Hematuria como factor de progresión de las enfermedades glomerulares

Montevideo, Uruguay

14-15 Septiembre 2015

Persistent Asymptomatic Isolated Microscopic Hematuria in Israeli Adolescents and Young Adults and Risk for End-Stage Renal Disease

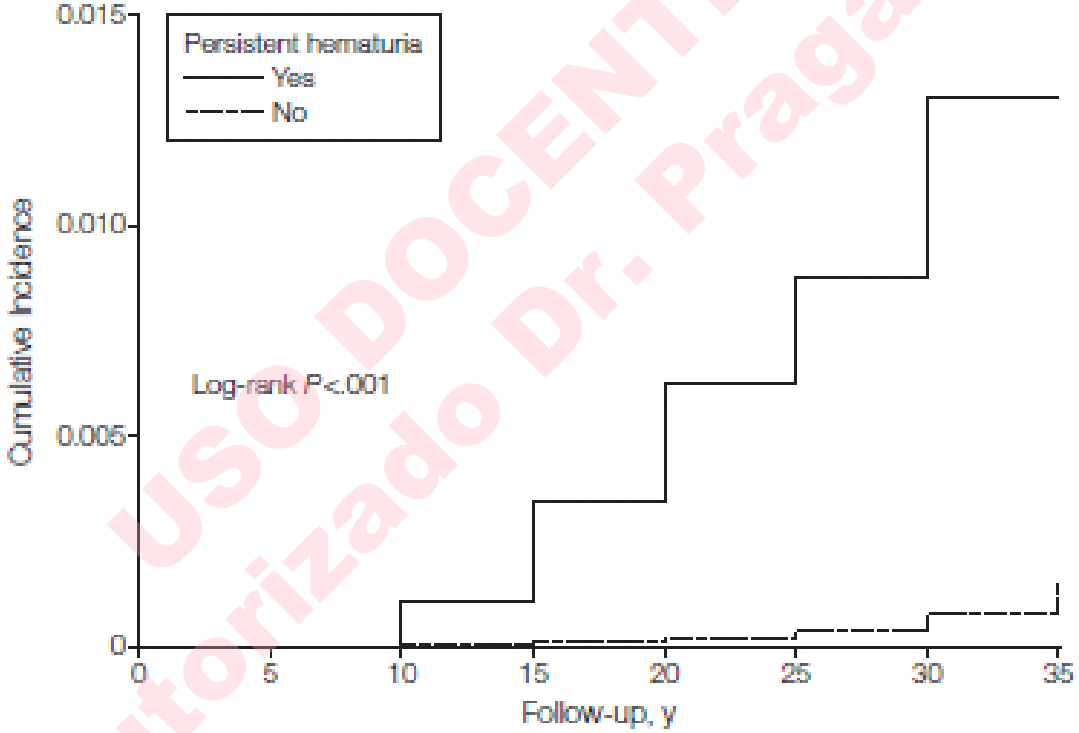
JAMA, August 17, 2011—Vol 306, No. 7

Results Persistent asymptomatic isolated microscopic hematuria was diagnosed in 3690 of 1 203 626 eligible individuals (0.3%). During 21.88 (SD, 6.74) years of follow-up, treated ESRD developed in 26 individuals (0.70%) with and 539 (0.045%) without persistent asymptomatic isolated microscopic hematuria, yielding incidence rates of 34.0 and 2.05 per 100 000 person-years, respectively, and a crude HR of 19.5 (95% confidence interval [CI], 13.1-28.9). A multivariate model adjusted for age, sex, pa-

Persistent Asymptomatic Isolated Microscopic Hematuria in Israeli Adolescents and Young Adults and Risk for End-Stage Renal Disease

JAMA, August 17, 2011—Vol 306, No. 7

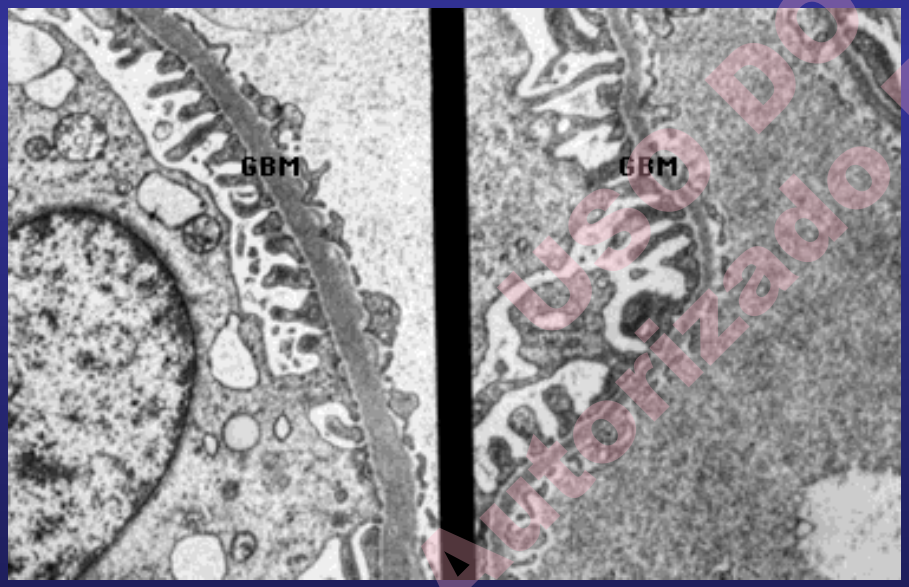
Figure 2. Cumulative Incidence of Treated ESRD among Participants With and Without Persistent Asymptomatic Isolated Microscopic Hematuria



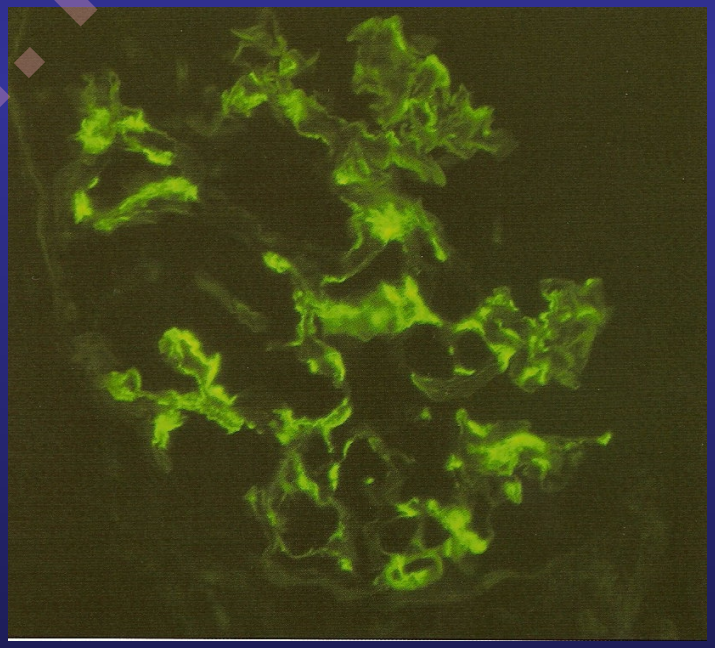
No. at risk								
Persistent hematuria								
Yes	3690	3677	3665	2873	1978	1135	244	10
No	1 199 936	1 196 606	1 193 878	947 735	680 092	431 433	212 810	1608

High prevalence of microhematuria in the general population

Dische FE et al: Incidence of thin membrane nephropathy: morphometric investigation of a population sample
J Clin Pathol 1990; 43:457



- **Hematuria Familiar Benigna**



- **Nefropatía IgA**

Hematuria due to hypercalciuria and hyperuricosuria in adult patients
Andrés A, Praga M, Bello I, et al. Kidney Int 1989;36:96.

37 patients with hematuria of unknown origin.

