

INTRODUCTION

Recent evidences reported the negative implications of glomerular haematuria on short, and long-term renal function, even among patients with advanced CKD.

The prevalence and significance of hematuria in large multicentric renal biopsy registries is not well known.

The aim of this study is to identify the prevalence of gross haematuria (GH) and microscopic haematuria (mH) and its association with clinical and histological findings over the Spanish Registry of Glomerulonephritis (SRG) between 1994 and 2013.

METHODS

We studied the data of a total 19,895 native renal biopsy included in the SRG, excluding patient without urinalysis data.

The patients were categorized according with the urinary sediment into:

- (1) GH if haematuria was obvious to a naked eye
- (2) mH if patient presented a positive dipstick, confirmed by microscopically examination, and
- (3) non haematuric (NH) if the sediment has <2 erythrocytes/ μ L.

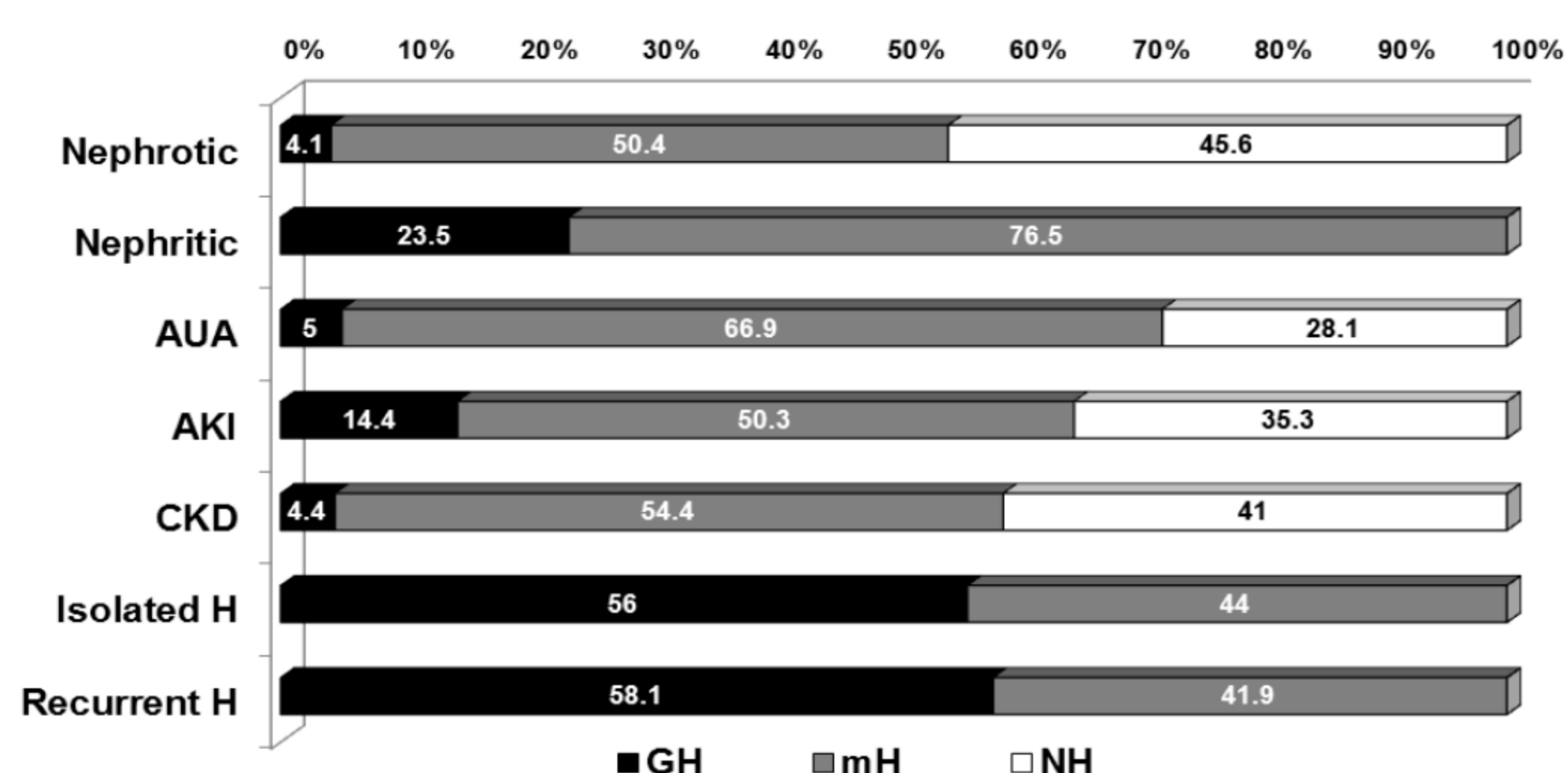
RESULTS

Clinical characteristics at renal biopsy according with urinalysis.

