

## Supplemental material

	<b>Cirrhosis-IgAN N= 46</b>	<b>Primary-IgAN N = 83</b>	<b>p</b>
<b>Clinical features at the time of Kidney biopsy</b>			
Age (years) mean $\pm$ SD	64 $\pm$ 10	44 $\pm$ 14	<b>&lt;0.001</b>
Female (%)	8 (17%)	26 (31%)	0.098
History of hypertension (%)	27 (59%)	30 (36%)	<b>0.017</b>
History of diabetes (%)	15 (33%)	7 (8%)	<b>0.001</b>
Tabaco user (%)	22 (48%)	28 (34%)	0.13
Alcohol abuse (%)	46 (100%)	5 (6%)	<b>&lt;0.001</b>
ACE or ARB users (%)	17 (37%)	23 (28%)	0.32
<b>Laboratory findings at the time of Kidney biopsy</b>			
Serum creatinine (mg/dL) mean $\pm$ SD	3.52 $\pm$ 2.54	2.1 $\pm$ 1.97	<b>0.0016</b>
Acute kidney injury (%) <sup>£</sup>	34/43 (79%)	13/80 (16%)	<b>&lt;0.001</b>
Alternatives causes of AKI <sup>§</sup>	21/34 (62%)	4/13 (31%)	0.1
Dialysis (%)	8 (17%)	4 (5%)	<b>0.0264</b>
uPCR (g/g) median [IQR]	2.9 [1.4;4.6]	2 [1.3;3.5]	<b>&lt;0.001</b>
uPCR $\geq$ 3 g/g (%)	21 (46%)	28 (34%)	0.19
Macroscopic hematuria (%)	8 (17%)	12 (14.4%)	0.8
Low C3 (%)	7/34 (21%)	1/48 (2%)	<b>0.0078</b>
Low C4 (%)	5/34 (15%)	0/48 (0%)	<b>0.01</b>
<b>Histopathological characteristics</b>			
Glomeruli (n) mean $\pm$ SD	14 $\pm$ 7	14 +/- 6.9	0.84
Sclerotic glomeruli (%) mean $\pm$ SD	17 $\pm$ 16	23 +/- 21	0.060
MEST-C score, n (%)	N = 39	N = 71	
M0/M1, n <sup>§</sup>	21/18	46/25	0.3
E0/E1, n	25/14	56/15	0.11
S0/S1, n	25/14	14/57	<b>&lt;0.001</b>
T score $\geq$ 1, n	15	31	0.69
C score $\geq$ 1, n	5	17	0.2
Presence of interstitial infiltrate, n (%)	25 (54%)	42 (51%)	0.72
Presence of acute tubular necrosis, n (%)	31 (67%)	26 (31%)	<b>&lt;0.001</b>
Vascular lesion, n (%)	38 (83%)	57 (69%)	0.098
Ischemic glomeruli, n (%)	19 (41%)	15 (18%)	<b>0.0063</b>
Arteriolar hyalinosis, n (%)	19 (41%)	38 (46%)	0.7
Fibro-intimal thickening, n (%) <sup>*</sup>	30/43 (70%)	34/76 (45%)	0.012
TMA, n (%)	2 (4%)	9 (11%)	0.33
MPGN pattern, n (%)	9 (20%)	4 (5%)	<b>0.013</b>

**Supplemental Table S1.** Cirrhosis-IgAN versus primitive IgAN at presentation.

**Abbreviation.** ACE or ARB, Angiotensin converting enzyme or Angiotensin receptor blockers; uPCR, urinary protein to creatinine ratio; MPGN, membranoproliferative glomerulonephritis.

£) 3 patients in the cirrhosis IgAN group and 3 patients in the primitive IgAN group had missing data concerning baseline serum creatinine value.

§) Alternatives causes of AKI in patients with primary IgAN; hearth failure n = 1, pyelonephritis n = 2, Diarrhea and vomiting n =1.

§) MEST-C score was used only in kidney biopsies samples with  $\geq 8$  glomeruli; 7 were excluded in the cirrhosis-IgAN group and 12 in the primitive IgAN group.