Hypercalciuria (HC) (>4 mg/kg/24 h) 9

Hyperuricosuria (HU) (>750-800 mg/24 h) 11

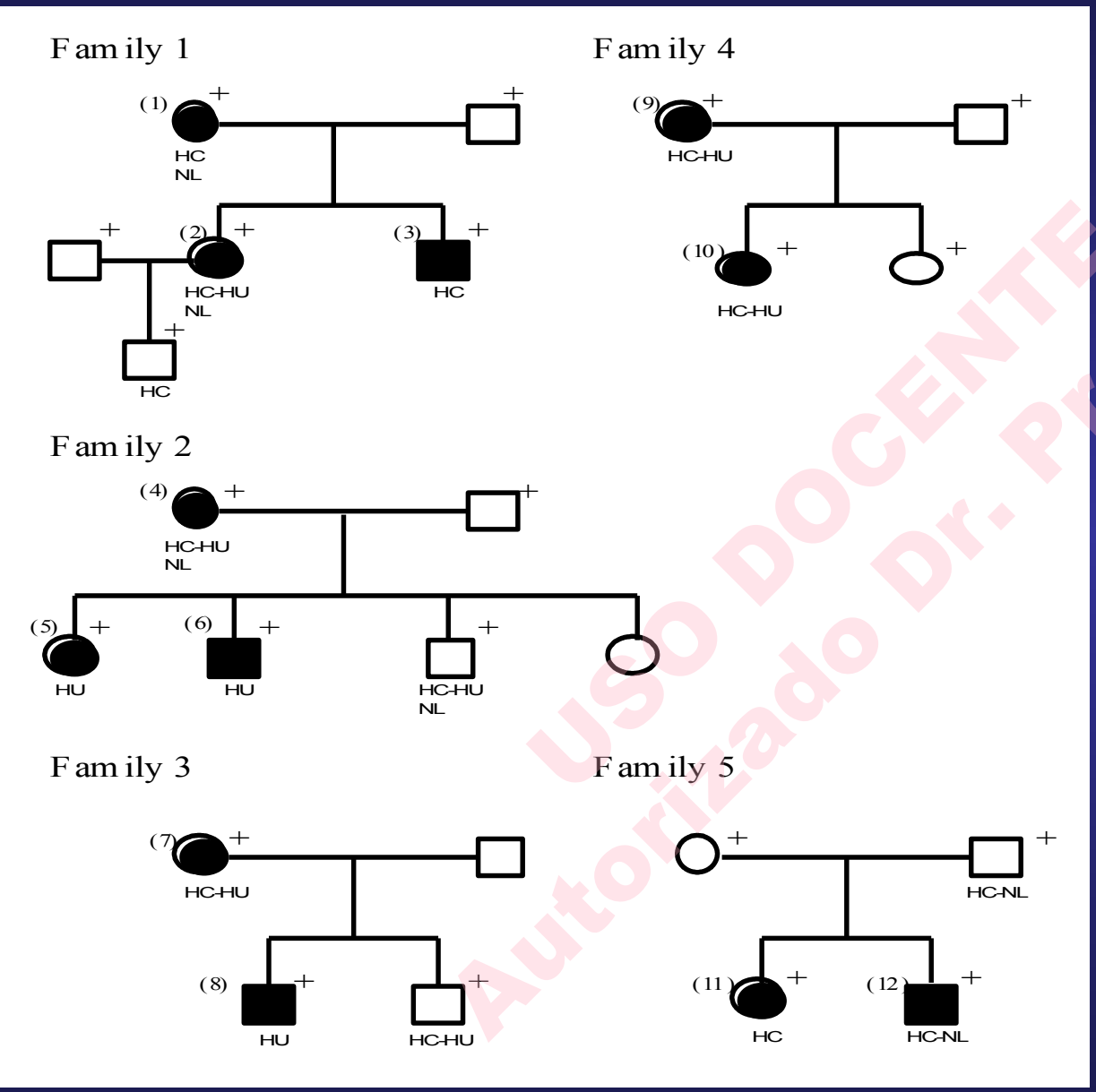
HC + HU..... 17

Treatment with Thiazides - Hypercalciuria

Treatment with Allopurinol - Hyperuricosuria

Disappearance of hematuria in 22 patients (59%)

Personal or Familial history of lithiasis in many patients



Familial Microscopic Hematuria Caused by Hypercalciuria and Hyperuricosuria
Praga M et al
AJKD 2000; 35: 141-145

MICROHEMATURIA FAMILIAR

- **Pacientes con microhematuria persistente,una vez descartadas causas urológicas (tumores, litiasis…)**

↓

- **Sedimento urinario en familiares de 1º grado (padres, hermanos, hijos)**

↓

- **Si microhematuria, Diagnóstico de microhematuria familiar persistente y protocolo de estudio**

↓

- **62 FAMILIAS, con un total de 155 pacientes**

Causes of familial isolated persistent microhematuria

	Families	Patients	
-Thin basement membrane disease (TBMD) (Biopsy-proven)	30	78	(80%)
-IgA Nephropathy (Biopsy-proven)	4	13	(15%)
-Hypercalciuria/Hyperuricosuria causing crystalluria	5	12	(5%)
-Families without renal biopsy	23	52	
Total	62	155	

Excellent prognosis if proteinuria during follow-up is negative or minimal (<0.5 g/24h)

Praga M: New insights into familial microhematuria.Curr Op Nephrol Hypertens 1999

Long-Term Outcomes of IgA Nephropathy Presenting with Minimal or No Proteinuria

JASN 23: 1753–1760, 2012

Eduardo Gutiérrez,* Isabel Zamora,† José Antonio Ballarín,‡ Yolanda Arce,‡ Sara Jiménez,§ Carlos Quereda,§ Teresa Olea,‖ Jorge Martínez-Ara,‖ Alfons Segarra,¶ Carmen Bernis,** Asunción García,** Marian Goicoechea,†† Soledad García de Vinuesa,†† Jorge Rojas-Rivera,* and Manuel Praga* for the Grupo de Estudio de Enfermedades Glomerulares de la Sociedad Española de Nefrología (GLOSEN)

Table 1. Clinical characteristics at baseline (renal biopsy)

Variable	Values[a]
Age (years)	23.7 (14.8; 5–71)
Males (%)	63.8
BMI (kg/m^2)	21.9 (4; 14.9–31.7)
Systolic BP (mmHg)	117 (16.9; 80–190)
Diastolic BP (mmHg)	70.6 (13.6; 35–130)
MAP (mmHg)	86.2 (13.9; 50–143.3)
SCr (mg/dl)	0.8 (0.2; 0.7–1.1)
eGFR (ml/min per 1.73 m^2)	111.7 (31.6; 65–228)
Proteinuria (g/24 h)	0.2 (0.1–0.4)
Microhematuria	141 (100%)
Smokers	22 (15.6%)
Follow-up (months)	108 (60–180)

141 Caucasian patients with biopsy-proven IgA nephropathy.
Normal renal function
Proteinuria <0.5 g/24 h or negative
Median follow-up 108 months.

Gutiérrez E et al
JASN 23: 1753–1760, 2012

- **Primary Outcomes:**

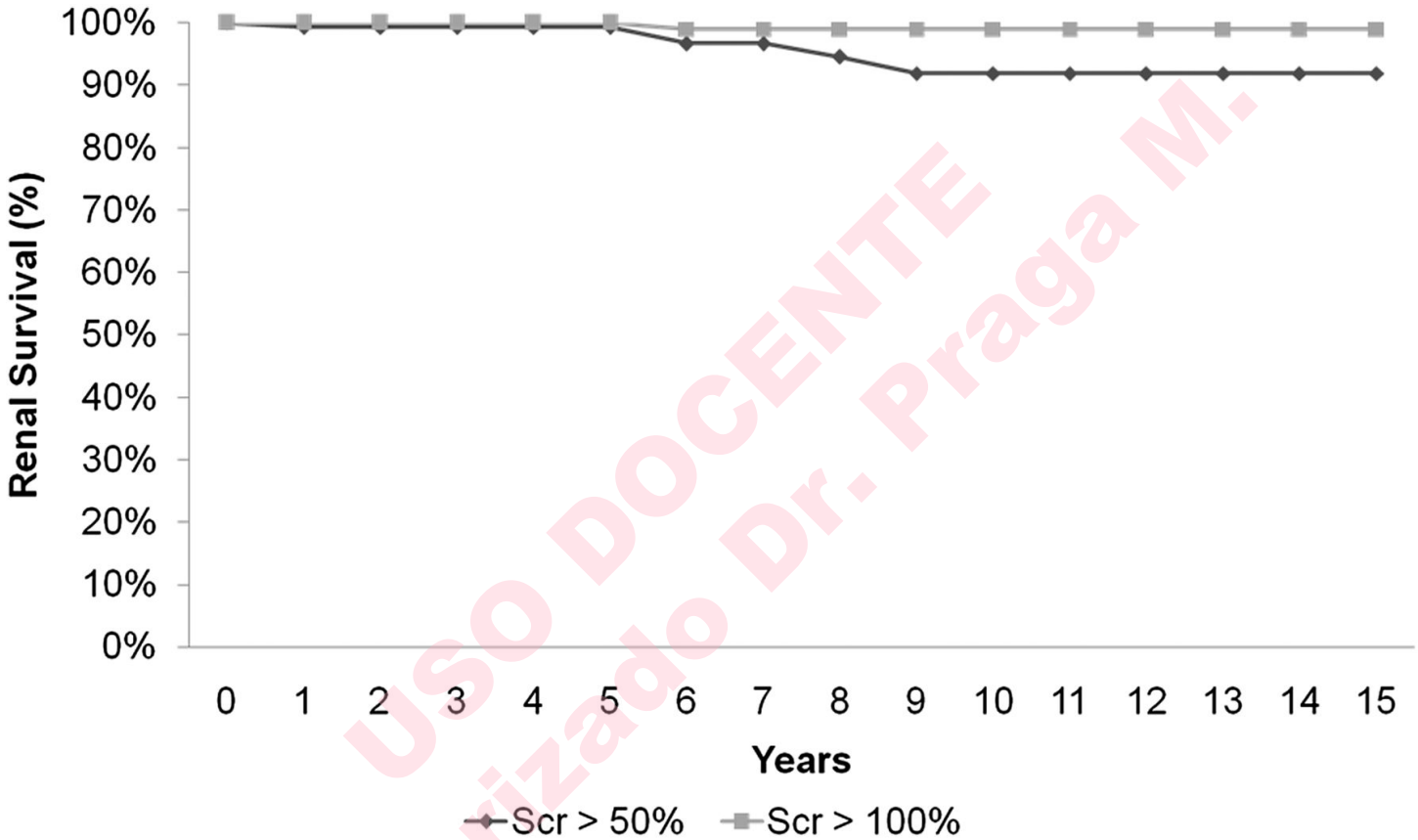
  -Renal survival (defined by a status free of SCr >50% and >100% with respect to baseline value and ESRD)

