V. CONCLUSION

In the present study the distribution of cases were more in the age group of 60 to 69 years with male predominance.

Among glomerular diseases in elderly, nephrotic syndrome constituted the major presentation than nephritic syndrome and Rapidly progressive glomerulonephritis.

In Nephrotic syndrome majority had idiopathic Membranous Nephropathy.

In Nephritic syndrome majority had diffuse proliferative glomerulonephritis.

In Rapidly progressive glomerulonephritis majority had Pauci Immune Crescentic glomerulonephritis.

Deaths and patients who underwent dialysis were more common in Rapidly progressive glomerulonephritis.

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