	Compensated cirrhosis n = 24	Decompensated cirrhosis n= 22	p
<b>Clinical features at kidney biopsy</b>			
Age – years	63±12	65±8	0.60
Female	7 (29%)	7 (32%)	1
History of hypertension	14 (58%)	13 (59%)	1
History of Diabetes	6 (25%)	9 (41%)	0.23
Causes of cirrhosis			
Alcohol only	13 (54%)	16 (73%)	0.23
Mixed (alcohol and metabolic)	11 (46%)	6 (27%)	0.23
ACE or ARB users	11 (46%)	6 (27%)	0.23
Purpura, n (%)	7 (29%)	4 (18%)	0.496
<b>Kidney features at kidney biopsy.</b>			
Serum creatinine	3.5±2.4	3.6± 2.7	0.9
Acute kidney injury	16/21 <sup>§</sup> (67%)	18 (82%)	0.72
ICA stage 1	3/16 (19%)	4/18 (22%)	
ICA stage 2	2/16 (13%)	5/18 (28%)	
ICA stage 3	11/16 (69%)	9/18 (50%)	
Alternative causes of acute kidney injury	7/16 (44%)	14/18 (78%)	0.076
Dialysis	4 (17%)	4 (18%)	1
uPCR (g/g)	2.2 [1.3;3.8]	3.4 [2.1;4]	0.21
<b>Histopathological characteristics</b>			
Glomeruli (n), mean ± SD	14±7	14±8	0.82
Sclerotic glomeruli (%), mean ±SD	17±19	17±13	0.94
Presence of mesangial hypercellularity	7 (29%)	17 (77%)	<b>0.0014</b>
Presence of endocapillary hypercellularity	8 (33%)	7 (32%)	1
Presence of FSGS lesion	10 (42%)	6 (27%)	0.36
Presence of crescent	2 (8%)	3 (14%)	0.659
Interstitial fibrosis $\geq 25\%$	8 (33%)	9 (41%)	0.76
Presence of acute tubular necrosis	16 (67%)	14 (64%)	1
Presence of Interstitial infiltrate	14 (58%)	11 (50%)	0.767
Vascular lesion			
Ischemic glomeruli, n (%)	10 (42%)	9 (41%)	1
Arteriolar hyalinosis,n (%)	10 (42%)	9 (41%)	1
Fibro-intimal thickening, n (%)	16/24 (67%)	14/19 (74%)	0.74
Thrombotic microangiopathy, n (%)	2 (8%)	0 (0%)	0.49
MPGN pattern	6 (25%)	3 (14%)	0.46

**Supplemental Table S2.** Clinical, laboratory and histological characteristics in patients with cirrhosis-IgAN according to the history of compensated or decompensated cirrhosis status.

**Abbreviation.** ACE or ARB, Angiotensin converting enzyme or Angiotensin receptor blocker; ICA, international club of ascites; uPCR, urinary protein to creatinine ratio; FSGS, focal segmental glomerulosclerosis; MPGN, membranoproliferative glomerulonephritis.

§) 3 patients had no serum creatinine baseline value.

\*) 2 patients in the cirrhosis group and 7 in the primary IgAN group had no arteries on kidney biopsy sample.

	<b>Cirrhosis-IgAN N= 46</b>	<b>Primitive IgAN N = 83</b>	<b>p</b>
<b>Mesangial deposit</b>			
IgA			
Number positive (%)	45 (98%) <sup>§</sup>	83 (100%)	1
Number ≥ 2+ (%)*	25/40 (63%)	79 (95%)	<b>&lt;0.001</b>
IgG			
Number positive (%)	3 (7%)	15 (18%)	0.11
Number ≥2+ (%)*	0/40 (0%)	7 (8%)	0.09
IgM			
Number positive (%)	16 (35%)	51 (61%)	<b>0.006</b>
Number ≥2+ (%)*	2/40 (5%)	7 (8%)	0.72
C3			
Number positive (%)	39 (85%)	75 (90%)	0.40
Number ≥2+ (%)*	19/40 (48%)	55 (66%)	0.052
<b>Glomerular capillary wall deposit</b>			
IgA			
Number positive (%)	17 (37%)	17 (20%)	0.23
Number ≥ 2+ (%)*	14/40 (35%)	13 (16%)	<b>0.02</b>
IgG			
Number positive (%)	3 (7%)	5 (6%)	1
Number ≥2+ (%)*	2/40 (5%)	1 (1%)	0.25
IgM			
Number positive (%)	4 (9%)	6 (7%)	0.74
Number ≥2+ (%)*	0/40 (0%)	3 (4%)	0.55
C3			
Number positive (%)	17 (37%)	12 (14%)	<b>0.005</b>
Number ≥2+ (%)*	10/40 (25%)	9 (11%)	0.06

