

Supplemental materials

Supplemental Table 1. Pathologic findings of IgA nephropathy presented as NS according to clinical responses

Characteristics	CR			PR (n=32)	NR (n=20)	P
	SR (n=24)	IS (n=24)	All (n=48)			
Haas classification, n (%)						0.001
Class I	2 (8.3)	3 (12.5)	5 (10.4)	2 (6.3)	1 (5.0)	
Class II	5 (20.8)	7 (29.2)	12 (25.0)	1 (3.1)	2 (10.0)	
Class III	6 (25.0)	7 (29.2)	13 (27.1)	10 (31.3)	3 (15.0)	
Class IV	7 (29.2)	7 (29.2)	14 (29.2)	16 (50.0)	7 (35.0)	
Class V	4 (16.7)	0 (0.0)	4 (8.3)	3 (9.4)	7 (35.0)	
Mesangial hypercellularity, n (%)						0.07
M0	10 (41.7)	9 (37.5)	19 (39.6)	6 (18.8)	5 (25.0)	
M1	14 (58.3)	15 (62.5)	29 (60.4)	26 (81.2)	15 (75.0)	
Segmental sclerosis, n (%)						0.26
S0	9 (37.5)	11 (45.8)	20 (41.7)	18 (56.3)	10 (50.0)	
S1	15 (62.5)	13 (54.2)	28 (58.3)	14 (43.2)	10 (50.0)	
Endocapillary proliferation, n (%)						0.79
E0	15 (62.5)	18 (75.0)	33 (68.8)	21 (65.6)	14 (70.0)	
E1	9 (37.5)	6 (25.0)	15 (31.2)	11 (34.4)	6 (30.0)	
Tubular atrophy/Interstitial fibrosis, n (%)						0.01
T0	22 (91.7)	21 (87.5)	43 (89.6)	26 (81.3)	13 (65.0)	
T1	2 (8.3)	3 (12.5)	5 (10.4)	5 (15.6)	5 (25.0)	
T2	0 (0.0)	0 (0.0)	0 (0.0)	1 (3.1)	2 (10.0)	

Foot process effacement, n (%)						0.15
none	1 (4.2)	1 (4.2)	2 (4.2)	2 (6.3)	3 (15.0)	
focal	10 (41.7)	10 (41.7)	20 (41.7)	14 (43.8)	6 (30.0)	
multifocal	2 (8.3)	5 (20.8)	7 (14.6)	5 (15.6)	3 (15.0)	
diffuse	11 (45.8)	8 (33.3)	19 (39.5)	11 (34.4)	8 (40.0)	
IgA deposits, n (%)						0.48
1+	7 (29.2)	8 (33.3)	15 (31.3)	12 (37.5)	7 (35.0)	
2+	11 (45.8)	12 (50.0)	23 (47.9)	16 (50.0)	9 (45.0)	
3+	6 (25.0)	4 (16.7)	10 (20.8)	4 (12.5)	4 (20.0)	
C3 deposits, n (%)						0.52
0~Trace	3 (12.5)	2 (8.3)	5 (10.4)	3 (9.4)	1 (5.0)	
1+	16 (66.7)	21 (87.5)	37 (77.1)	23 (71.9)	14 (70.0)	
2+	4 (16.7)	1 (4.2)	5 (10.4)	6 (18.8)	5 (25.0)	
3+	1 (4.1)	0 (0.0)	1 (2.1)	0 (0.0)	0 (0.0)	

Abbreviations: NS, nephrotic syndrome; CR, complete remission; SR, spontaneous remission; IS, immunosuppressant; PR, partial remission; NR, no response or progression.

