THE IMPACT OF CLINICAL AND MORPHOLOGICAL PROGNOSTIC RISK FACTORS THE PREDICTION OF RENAL OUTCOME IN PATIENTS WITH IMMUNOGLOBULIN A NEPHROPATHY: the long-term study of comparison patient groups with and without drug treatment

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OBJECTIVES

IgA nephropathy (IgAN) is the most frequent glomerulonephritis in many countries including Estonia (Riispere, 2012). We have been reviewed retrospectively our native kidney biopsy material (n=578) performed during 2001-2010 at the Tartu University Hospital. IgAN formed the main part (35.5%) among primary glomerulonephritis (Riispere, 2012). Because of asymptomatic disease course, in many cases, diagnosis of the IgAN is obtained late, when chronic histological lesions are prominent and renal function deteriorated. There is no specific treatment for IgAN but renoprotection is indicated when proteinuria is >1g/day and corticosteroids when estimated glomerular filtration rate (eGFR) is > 50 ml/min (KDIGO).

We aimed to compare a long-term outcome of IgAN patients with different drug treatment regimes.

METHODS

According our previous study a total of 88 cases of IgAN during the 11 years were registered. To compose the patient cohort for current study, we followed the recommendations of the Oxford's classification of IgAN, and, 72 IgAN cases were selected for the study. Baseline clinical data were collected within 3 months of the biopsy and at the end of a follow-up (FU, average of 4.1 years).
The following demographic and major clinical risk factors data were included for statistical analysis: data on gender and age at the time of biopsy, weight (kg), height (cm), body mass index (BMI, kg/m^2), smoking history, presenting clinical syndrome at the time of biopsy, systolic and diastolic blood pressure (mmHg), serum creatinine (µmol/L). Urinary protein excretion was expressed in grams (g) per 24hr/1.73m^2 in children and in g per 24 hr in adults (24 hours urine collection or protein/creatinine ratio). Microhaematuria was ranked at the intervals of <75, 76–150, >150 erythrocytes/µL. For the statistical analysis patients data examined in three groups according of eGFR values as follows: 1) eGFR >90 ml/min, 2) eGFR 60-89 ml/min and 3) eGFR <60 ml/min. Treatment type: antihypertensive drugs with or without renin-angiotensin system blockers - RASb, corticosteroids.

Table 1.

Clinical data	At the time of biopsy	At the end of follow-up			
	All cases	All cases	Treated	Untreated	p-value
N	73	65	38	27	
Age (years)	33.7 (16-76)	33.9 (16-76)	37.5 (16-76)	28.8 (16-46)	0.04
Duration of follow-up (months)		48.9 (12-144)	46.4 (12-144)	52.8 (12-135)	0.02
BMI	26.4±5.2	27.1±4.8	27.5±5.4	25.2±4.7	
Smoker, %	29	27.7	31.6	22.2	
Presenting clinical syndrome:					
Macroscopic haematuria, %	4	4.6	0	11.1	
Asymptomatic microhaematuria	48	44.6	34.2	59.3	
Asymptomatic microhaematuria and proteinuria, %	39	41.5	50.0	29.6	
NS, %	7	6.2	10.5	0	
Acute renal failure, %	1	1.5	2.6	0	
Chronic renal failure (eGFR<60 ml/min/1.73m²), %	1	1.5	2.6	0	0.1
MAP (mm Hg)	94.5±16.7	95.2±9.1	96.2±9.9	93.9±7.7	0.04
S-Creatinine (µmol/L)	93.4±70.7	94.4±74.4	106.1±94.4	77.2±15.0	0.01
eGFR (mean, ml/min per 1.73 m²)	94.9±30.7	85.8±28.6	76.5±29.1	98.8±22.5	
eGFR >90 ml/min, n	38	34	16	18	
eGFR 60-89 ml/min, n	21	18	11	7	0.1
eGFR >60 ml/min, n	13	13	11	2	
Proteinuria (g/day)	0.91 (0-10.2)	0.79 (0-8.5)	1.0 (0-8.5)	0.5 (0-3.5)	
Proteinuria, %:	81	79	73.7	85.2	
<1 g/day	11	15	13.2	14.8	0.1
1-3.49 g/day	8	6	10.5	0	
>3.5 g/day	65.8	40.0	39.5	40.7	
Microhaematuria, %					

Table 2.