**Supplemental Table S3. Immunofluorescence study in patients with cirrhosis-IgAN and primitive IgA nephropathy.**

\*)No semi quantitative analysis in 6 patients with cirrhosis-IgAN

§) One patient had IgA dominant or co-dominant deposit on glomeruli capillary loop but no mesangial deposit.

	<b>MPGN pattern N = 9</b>	<b>Non MPGN pattern N = 37</b>	<b>P</b>
<b>Clinical features at the time of kidney biopsy</b>			
Age (years) mean ±SD	66±10	63±10	0.53
Female (%)	3 (33%)	5 (14%)	0.18
History of hypertension (%)	6 (67%)	21 (57%)	0.72

History of diabetes (%)	3 (33%)	12 (32%)	1
History of decompensated cirrhosis, n (%)	3 (33%)	19 (51%)	0.46
Tabaco user (%)	6 (67%)	16 (43%)	0.28
Purpura (%)	2 (22%)	9 (24%)	1
Decompensated cirrhosis at the time of KB	3 (33%)	10 (27%)	0.70
<b>Laboratories findings at the time of Kidney biopsy</b>			
Serum creatinine (mg/dL) mean $\pm$ SD	4.8 $\pm$ 2.1	3.2 $\pm$ 2.6	0.07
Acute kidney injury (%) <sup>§</sup>	9 (100%)	25/34 (73%)	0.17
Alternative causes of AKI, n (%)	2 (22%)	19/25 (76%)	<b>0.013</b>
Dialysis (%)	4 (44%)	4 (11%)	<b>0.036</b>
uPCR (g/g) median [IQR]	7.7 [3;9]	2.2 [1.1;3.8]	<b>0.014</b>
Nephrotic syndrome	7 (78%)	7 (19%)	<b>0.0016</b>
Macroscopic hematuria (%)	2 (22%)	6 (16%)	0.64
Low C3 (%)	3/7 (43%)	4/27 (15%)	0.13
Low C4 (%)	2/7 (29%)	3/27 (11%)	0.27
<b>Treatment and Outcomes</b>	N = 9	N = 36 <sup>§</sup>	
ACE or ARB	4 (44%)	23 (64%)	0.45
Steroids	7 (78%)	2 (6%)	<b>&lt;0.001</b>
At last follow up			
Follow up (months), median-[IQR]	12 [5-63]	27 [11-62]	0.74
CKD G3a-G5	7 (78%)	30 (83%)	0.65
CKD G5	5 (56%)	13 (36%)	0.24
Severe infections, n (%)	4 (44%)	17 (47%)	1
Death, n (%)	7 (78%)	20 (56%)	0.28

**Supplemental Table S4.** Cirrhosis associated IgA nephropathy according to the presence of membranoproliferative pattern on light microscopy.

**Abbreviation.** ACE or ARB, Angiotensin converting enzyme or Angiotensin receptor blockers; uPCR, urinary protein to creatinine ratio; MPGN, membranoproliferative glomerulonephritis.

\*) Excluding patients on dialysis.

§) One patient had missing data about treatment and outcome.

