ASSOCIATION OF PROTEINURIA AND MDRD-GFR WITH HISTOLOGICAL PARAMETERS GRADED ACCORDING TO OXFORD CLASSIFICATION IN PATIENTS WITH IGA NEPHROPATHY

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OBJECTIVES

IgA nephropathy is the commonest glomerular disease worldwide. Oxford classification is an evidence-based classification developed to grade histological severity of the disease. We conducted the present study to determine the association of baseline proteinuria and MDRD-GFR at the time of kidney biopsy, with histological parameters according to Oxford classification.

METHODS

•We identified patients with IgA nephropathy retrospectively from the records of kidney biopsies examined at our center from 2009 to 2013. The light microscopy slides were re-examined by trained pathologists blinded to clinical information and histological variables were graded according to Oxford classification. (Mesangial hypercellularity M0 Vs M1; Endocapillary proliferation E0 Vs E1, Segmental sclerosis S0 Vs S1; Tubular atropy and interstitial fibrosis T0 Vs T1 Vs T2). We collected clinical information by retrospective chart review.
•Baseline characteristics are presented as median (IQR) or Mean (SD) for continuous variables and proportions for categorical variables. Since the proteinuria and MDRD-GFR were not normally distributed, we used appropriate non-parametric tests (Mann-Whitney U test or Kruskal Wallis test) to determine association of proteinuria and MDRD-GFR with mesangial hypercellularity (M0/M1), endocapillary hypercellularity (E0/E1), segmental sclerosis (S0/S1) or interstitial fibrosis-tubular atrophy (T0/T1/T2) as defined by Oxford classification.

Table 1: Baseline Characteristics

Variables	Mean (SD) / Median (IQR) / n(%)
Age *	33.8(11.5) yrs
Gender - Male**	20 (52.6%)
Recent Upper respiratory tract infection**	8 (21%)
Macroscopic hematuria**	7 (18.4%)
Microscopic hematuria**	15 (39.4%)
Proteinuria #	1900 (1120-4500) mg/L
Hypertension**	22 (57.8%)
Systolic Blood pressure#	150 (130-170) mmHg
Diastolic Blood pressure#	100 (80-110) mmHg
MDRD- GFR#	43.5 (23.2-71.2) ml/min
CKD-Epi GFR#	45.2 (22.4-76.4) ml/min

*Mean(SD); #Median (IQR); **n (%)

RESULTS

•We included 38 patients with IgA nephropathy who underwent biopsy in the study period. Mean age was 33.1 (SD 11.5) years and 20/38 (52.6%) were males. All patients had microscopic hematuria and 36/38 (94.7%) had abnormal proteinuria. 7/38 (18.4%) patients had macroscopic hematuria, 13/38 (32.2%) patients had nephrotic range proteinuria and 22/38 (57.9%) patients had hypertension. (Table.1)
•Median proteinuria was 1900 mg/day (IQR 1120 - 4500 mg/day) and median MDRD-GFR was 43.5 ml/min (IQR 23.2 - 71.2 ml/min). Proteinuria tended to be significantly higher in patients with more extensive mesangial proliferation (M1) compared to M0 (p = 0.07) and with increasing grade of interstitial fibrosis-tubular atrophy (p = 0.06). There was no significant difference in proteinuria between E0 and E1 or between S0 and S1.
•MDRD-GFR was significantly lower in patients with segmental sclerosis (S1) compared to those without (S0) (p = 0.002). MDRD-GFR was also significantly less with increasing grades of interstitial fibrosis-tubular atrophy (p = 0.004). MDRD-GFR did not differ significantly between patients with more mesangial proliferation (M1) compared to M0 or between those with or without endocapillary proliferation (E1 or E0). (Table.2)

Table 2: Association of Proteinuria & GFR with Histology

Scoring		Proteinuria Median(IQR) mg/day	P	MDRD-GFR Median(IQR) ml/min	P
Mesangial Hypercellularity	M0	1000(829.5-1100)	0.07	50.6 (40.8-68)	0.67
	M1	2450(1170-4500)		42.5 (19-70.3)	
Segmental sclerosis	S0	2050(905-4175)	0.53	68 (41.2-98)	0.002
	S1	1900(1180-4350)		31 (16-47.5)	
Endocapillary Hypercellularity	E0	2159(1102-4275)	0.61	41.8 (17.3-72)	0.31
	E1	1600(1400-6700)		61.2 (47.2-69)	
Intertitial fibrosis Tubular atrophy	T0	1550(915-3200)	0.06	67.5 (42.5-85)	0.004
	T1	1700(1500-3400)		21 (16.6-34)	
	T2	5600(3750-6925)		24 (11-39.3)	

LIMITATIONS

1. Retrospective study. 2. Relatively small sample size.

CONCLUSIONS

In patients with IgA nephropathy, greater mesangial proliferation (M1) was associated with significantly higher proteinuria and presence of segmental sclerosis (S1) was associated with significantly lower MDRD GFR. Increasing grades of interstitial fibrosis-tubular atrophy was associated with both a significantly higher proteinuria and a significantly lower MDRD-GFR.

REFERENCES

Daniel C. Cattran et al. The Oxford classification of IgA nephropathy: rationale, clinicopathological correlations, and classification. Kidney International (2009); 76: 534–545..

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