Supplemental Table 2. Renal outcomes according to the presence of NS in patients with IgA nephropathy

Parameter	Model 1		Model 2		Model 3		Model 4	
	HR (95% CI)	P	HR (95% CI)	P	HR (95% CI)	P	HR (95% CI)	P
Primary outcome								
NS	5.05 (3.11-8.21)	<0.001	4.90 (3.01-7.96)	<0.001	3.46 (2.03-5.92)	<0.001	2.08 (1.19-3.64)	0.01
Non-NS	1.00 (reference)		1.00 (reference)		1.00 (reference)		1.00 (reference)	
Secondary outcome								
NS	5.70 (3.48-9.35)	<0.001	5.53 (3.37-9.07)	<0.001	4.86 (2.92-8.09)	<0.001	2.89 (1.68-5.00)	<0.001
Non-NS	1.00 (reference)		1.00 (reference)		1.00 (reference)		1.00(reference)	

Model 1.Adjusted for age, sex, and diabetes

Model 2.Adjusted for Model 1 variables + mean arterial pressure

Model 3.Adjusted for Model 2 variables + serum creatinine levels and pathologic findings

Model 4.Adjusted for Model 3 variables + use of RAS blockers and treatment with immunosuppression with high-dose corticosteroids

Abbreviations: HR, hazard ratio; NS, nephrotic syndrome

Supplemental Table 3. Clinical outcomes of IgA nephropathy patients with NS (n=100)

	CR			PR (n=32)	NR (n=20)	P
	SR (n=24)	IS (n=24)	All (n=48)			
FU duration (months)*	37.8 (10.7 – 82.4)	47.5 (11.0 – 107.8)	42.5 (11.0 – 107.8)	36.1 (12.0 – 104.6)	52.5 (10.7 – 107.8)	-
Time to CR (days)*	154 (32 - 637)	180 (27 - 867)	172 (27 - 867)	-	-	-
Time to proteinuria reduction >50% from baseline (days)*	52 (14 – 163)	44 (15 - 183)	47 (14 - 183)	-	-	-
Relapse, n (%)	2 (8.3)	11 (45.8)	13 (27.1)	-	-	<0.001†
Time to first relapse (months)*	37.0 and 60.0	10.0 (1.0-33.0)	10.5 (1.0-60.0)	19.6 (4.1-54.3)	-	
Primary endpoint, n (%)	0 (0.0)	2 (8.3)	2 (4.2)	5 (15.7)	17 (85.0)	<0.001
Secondary endpoints, n (%)						<0.001
ESRD	0 (0.0)	0 (0.0)	0 (0.0)	2 (6.3)	9 (35.0)	
Death	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	2 (10.0)	

* Data are expressed as median with ranges.

Abbreviations: CR, complete remission; SR, spontaneous remission; IS, immunosuppressant; PR, partial remission; NR, no response or progression; FU, follow-up; ESRD, end-stage renal disease

† P-value between the SR group and the IS group

Supplemental Table 4. Cox proportional hazard model for the primary endpoint in IgA nephropathy patients with NS (n=100)

	Unadjusted		Adjusted*		Adjusted*	
	HR (95% CI)	P	HR (95% CI)	P	HR (95% CI)	P
Gender (male vs. female)	1.38 (0.64-3.01)	0.44	1.14 (0.35-3.76)	0.42	1.26 (0.62-5.75)	0.74
Age (per 1 year)	0.99 (0.96-1.03)	0.91	0.99 (0.99-1.03)	0.74	0.99 (0.96-1.03)	0.61
DM (vs. non-DM)	0.89 (0.11-5.86)	0.84	3.72 (0.35-39.09)	0.31	1.58 (0.14-22.47)	0.74
Baseline 24-hr proteinuria (per 1 g/day)	1.68 (1.17-3.28)	0.04	1.01 (0.88-1.31)	0.80	1.13 (0.96-1.50)	0.12
Mean arterial pressure (per 1 mmHg)	1.01 (0.99-1.04)	0.31	1.00 (0.95-1.06)	0.94	1.02 (0.95-1.10)	0.98
Estimated GFR <60 mL/min/1.73m ² (vs. ≥60 mL/min/1.73m ²)	2.74 (1.04-7.24)	0.04	2.92 (1.10-8.01)	0.03	2.23 (1.05-5.00)	0.04
Clinical responses						
CR	1.00 (reference)		1.00 (reference)		1.00 (reference)	-
PR	8.66 (1.04-72.24)	0.46	13.10 (1.32-130.94)	0.03	5.89 (0.66-52.94)	0.08
NR	90.96 (11.71-706.48)	<0.001	157.73 (14.73-1688.92)	<0.001	114.76 (12.60-1031.86)	<0.001
Haas classification						
class I + II	1.00 (reference)		1.00 (reference)	-	-	-
class III	1.83 (0.40-8.38)	0.46	0.96 (0.19-4.97)	0.91	-	-
class IV	2.43 (0.67-8.89)	0.21	0.34 (0.06-2.01)	0.22	-	-
class V	8.97 (2.57-45.96)	0.001	1.50 (0.23-5.36)	0.63	-	-
Oxford classification						
M1 (vs. M0)	2.23 (0.83-6.01)	0.14	-	-	2.54 (0.78-8.35)	0.14
E1 (vs. E0)	0.93 (0.41-2.08)	0.98	-	-	0.96 (0.26-1.53)	0.33
S1 (vs. S0)	1.10 (0.50-2.34)	0.83	-	-	2.28 (0.75-6.98)	0.24
T1+T2 (vs. T0)	2.52 (1.07-5.88)	0.03	-	-	0.86 (0.24-2.42)	0.61