	All N=19895	GH N=1717	mH N=10966	NH N=7212	p
Age (years)	48.3 \pm 19.5	45.8 \pm 22.3	48.3 \pm 18.9 ^a	49.6 \pm 19.0 ^{a,b}	<.0001
Gender (Male)	60.1%	67.2%	59.9% ^a	58.6% ^a	<.0001
Hypertension (Yes)	53.5%	45.8%	55.5% ^a	53.7% ^{a,b}	<.0001
Creatinine (mg/dL)	2.62 \pm 2.84	3.32 \pm 3.19	2.56 \pm 2.74 ^a	2.51 \pm 2.75 ^a	<.0001
eGFR (mL/min)	50.4 \pm 36.7	46.6 \pm 41.6	50.5 \pm 36	51.3 \pm 36.4 ^b	.015
Proteinuria (g/day)	4.09 \pm 4.61	3.09 \pm 4.19	3.96 \pm 4.49 ^a	4.52 \pm 4.83 ^{a,b}	<.0001

eGFR, estimated glomerular filtration rate. Where ^a indicate statistical difference with GH, and ^b indicate statistical difference with mH.

Urinalysis findings according with the main renal syndrome.



CKD, Chronic Kidney Disease; AKI, Acute Kidney Injury; AUA, Asymptomatic Urinary Abnormalities; Isolated H, isolated haematuria; Recurrent H, recurrent haematuria.

Relationship between urinalysis and kidney biopsy histology.

Histology	All		Gross Haematuria		Microscopic Haematuria		Non Haematuria	
	n	%	n	%	n	%	n	%
IgAN	2922	14.7	577	33.6	2029	18.5	316	4.4
Crescentic GN	2085	10.5	373	21.7	1260	11.5	452	6.3
MPGN	799	4.0	85	4.9	519	4.7	195	2.7
Mes non IgA	672	3.4	69	4	416	3.8	187	2.6
LN	1876	9.4	68	4	1110	10.1	698	9.7
FSGS	1632	8.2	66	3.8	868	7.9	698	9.7
Unclassifiable	862	4.3	62	3.6	441	4	359	5
Endocapillary	244	1.2	51	3	121	1.1	72	1
MN	2012	10.1	49	2.9	1066	9.7	897	12.5
MCD	1337	6.7	42	2.4	566	5.2	729	10.1
Amiloidosis	714	3.6	31	1.8	272	2.5	411	5.7
ATIN	611	3.1	30	1.7	217	2	364	5.1
HN	860	4.3	27	1.6	429	3.9	404	5.6
ATN	236	1.2	24	1.4	100	0.9	112	1.6
Cryoglob	111	0.6	22	1.3	65	0.6	24	0.3
TMA	144	0.7	17	1	90	0.8	37	0.5
DN	745	3.7	16	0.9	337	3.1	392	5.4
CTIN	430	2.2	16	0.9	160	1.5	254	3.5
MHT	191	1	12	0.7	104	0.9	75	1
Esclerosis	430	2.2	12	0.7	271	2.5	146	2
Fibrillary GN	43	0.2	3	0.2	20	0.2	20	0.3
MM	200	1	3	0.2	99	0.9	98	1.3
Alport S	31	0.2	2	0.1	25	0.2	4	0.1
ChE	45	0.2	1	0.1	20	0.2	24	0.3
Others	677	3.4	73	4.2	361	3.2	243	3.4
Total	19895	%	1717	8.6	10966	55.1	7212	36.3

IgAN, IgA Nephropathy; MPGN, Membranoproliferative GN; Mes non IgA, Mesangial non IgA; LN, Lupus Nephritis; FSGS, Focal Segmental Glomerulosclerosis; MN, Membranous Nephritis; MCD, Minimal Change Disease; MHT, Malignant Hypertension; ATIN, Acute Tubulointerstitial Nephritis; ATN, acute tubular Necrosis; HN, hypertensive Nephropathy; CTIN, Chronic Tubulointerstitial Nephritis; DN, Diabetic Nephropathy; TMA, Thrombotic Microangiopathy; Alport S, Alport Syndrome; ChE, Cholesterol embolism; MM, Multiple Myeloma.