Treated/Untreated patients	At the time of biopsy										
	%	MAP mm Hg	P-value	eGFR ml/min per 1.73 m²	P-value	Proteinuria g/24hrs	P-value	S1/T1, %	P-value	BMI	P-value
All treated	54.2	100.8±13.9	0.001	85.7±32.8	0.04	1.3 (0-10.2)	0.005	63.2	0.01	27.6±5.4	0.02
ACE or ARBs	43	102.8±14.2	0.0001	82.1±32.2	0.001	1.2 (0-10.2)	0.006	61.3	0.1	28.4±5.4	0.001
Calcium channel blockers	11	110.5±16.4	0.007	49.5±20.4	0.0001	3.4 (0.1-10.2)	0.002	87.5	0.001	31.0±6.2	0.01
Immunosuppression	13	109.8±15.5	0.006	71.1±43.5	0.1	3.5 (0-10.2)	0.01	77.8	0.1	28,6±7.5	0.04
All untreated	45.8	91.1±8.0	0.001	106.0±23.9	0.04	0.3 (0-2.2)	0.005	34.2	0.01	25.0±4.7	0.02
Patients without any antihypertensive and immunosuppressive treatment (risk factors group)	19.2	92.7±7.7	0.005	111.3±20.9	0.005	0.5 (0-2.2)	0.025	42.9	0.1	26.7±5.0	0.1
Patients without any antihypertensive and immunosuppressive treatment (without risk factors)	26.0	89.8±10.5	0.1	101.9±25.9	0.1	0.2 (0-0.4)	0.1	36.8	0.1	22.1±2.1	0.01

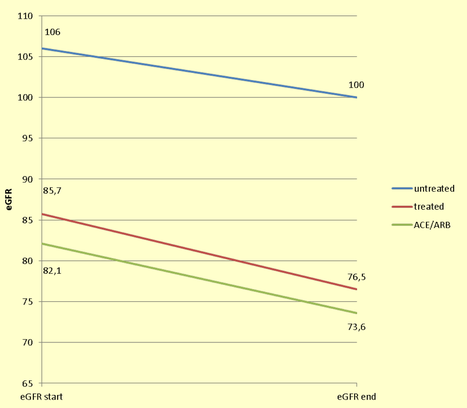

Table 3.

Treated/Untreated patients	At the time of biopsy										
	%	MAP mm Hg	P-value	eGFR ml/min per 1.73 m²	P-value	Proteinuria g/24hrs	P-value	S1/T1, %	P-value	BMI	P-value
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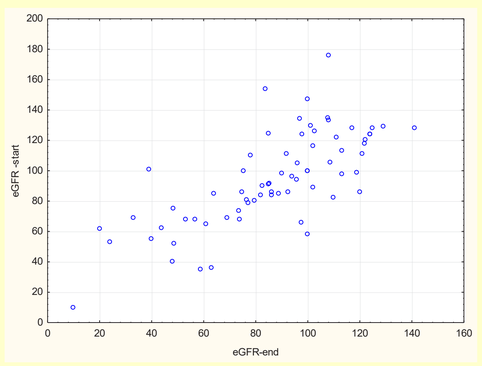

Figure 1

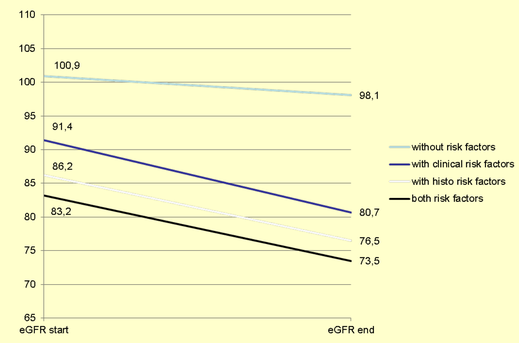

Figure 2

RESULTS

The patient demographic and clinical details are shown in Table 1. Prescribed therapy according to clinical and histological risk factors at the time of biopsy shown in Table 2 and FU data in Table 3. By Oxford classification M1, E1, S1, T1 and A2 scores were associated with the levels of BP, eGFR and urineP. From all studied IgAN pts 54% received treatment. We analysed IgAN treatment groups (all together and separately according of different drugs) and compared with pts without treatment. The following statistically significant associations in IgAN cohort were found: in pts with lower kidney function (eGFR <60 ml/min) higher BP (p=0.000059) and proteinuria was found irrespectively pts received (p=0.006365) or did not receive RASb (p=0.001253). Correlation analysis also confirmed these associations: almost all clinical parameters (except microhematuria) were found between each other in statistically significant correlation irrespectively of treatment state. By dispersion analysis BP affected significantly the dispersal of eGFR (p=0.000005) especially when we estimated BP concurrence with smoking (p=0.0106). After the FU eGFR decreased in 55% of patients and remain the same level in 12 % of patients (Fig. 1). If compared separately then eGFR decrease was seen in both study groups (Fig. 2) and more significantly among pts with clinical and morphological risk factors (ANOVA). The biggest significant eGFR change by Wilkinson test was found among pts who had risk factors and received treatment. The result was confirmed by post hoc analysis and did not depend of the presence of risk factors. However, in the investigation of subgroup who received RASb we found that the lowering of eGFR did depend of the presence of clinical and morphological risk factors.

CONCLUSIONS

The main findings of the study revealed, similarly to the Oxford study, our cohort's pattern of MEST confirmed having a predictive value independent of clinical data as their higher score was linked to an inauspicious outcome. RASb are only effective in the prevention of the progression when clinical and/or morphological risk factors are modest or missing.

References

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