Abbreviations: HR, hazard ratio; DM, Diabetes mellitus; CR, complete remission; PR, partial remission; NR, no response or progression; eGFR estimated glomerular filtration rate; M, mesangial proliferation; E, endocapillary proliferation; S, segmental sclerosis; T, tubular atrophy/Interstitial fibrosis

* adjusted for gender, age, DM, baseline 24-hr proteinuria, mean arterial pressure, estimated GFR, and pathologic findings.

Supplemental Table 5. Cox proportional hazard model for prediction of CR of NS in patients with IgA nephropathy

	Unadjusted		Adjusted*		Adjusted*	
	HR (95% CI)	P	HR (95% CI)	P	HR (95% CI)	P
Gender (female vs. male)	1.30 (0.74-2.30)	0.36	2.03 (1.12-3.93)	0.03	1.79 (1.02-3.64)	0.07
Age (per 1 year)	0.99 (0.98-1.02)	0.80	1.01 (0.98-1.03)	0.41	1.01 (0.99-1.04)	0.37
Mean arterial pressure (per 1 mmHg)	0.98 (0.95-1.02)	0.28	0.99 (0.96-1.02)	0.38	0.99 (0.96-1.04)	0.64
Baseline 24-hr proteinuria (per 1 g/day)	0.96 (0.88-1.07)	0.48	0.90 (0.80-1.35)	0.11	0.91 (0.80-1.04)	0.16
Proteinuria decrease >50% within 3 mo	13.52 (6.99-26.10)	<0.001	27.14 (10.84-67.94)	<0.001	26.16 (10.42-65.63)	<0.001
Estimated GFR ≥ 60 mL/min/1.73m ² (vs. <60 mL/min/1.73m ²)	2.14 (0.91-5.04)	0.08	1.14 (0.48-2.81)	0.78	1.87 (0.58-3.63)	0.22
Treatment with corticosteroid	1.07 (0.61-1.90)	0.72	1.88 (1.01-3.70)	0.06	2.31 (1.14-4.31)	0.02
Haas classification						
class I + II	5.74 (1.93-17.13)	0.002	8.12 (2.39-27.60)	0.001	-	-
class III	2.39 (0.80-7.31)	0.12	3.32 (0.87-10.23)	0.05	-	-
class IV	1.59 (0.52-4.83)	0.44	1.95 (0.66-6.30)	0.26	-	-
class V	1.00 (reference)	-	1.00 (reference)	-	-	-
Oxford classification						
M1 (vs. M0)	0.38 (0.22-0.68)	0.001	-	-	0.40 (0.20-0.78)	0.01
E1 (vs. E0)	0.92 (0.50-1.68)	0.79	-	-	0.55 (0.61-2.50)	0.61
S1 (vs. S0)	1.40 (0.80-2.53)	0.26	-	-	1.51 (0.80-2.86)	0.20

T1+T2 (vs. T0)	0.45 (0.18-1.14)	0.06	-	-	0.31 (0.11-0.88)	0.03
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Abbreviations: HR, hazard ratio; eGFR, estimated glomerular filtration rate; M, mesangial proliferation; E, endocapillary proliferation; S, segmental sclerosis; T, tubular atrophy/Interstitial fibrosis

* adjusted for gender, age, mean arterial pressure, baseline 24-hr proteinuria, a > 50% decrease in proteinuria within 3 month, eGFR, treatment with steroid, and pathologic findings.