	<b>Compensated Cirrhosis N = 24</b>	<b>Decompensated cirrhosis N = 21<sup>§</sup></b>	<b>p</b>
Follow up years (months) median-[IQR]	26 [5-56]	24 [12-53]	0.98
<b>Treatment</b>			
ACE or ARB	13 (54%)	14 (67%)	0.54
Steroids	5 (21%)	4 (19%)	1
<b>Outcomes</b>			
<i>At 12 months</i>	N = 14	N = 14	
Serum creatinine (mg/dL) mean $\pm$ SD*	1.4 $\pm$ 0.64	1.97 $\pm$ 0.96	0.096

eGFR mean $\pm$ SD*	68 $\pm$ 36	45 $\pm$ 24	0.088
CKD G3a-G5	9 (64%)	11 (79%)	0.68
CKD G3a	3 (21%)	2 (14%)	0.53
CKD G3b	2 (14%)	5 (36%)	0.38
CKD G4	1 (7%)	2 (14%)	1
CKD G5	3 (21%)	2 (14%)	1
<i>At last follow up</i>	N = 24	N = 21	
Serum creatinine (mg/dL) mean $\pm$ SD	2.3 $\pm$ 1.5	2 $\pm$ 1	0.5
eGFR mean $\pm$ SD	48 $\pm$ 33	45 $\pm$ 25	0.75
CKD G3a-G5	20 (83%)	17 (81%)	1
CKD G3a	3 (13%)	4 (19%)	0.69
CKD G3b	3 (13%)	2 (10%)	1
CKD G4	3 (13%)	4 (19%)	0.69
CKD G5	11 (45%)	7 (33%)	0.54
Severe infections	9 (38%)	12 (57%)	0.24
Death	16 (67%)	11 (52%)	0.37
Time to death (months), median [IQR]	12 [6-64]	16 [2-25]	0.22

**Supplemental Table S5.** Treatment and outcomes of patients with cirrhosis-IgAN according to the history of compensated or decompensated cirrhosis status.

**Abbreviation.** ACE or ARB, Angiotensin converting enzyme or Angiotensin receptor blocker.

§) One patient had missing data about treatment and outcome.

\*) excluding patients treated with dialysis

	Cirrhosis IgAN n =45 <sup>§</sup>
<b>Treatment</b>	
ACE or ARB	27 (60%)
Side effect of ACE or ARB <sup>§</sup>	5/27 (19%)
Steroids	9 (20%)
Steroids initiated intra-venously.	4 (9%)
<b>Outcomes</b>	
Follow-up (month), median [IQR]	25 [5-62]
<i>At 12 months, n</i>	28
Serum creatinine (mg/dL) mean $\pm$ SD*	1.7 $\pm$ 0.9
eGFR mean $\pm$ SD*	55 $\pm$ 32
CKD G3a-G5	20 (71%)
CKD G3a	5 (18%)
CKD G3b	7 (25%)
CKD G4	3 (11%)
CKD G5	5 (18%)
<i>At last follow-up</i>	
Serum creatinine (mg/dL) mean $\pm$ SD*	2.16 $\pm$ 1.3
eGFR mean $\pm$ SD*	46 $\pm$ 29
CKD G3a-G5	37 (82%)
CKD G3a	7 (16%)
CKD G3b	5 (11%)
CKD G4	7 (16%)
CKD G5	18 (40%)
Severe infections	21 (47%)

Death	27 (60%)
Time to death (months) median [IQR]	15 [5-57]
Causes of death	
Infections	7 (26%)
Decompensated cirrhosis	10 (37%) <sup>£</sup>
Malignancies	6 (22%)
Others	3 (11%)
Unknow	1 (4%)

**Supplemental Table S6.** Management and outcomes of 45 patients with Cirrhosis-IgAN.

**Abbreviation.** ACE or ARB, Angiotensin converting enzyme or Angiotensin receptor blocker; eGFR, estimated glomerular filtration rate according to modification of diet in renal disease equation (MDRD).

§) One patient had missing data about treatment and outcome.

§) acute kidney injury n = 2, arterial hypotension n = 2, hyperkalemia n =1.

\*) excluding patients treated with dialysis

£) Patients which had decompensated cirrhosis induced by sepsis with further control of the sepsis were classified in “decompensated cirrhosis” group.