  -Clinical remission

- **No patient received immunosuppressive treatments, including corticosteroids, or fish oil. No patient was submitted to tonsillectomy.**

- **A total of 59 (41.8%) patients received treatment with renin-angiotensin system (RAS) blockers, because of hypertension and/or proteinuria increase.**

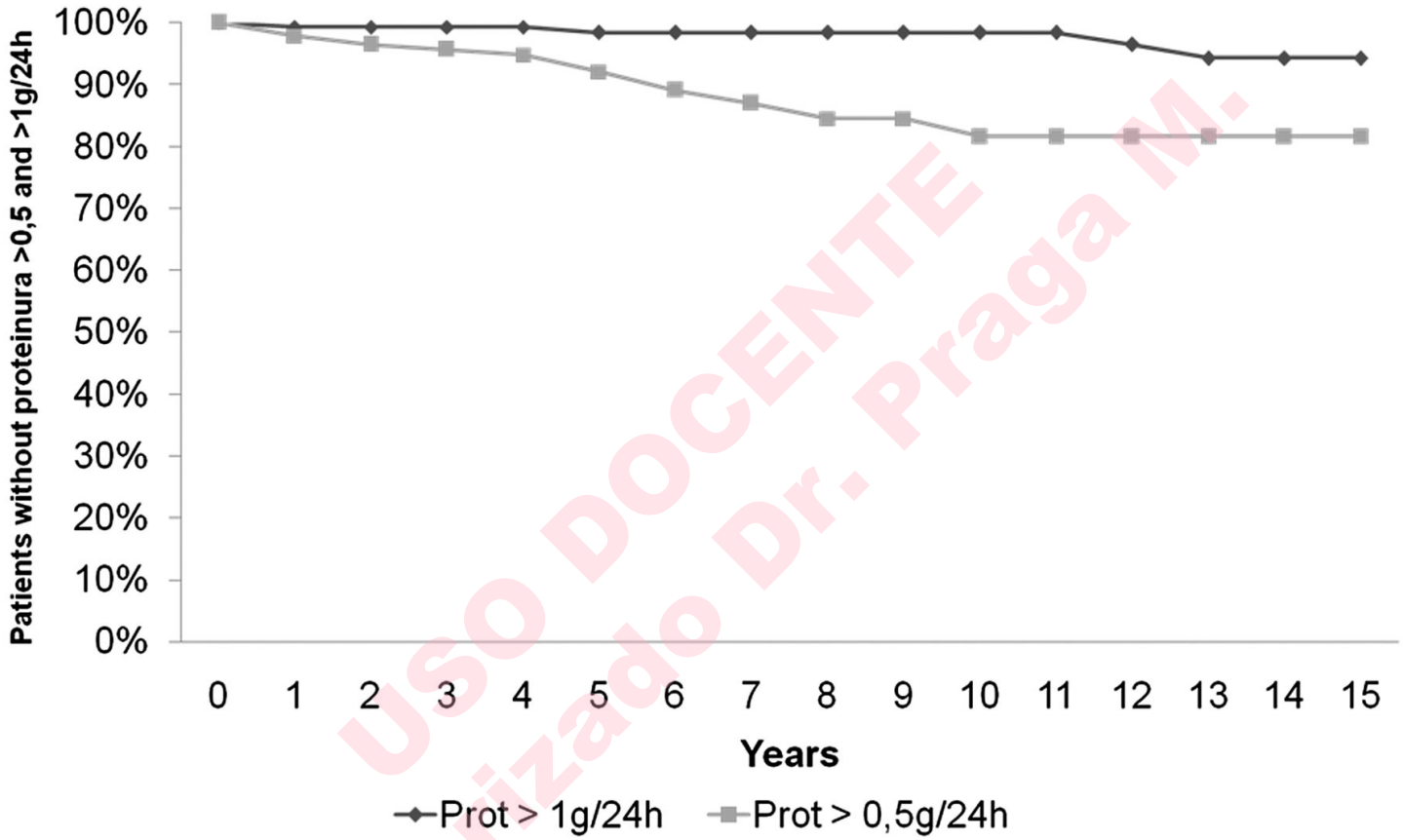
Renal survival (defined by a status free of >50% and >100% baseline SCr increase).



Number at risk																
>50%	141	141	140	127	118	106	95	87	77	72	67	58	51	45	36	35
>100%	141	141	141	128	119	107	96	87	77	72	67	58	51	45	37	36

Gutiérrez E et al. JASN 2012;23:1753-1760

Probability of absence of proteinuria>0.5 and >1.0 g/24 h during follow-up.



Number at risk																
>0,5g	141	140	137	125	113	103	92	82	69	63	58	49	43	37	36	33
>1g	141	140	139	128	119	107	96	88	77	72	67	58	51	44	37	36

Gutiérrez E et al. JASN 2012;23:1753-1760

JASN

Long-Term Outcomes of IgA Nephropathy Presenting with Minimal or No Proteinuria

Gutiérrez E et al
JASN 23: 1753–1760, 2012

Clinical remission of the disease: 53 patients (37.5%)

(1) persistent disappearance of microhematuria
(2) proteinuria <0.2 g/24 h or negative
(3) normal renal function
(4) normal BP.

Mean time to remission was 60.2 (42.8) months

Patients with isolated persistent microhematuria and minimal or negative proteinuria. Our current policy

- **Rule-out non-glomerular causes of hematuria, particularly in high-risk patients (male, >50 yr, smoker…)**
- **Perform urinary sediment in some first grade relatives. If confirmed the familial character of hematuria, diagnosis is restricted to TBMD (80%), IgAN (15%) or crystalluria.**
- **No renal biopsy, unless proteinuria > 1-1.5 g/d, renal function decline or suspicion of other diagnosis .**

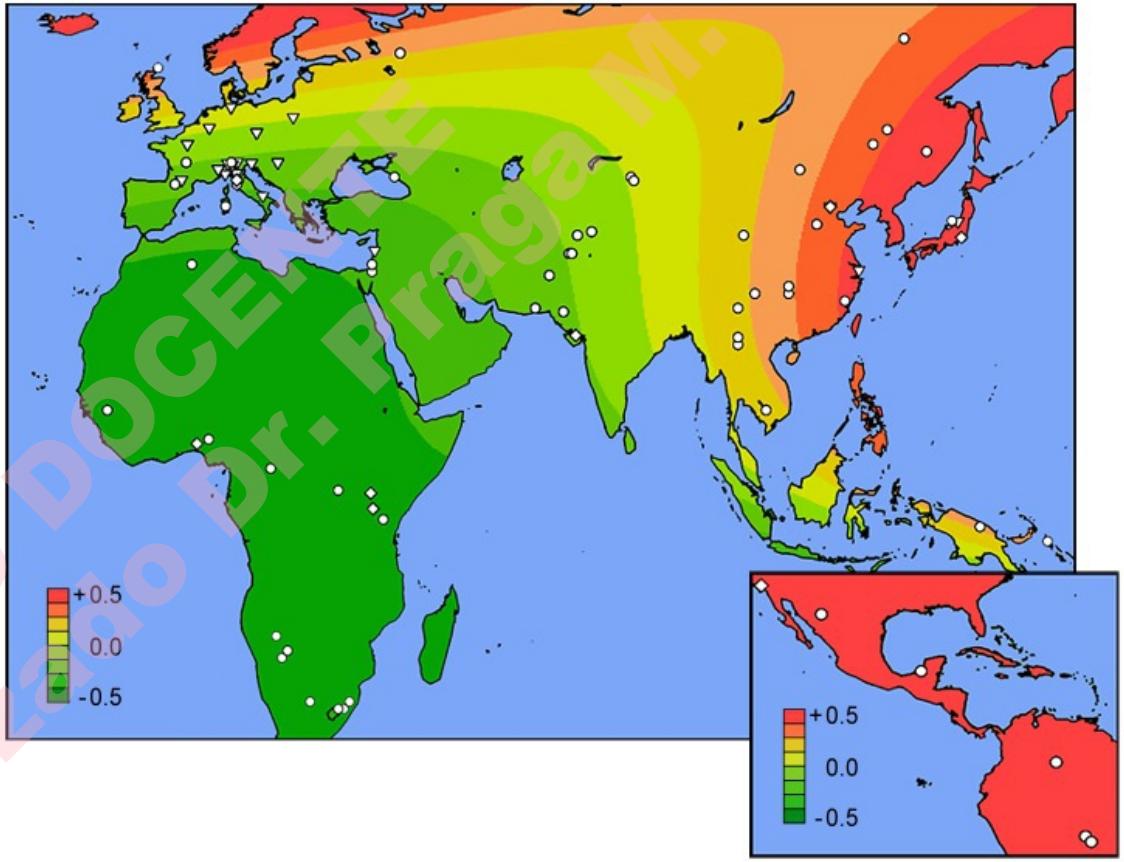
Patients with isolated persistent microhematuria and minimal or negative proteinuria. Our current policy

