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Clinical features and outcomes of primary glomerulonephritis in Taiwan

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Objectives : End-stage renal disease (ESRD) caused huge health care burden worldwide. The prevalence of ESRD in Taiwan is one of the highest among the world and glomerulo-nephritis (GN) is the second leading cause of ESRD in Taiwan. Among primary GN, IgA nephropathy (IgAN), membranous nephropathy (MN), minimal change disease (MCD), and focal segmental glomerulosclerosis (FSGS) are the most common diagnoses in Taiwan. Clinical manifestations and disease outcomes vary substantially between different types of GNs, and early prognostic factors are needed for renal outcome prediction.
Methods : A total of 671 cases of biopsy-proven glomerulonephritis (GN), between January, 2000 to December, 2023, including IgA nephropathy (IgA), minimal change disease (MCD), membranous nephropathy (MN), and focal segmental glomerulosclerosis (FSGS) at Kaohsiung Medical University Hospital were included. Clinical parameters included serum creatinine, urinary protein excretion, urinary creatinine, estimated glomerular filtration rate (eGFR), and urinary protein creatinine ratio (UPCR) were collected. Categorical variables including frequencies and percentages were calculated using chi-squared or Fisher exact test. Renal survival was analyzed by Kaplan-Meier method and compared by log-rank test. Univariate analysis of factors affecting renal survival was performed by Cox proportional hazards model.
Results : During a median follow-up of 8.6 years (IQR 4.5-14.0 years), 671 patients with biopsy-proven primary glomerulonephritis were included in the cohort. Patients with MCD and MN showed heavy proteinuria (5.5 g/g, IQR 1.1-9.9 g/g, and 5.2 g/g, IQR 2.5-9.5 g/g respectively) than FSGS, while IgA presented with limited proteinuria (1.3 g/g, IQR 0.5-3.0 g/g). FSGS group showed a worse prognosis of 27.9% reached renal failure at during the follow-up than 4.2%, 11.0% and 22.1% of MCD, MN and IgAN group.
Conclusions : This study demonstrated that the prognosis of primary glomerulonephritis and long-term follow-up of proteinuria status in Taiwan.

Fig1.png

Variables	IgA (n=226)	MCD (n=187)	MN (n=190)	FSGS (n=68)	*P*-value
Sex, n (%)					0.07
Female	109 (48.2%)	68 (36.4%)	73 (38.4%)	29 (44.1%)	
Male	117 (51.7%)	119 (63.6%)	117 (61.5%)	39 (57.4%)	
Biopsy age (yr; mean ± SD)	38.7 ± 13.0	43.3 ±17.6	54.3±14.1	47.4±16.6	<0.001
Follow up time (yr; median + IQR)	9.2 (4.4-13.9)	7.7 (3.8-13.6)	9.0 (5.3-15.2)	5.9 (3.9-12.6)	0.101
Initial eGFR (ml/min/1.73 m^2; mean ± SD)	79.9±27.7	86.9±28.9	82.2±23.5	74.8±25.9	<0.01
CKD stage					<0.05
1	80 (35.4%)	87 (46.5%)	78 (42.6%)	21 (39.6%)	
2	84 (37.1%)	61 (32.6%)	80 (42.1%)	28 (39.4%)	
3	53 (23.4%)	33 (17.6%)	28 (14.7%)	13 (18.3%)	
4	9 (3.9%)	6 (3.2%)	4 (2.1%)	6 (8.5%)	
Pronteinuria					
Initial UPCR (median and IQR)	1.3 (0.5-3.0)	5.5 (1.1-9.9)	5.2 (2.5-9.5)	2.1 (0.7-6.9)	<0.001
>3.5	40 (21.9%)	101 (67.7%)	116 (69.8%)	21 (35.0%)	
1.0 - 3.4	66 (36.1%)	22 (13.7%)	35 (21.3%)	21 (35.0%)	
0.9 - 0	77 (42.1%)	38 (23.6%)	18 (10.7%)	18 (31.7%)	
Remission, 1 year time window, n (%)					<0.001
CR	8 (24.2%)	64 (86.5%)	50 (46.7%)	8 (44.4%)	
PR	22 (33.3%)	8 (10.8%)	41 (38.3%)	9 (50.0%)	
NR	3 (9.1%)	2 (2.7%)	16 (14.9%)	1 (5.6%)	
Relapse	9 (27.2%)	15 (20.2%)	31 (28.9%)	7 (38.8%)	
Comorbidity					
HTN	103 (45.6%)	78 (41.7%)	97 (51.1%)	37 (54.4%)	0.24
DM	22 (9.7%)	35 (18.7%)	51 (26.8%)	20 (29.4%)	<0.001
Dyslipidemia	106 (46.9%)	98 (52.4%)	100 (52.6%)	35 (51.5%)	<0.05
Gout	48 (21.2%)	11 (5.9%)	23 (12.1%)	18 (26.5%)	<0.001
HBV	12 (5.3%)	9 (4.8%)	18 (9.5%)	8 (11.8%)	0.1
HCV	1 (0.4%)	7 (3.7%)	5 (2.6%)	1 (1.5%)	0.06
Treatment					
ACEI/ARB	102 (45.1%)	62 (33.2%)	80 (42.1%)	30 (44.1%)	0.53
Steroid	30 (13.3%)	61 (32.6%)	51 (26.8%)	15 (22.1%)	<0.001
β-blocker	42 (18.6%)	25 (13.4%)	30 (15.8%)	17 (25.0%)	0.32
CCB	59 (26.1%)	27 (14.4%)	36 (18.9%)	19 (27.9%)	0.08

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