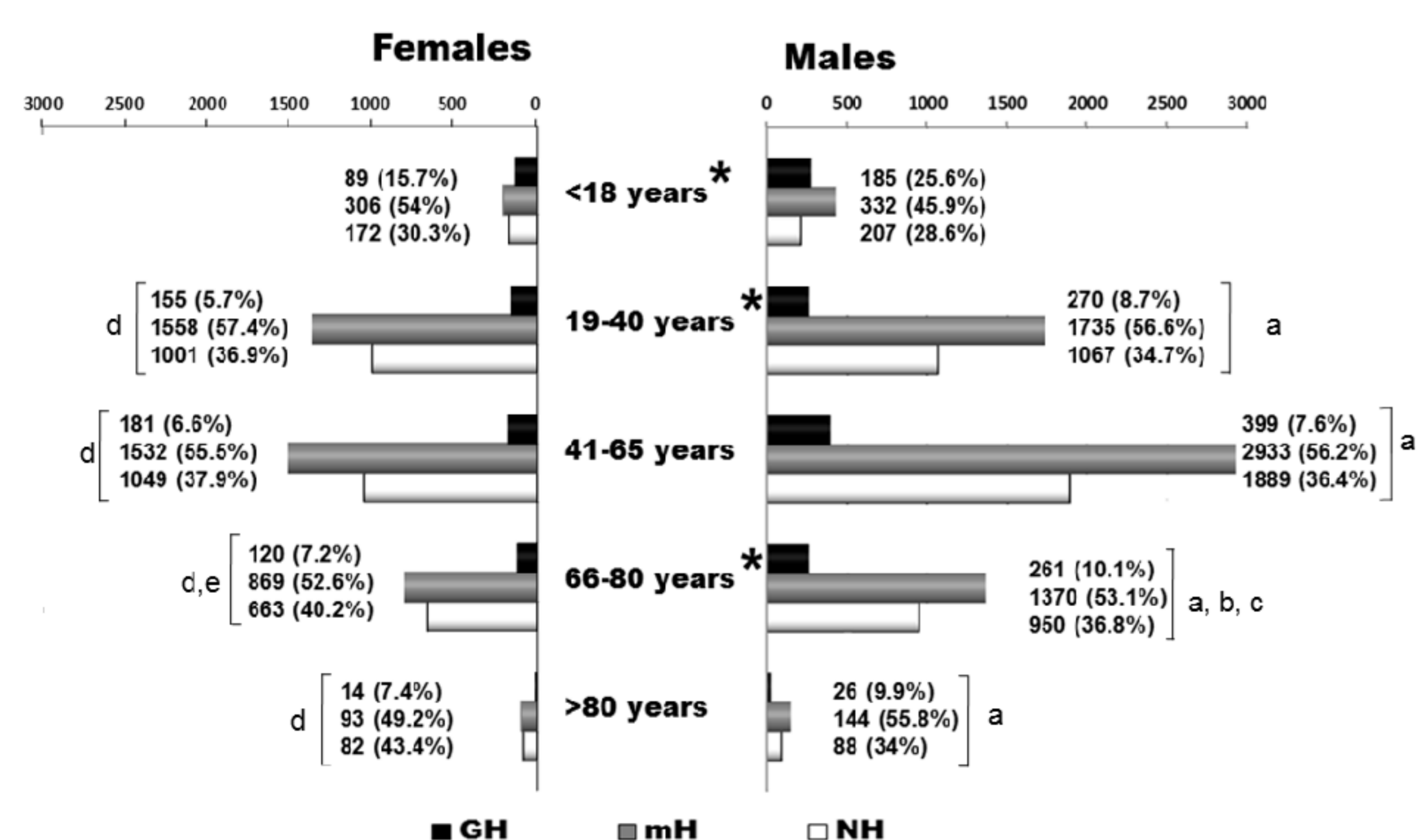
CONCLUSIONS

Haematuria, usually microhaematuria, is a common urinalysis finding in patients that underwent native renal biopsy.

The most frequent histological finding on both GH and mH were IgAN and Crescentic GN.

Gross haematuria is more frequent in young males and is usually associated to AKI, whereas microhaematuria presented a higher incidence in adults with nephrotic syndrome.

Urinalysis findings according gender and age groups.



Where * represents statistical differences in the same group of age between gender on the urinalysis. Where ^a represents differences with < 18 years males, ^b represents differences with 19-40 years males and ^c differences with 41-65 years males. Where ^d represents differences with < 18 years females and ^e differences with 19-40 years females.