- **If proteinuria >0.5 g/d, RAAS blockade unless contraindicated**
- **In patients with negative proteinuria, regular follow-up (every 1-3 yr) to rule out the appearance of increasing proteinuria.**
- **Is persistent isolated microhematuria a risk factor for progressive renal disease?: Not in our experience**

OPEN ACCESS Freely available online PLOS GENETICS

Geographic Differences in Genetic Susceptibility to IgA Nephropathy: GWAS Replication Study and Geospatial Risk Analysis

Kiryluk K et al,
PLOS Genet
2012; 8: e 1002765

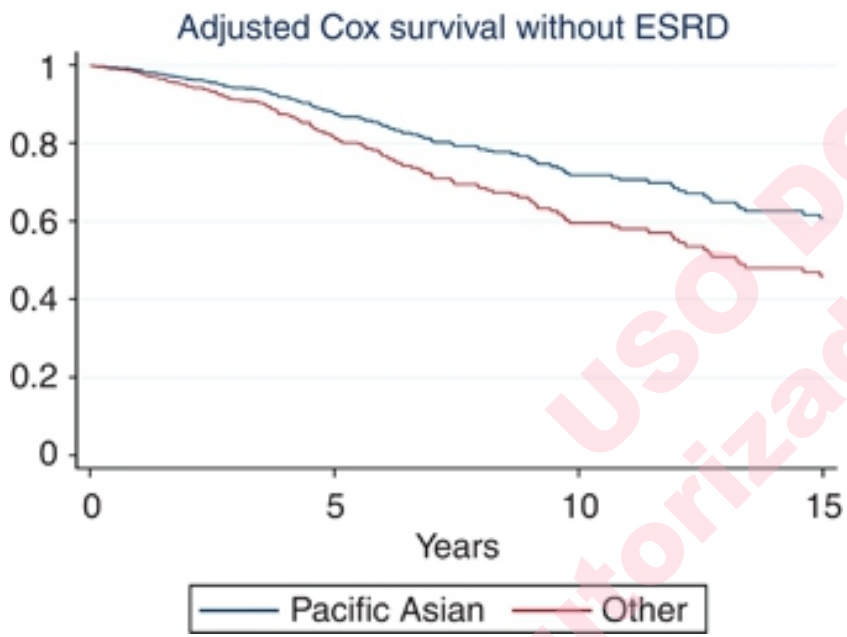


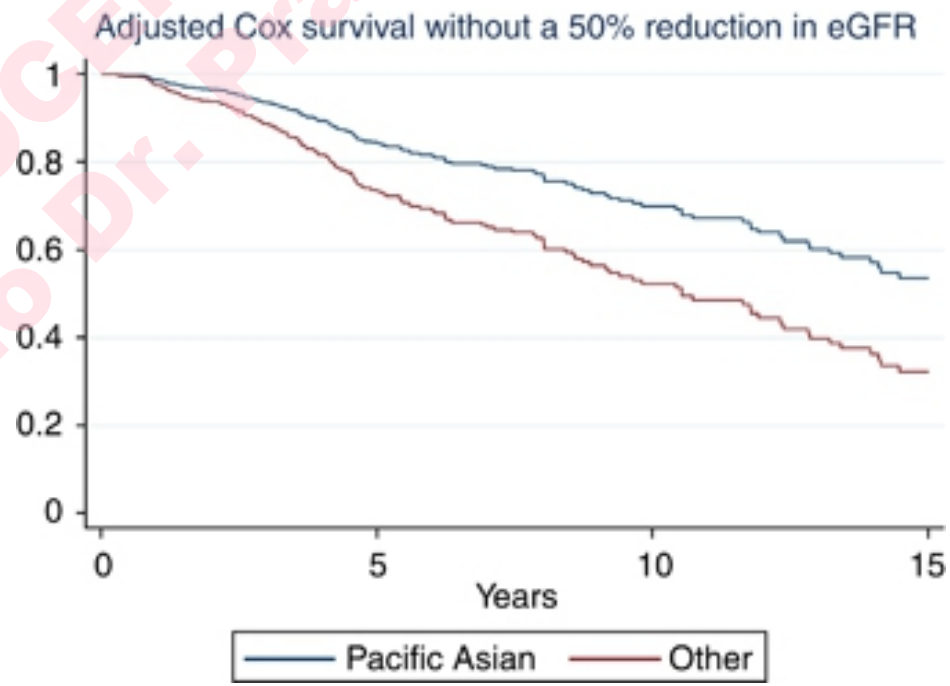
Carriers of a common deletion encompassing the neighboring CFHR1 and CFHR3 genes had an approximately 30% decreased risk of developing IgAN.

http://www.kidney-international.org clinical investigation

Individuals of Pacific Asian origin with IgA nephropathy have an increased risk of progression to end-stage renal disease

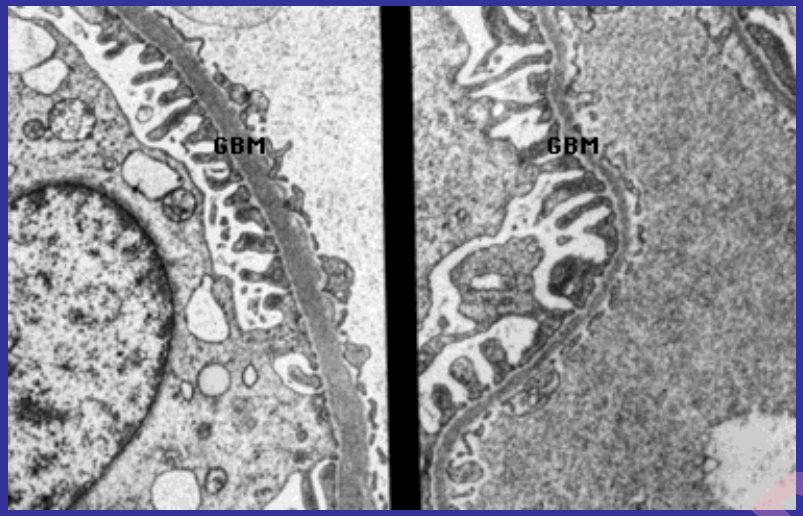
Sean J. Barbour[1,2,3], Daniel C. Cattran[3,4], S. Joseph Kim[4], Adeera Levin[1,2], Ron Wald[4], Michelle A. Hladunewich[3,4] and Heather N. Reich[3,4]





Kidney Int 2013

Hematuria Familiar “Benigna”



Mejor: Enfermedad de la membrana basal delgada (TBMD)

- **Dische FE et al: Abnormally thin glomerular basement membranes associated with hematuria, proteinuria or renal failure in adults.**

  Am J Nephrol 1985; 5:103

- **Nieuwhof C et al: Thin GBM nephropathy: premature glomerular obsolescence is associated with hypertension and late onset renal failure.**

  Kidney Int 1997; 51:1596

COLAGENO TIPO IV Y SINDROME DE ALPORT

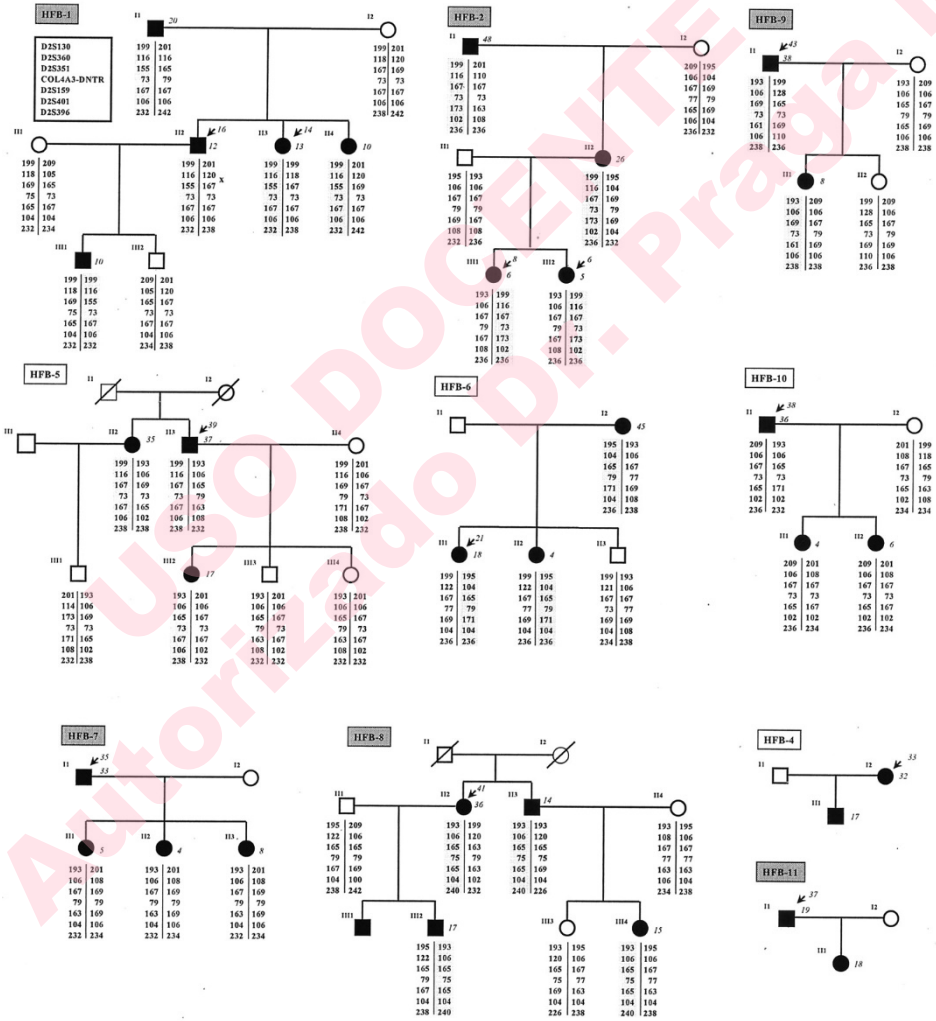
Seis cadenas distintas del COLÁGENO TIPO IV, el principal constituyente de las membranas basales

CADENA	GEN	VARIANTES DEL ALPORT
α1	COL4A1	-LIGADO AL CROMOSOMA X
α2	COL4A2	Mutaciones en COL4A5
α3	COL4A3	-AUTOSÓMICO RECESIVO
α4	COL4A4	Ligado a COL4A3/COL4A4,
α5	COL4A5	
α6	COL4A6	-AUTOSÓMICO DOMINANTE
		Ligado a COL4A3/COL4A4

Mutations in the *COL4A4* and *COL4A3* Genes Cause Familial Benign Hematuria

CÈLIA BADENAS,*† MANUEL PRAGA,‡ BÁRBARA TAZÓN,*† LAURENCE HEIDET,§ CHRISTELLE ARRONDEL,§ ANNA ARMENGOL,*† AMADO ANDRÉS,‡ ENRIQUE MORALES,‡ JUAN ANTONIO CAMACHO,¶ XOSE LENS,# SONIA DÁVILA,‡ MONTSE MILÀ,† CORINNE ANTIGNAC,§ ALEJANDRO DARNELL,* and ROSER TORRA*

*Nephrology and †Genetics Departments, Hospital Clínic, Barcelona, Spain; ‡Nephrology Department, Hospital 12 de Octubre, Madrid, Spain; §Nephrology Department, Inserm U423, Université René Descartes, Hôpital Necker-Enfants Malades, Paris, France; ¶Hospital Sant Joan de Déu, Barcelona, Spain; and #Nephrology Department, Hospital Clínico Universitario, Santiago de Compostela, Spain.



JASN

Proteinuria and renal Failure in “Benign” Familial Hematuria?

Nephrol Dial Transplant (2009) 24: 2721–2729
doi: 10.1093/ndt/gfp158
Advance Access publication 8 April 2009

Clinico-pathological correlations in 127 patients in 11 large pedigrees, segregating one of three heterozygous mutations in the *COL4A3/COL4A4* genes associated with familial haematuria and significant late progression to proteinuria and chronic kidney disease from focal segmental glomerulosclerosis

Alkis Pierides[1], Konstantinos Voskarides[2], Yiannis Athanasiou[1], Kyriacos Ioannou[1], Loukas Damianou[3,4], Maria Arsali[1], Michalis Zavros[1], Michael Pierides[5], Vasilios Vargemezis[4], Charalambos Patsias[1], Ioanna Zouvani[6], Avraam Elia[7], Kyriacos Kyriacou[8] and Constantinos Deltas[2]

CLINICAL RESEARCH www.jasn.org

COL4A3/COL4A4 Mutations Producing Focal Segmental Glomerulosclerosis and Renal Failure in Thin Basement Membrane Nephropathy

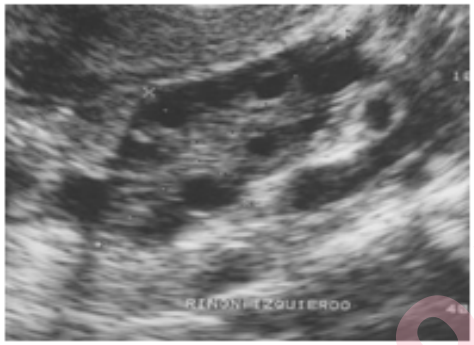
Konstantinos Voskarides,* Loukas Damianou,† Vassos Neocleous,‡ Ioanna Zouvani,§ Stalo Christodoulidou,† Valsamakis Hadjiconstantinou,† Kyriacos Ioannou,‖ Yiannis Athanasiou,‖ Charalampos Patsias,¶ Efstathios Alexopoulos,** Alkis Pierides,‖ Kyriacos Kyriacou,‡ and Constantinos Deltas*‡

Proteinuria and renal Failure in “Benign” Familial Hematuria? Our Experience

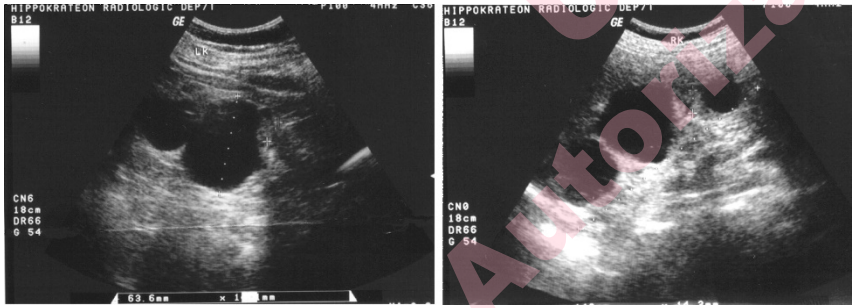
- Sixteen patients with biopsy-proven TBMD and proteinuria >0.5 g/d
- Age: 32±17 yr (7-62)
- Gender: 10 M, 6 F
- Renal biopsy: Presence of Glomerulosclerosis in 55%
- Percentage of glomeruli showing glomerulosclerosis: 23±15
- Mean Follow-up 15 yr
- RAAS blockade in all the patients
- Mean eGFR loss: 2.5±7 ml/m/1.73 m2/yr
- eGFR <60 ml/m/1.73m2 at last visit: 7 (44%)
- eGFR <30 ml/m/1.73m2 during follow-up: 2 (12%)

Multiple kidney cysts in thin basement membrane disease with proteinuria and kidney function impairment

Presence of bilateral cysts in 56% of our Biopsy-proven TBMD patients with proteinuria/CKD.
No cysts in TBMD patients without proteinuria



Patients with persistent microhematuria, proteinuria…
Suspect TBMD particularly if bilateral kidney cysts are present



Pierides A et al.
Nephrol. Dial. Transplant. 2009

CKJ in press

Association of thin basement membrane nephropathy with hypercalciuria, hyperuricosuria and nephrolithiasis

Praga M, Martínez MA, Andrés A, Alegre R,
Vara J, Morales E, Herrero JC, Novo O, Rodicio JL

Kidney Int 1998;54:915-920

Loin-pain hematuria syndrome associated with thin glomerular basement membrane disease and hemorrhage into renal tubules

Hebert LA, Betts JA, Sedmak DD, Cosío FG,
Bay WH, Carlton S.

Kidney Int 1996; 49: 168-173

HEMATURIA

- **FRA por Hematuria Macroscópica**

  -IgA

  -GN extracapilares

  -GN agudas postinfecciosas

  -GN Membranoproliferativa

Acute worsening of renal function during episodes of macroscopic hematuria in IgA nephropathy"

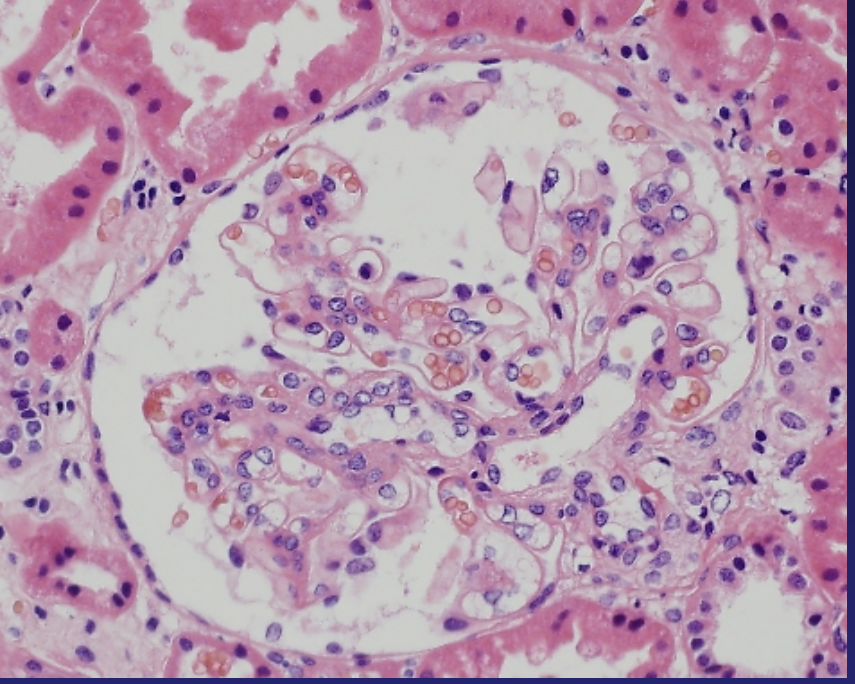
M. Praga, et al Kidney Int 28: 69-74, 1985

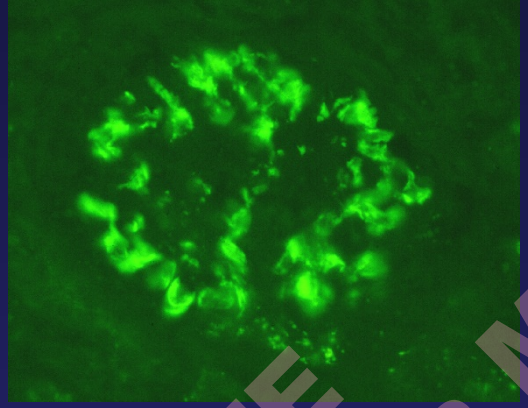
-29 episodios de HM en 21 pacientes con GN IgA

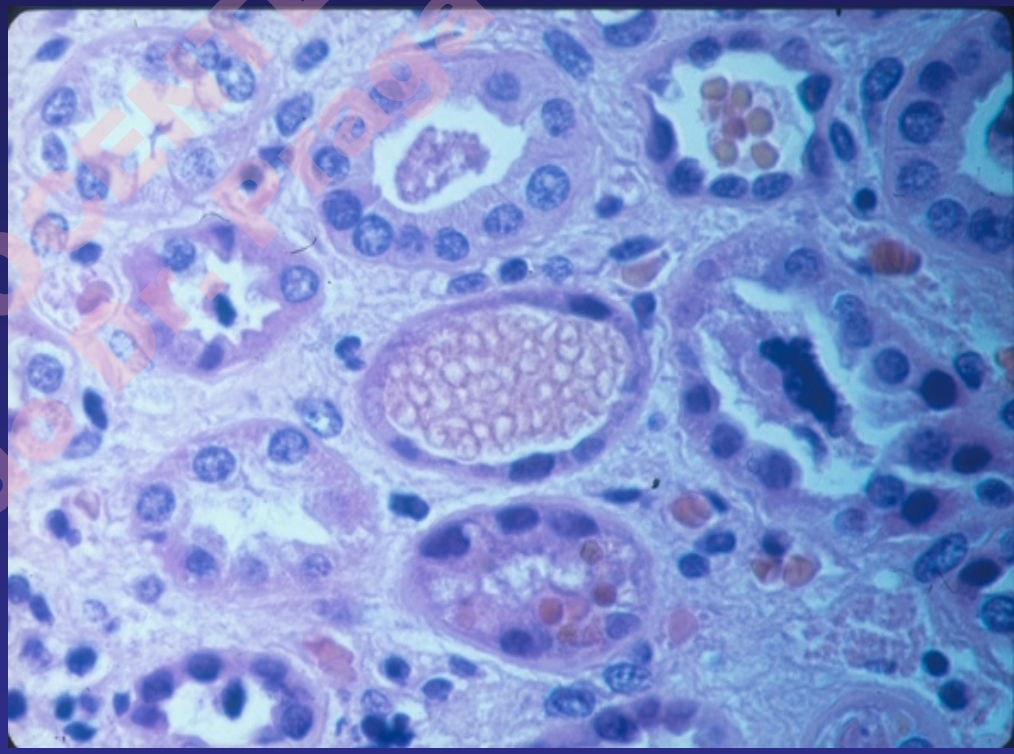
-Incremento de Crs >0.5 mg/dl en 11 episodios (37.9%)
Crs máxima 1.2-6.7 mg/dl

-Duración de la HM mayor en los casos con FRA
4.8±1.3 vs 3.5±1,5 días ($p<0.05$)

-Recuperación completa, sin tratamientos específicos, de la función renal en 1-2 meses.







GN IgA con FRA asociado
a brote de hematuria macroscópica
Glomérulos con proliferación
mesangial.
Semilunas ocasionales
(<15% de glomérulos)

Lesión Principal: Túbulos llenos de cilindros hemáticos, con signos de Necrosis Tubular aguda

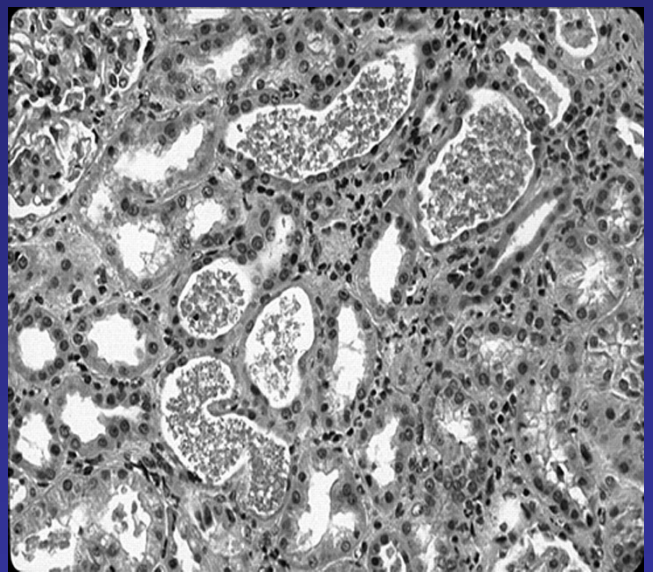
NEFROPATÍA IgA – BROTES DE HM

"Factors that determine an incomplete recovery of renal function in macrohematuria-induced acute renal failure of IgA Nephropathy"

Gutiérrez E et al *Clin J Am Soc Nephrol 2007; 2, 51-57*

36 episodios de FRA por macrohematuria en IgAN

- **27 recuperan la función renal previa: ClCr: 89 ± 28 ml/min (Grupo I)**
- **9 (25%) no recuperan su función renal anterior: 38 ± 12 ml/min (Grupo II)**



NEFROPATÍA IgA – BROTES DE HM

Correlación entre la duración del BHM y la creatinina final

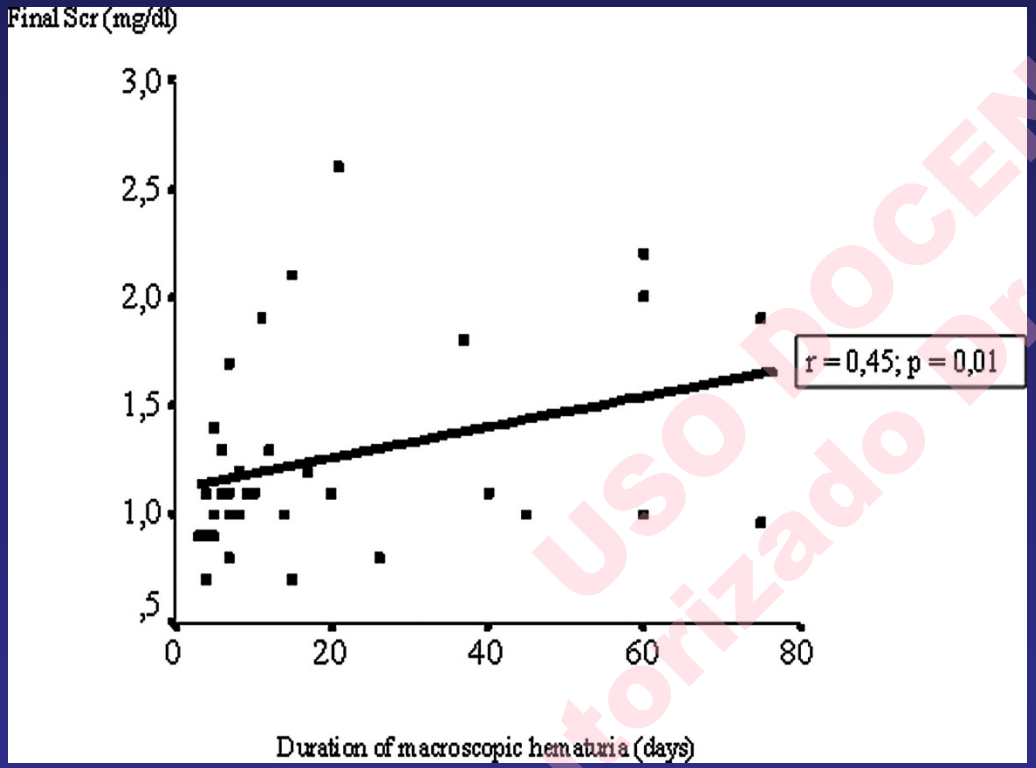


Table 3. Variables that influence the risk for an incomplete recovery of renal function[a]

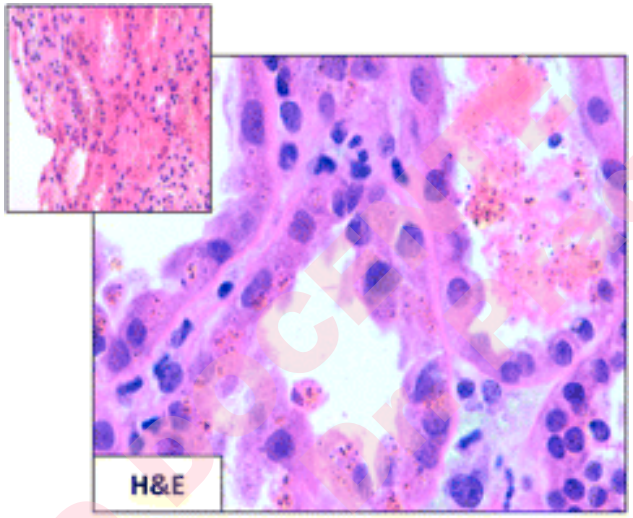
Variable	Univariate Analysis			Multivariate Analysis		
	P	OR	95% CI	*P*	OR	95% CI
Age	0.46					
Age >50 yr	0.001	9.2	1.3 to 62.0	NS		
Gender	0.618					
Baseline Scr	0.002	1.22	1.0 to 1.7	NS		
Baseline eGFR	0.02	1.04	1.0 to 1.1	NS		
Previous MH episode	0.05	0.98	0.96 to 0.99	NS		
Severity of tubular necrosis	0.03	6.4	1.1 to 37.1	NS		
Steroid treatment	0.24					
Duration of MH >10 d	0.01	11.6	1.2 to 106.0	NS		
Duration of MH >15 d	0.005	13.8	1.7 to 110.2	0.04	12.3	1.06 to 143.5

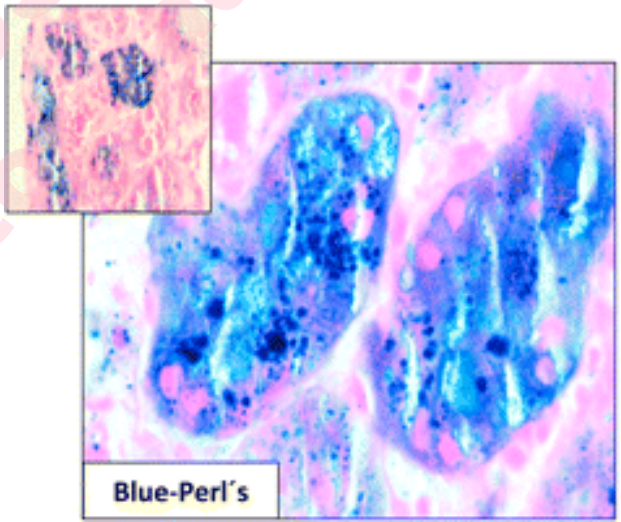
[a]CI, confidence interval; OR, odds ratio.

- Edad > 50 años
- BHM > 10 días.
- Función renal basal
- Grado de necrosis tubular

Gutiérrez E. et al. Clin J Am Soc Nephrol 2007; 2, 51-57

Ballarin J, Arce Y, Torra Balcells R, Diaz Encarnacion M, Manzarbeitia F, Ortiz A, Egido J, Moreno JA. Acute renal failure associated to paroxysmal nocturnal haemoglobinuria leads to intratubular haemosiderin accumulation and CD163 expression. *Nephrol Dial Transplant*; 2001. 26:3408-11.





In-Depth Review

Clin J Am Soc Nephrol 7: 175–184, 2012.

AKI Associated with Macroscopic Glomerular Hematuria: Clinical and Pathophysiologic Consequences

Juan Antonio Moreno, Catalina Martín-Cleary,* Eduardo Gutiérrez,† Oscar Toldos,‡ Luis Miguel Blanco-Colio,* Manuel Praga,† Alberto Ortiz,*§ and Jesús Egido*§*

Nephrol Dial Transplant (2012) 27: 28–34
doi: 10.1093/ndt/gfr749

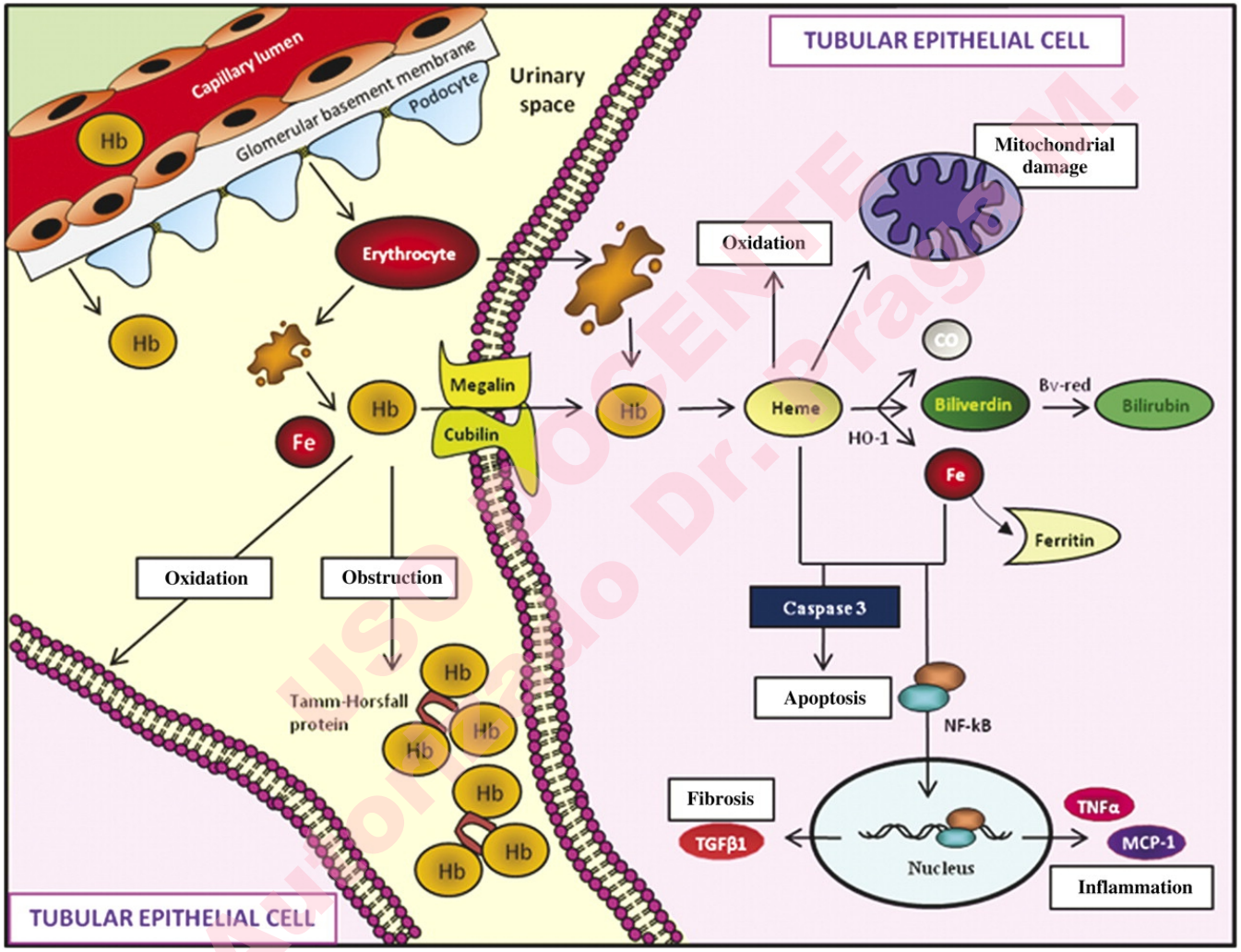
NDT
Nephrology Dialysis Transplantation

Editorial Reviews

Haematuria: the forgotten CKD factor?

Juan Antonio Moreno[1,*], Catalina Martín-Cleary[1,*], Eduardo Gutiérrez[2], Alfonso Rubio-Navarro[1], Alberto Ortiz[1,3,4], Manuel Praga[2] and Jesús Egido[1,3,4]

Pathophysiologic pathways of hematuria-induced kidney damage.

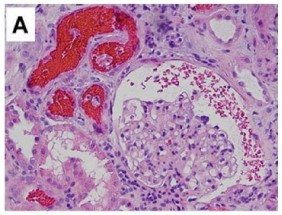


Moreno J A et al. CJASN 2012;7:175-184

CJASN

Acute Kidney Injury During Warfarin Therapy Associated With Obstructive Tubular Red Blood Cell Casts: A Report of 9 Cases

Brodsky et al, AJKD 2009



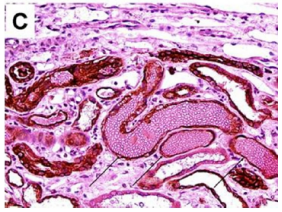


Table 1. Clinical Characteristics of Patients on Warfarin Therapy With ATN

Patient No.	Age (y)	Sex	Race	INR (IU)	SCr at Biopsy (mg/dL)	Baseline SCr (mg/dL)	eGFR at Biopsy (mL/min)	Baseline eGFR (mL/min)	Hct (%)	WBCs (K/mcl)	BP (mm Hg)	Hb (g/dL)	Urinalysis	Underlying Kidney Disease	Medications	Outcome
1	27	F	AA	8.0	3.1	0.6	8	154	29	4.7	137/90	12.1	Gross hematuria, protein 1+	SLE GN, class II	Prednisone, amlodipine, furosemide, warfarin	Recovery of kidney function
2	73	M	W	3.0	6.5	2.6	9	26	NA	NA	NA	NA	Hematuria, protein 3+	Moderate interstitial fibrosis	Warfarin	Dialysis
3	61	M	W	2.0	4.8	3	13	23	27	4.2	150/90	6.4	Hematuria; protein, 3.4 g/24 h	Nephrosclerosis, calcification	Amiodarone, amlodipine, citalopram, folic acid, warfarin	Dialysis, died
4	76	F	W	7.0	3.4	0.9	14	65	39	5.9	180/90	10.8	Hematuria	FSGS	Diltiazem, metoprolol, omeprazole, propranolol, pentoxifylline, warfarin	Dialysis
5	38	F	W	3.9	0.9	0.7	74	100	34	10.2	120/80	11.9	Hematuria; protein, 0.9 g/24 h	Mesangial IgA deposits	Warfarin	Recovery of kidney function
6	80	M	W	5.2	3.9	1.1	16	68	33	11.6	150/70	11.6	Hematuria, proteinuria	Diabetic nephropathy, mesangial IgA deposits	Diltiazem, insulin, donepezil, warfarin	Dialysis
7	82	F	W	2.8	4.5	1.1	10	51	23	7.8	140/80	NA	Hematuria	Mesangial IgA deposits	Warfarin	Recovery of kidney function
8	63	M	W	3.7	2.5	1.0	28	80	23	15.2	119/68	7.9	Hematuria, RBC casts	Mild to moderate nephrosclerosis	Prednisone, cyclophosphamide, warfarin	SCr remained increased 2 mo after biopsy
9	55	M	W	3.8	9.1	0.8	6	107	17.3	21.0	119/81	5.6	Hematuria, proteinuria, eosinophils	Mesangial IgG deposits	Warfarin	Remission with INR normalization; INR increases with repeated hematuria and AKI with ATN

Warfarin-related nephropathy occurs in patients with and without chronic kidney disease and is associated with an increased mortality rate

Brodski, KI 2011

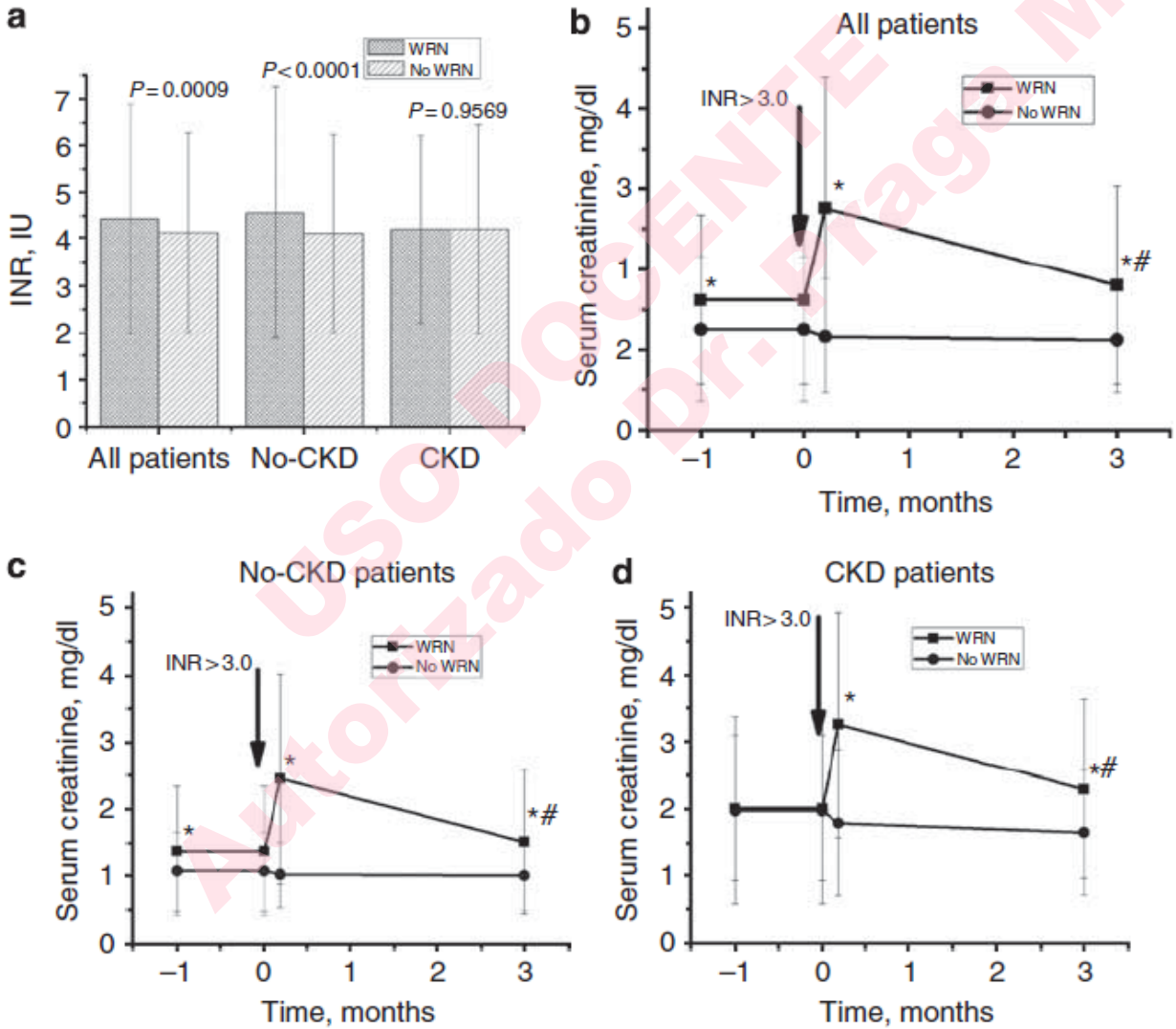


Table 2. Clinical syndromes at presentation.
Abbreviations: AKI, acute kidney injury.

Variable	All, (n=2872)	<16 years (n=210)	65. years (n=2388)	>65 years (n=274)	p
Nephrotic syndrome, %	13.1	11.3	12.7	17.7	0.000
Nephritic syndrome, %	6.9	8.9	6.6	7.9	0.000
Asymptomatic urinary disorders, %	37.7	34	40.1	18.8	0.000
AKI, %	11.6	4.9	9.5	35.3	0.000
Chronic renal failure, %	16.7	1.5	18.1	16.5	0.000

Caso Clínico (I)

- **67 años. Diagnosticada de GN IgA a los 48 años (1993), por biopsia renal. TA 160/90 mmHg, Crs 1.2-1.4 mg/dl, proteinuria 1.5-2 mg/dl.**

- **Tratamiento con IECA, dosis altas: buen control de TA, proteinuria <0.5-1 g/24 h**

- **Función renal estable (Crs 1.3-1.5 mg/dl) hasta 2010. Sedimento con microhematuria escasa (5 hxc) y negativa desde 2004.**

Caso Clínico (II)

- **En Junio 2010, aumento de la microhematuria, progresiva, hasta ser valorada como INCONTABLES hematies x c, pero con orina de aspecto normal. Proteinuria sigue en valores < 1 g/24 h.**

- **En paralelo, incremento progresivo de Creatinina, hasta alcanzar 2 mg/dl en Diciembre10.**

- **Ecografia: Riñones de 8-9 cm, con cortical adelgazada.**

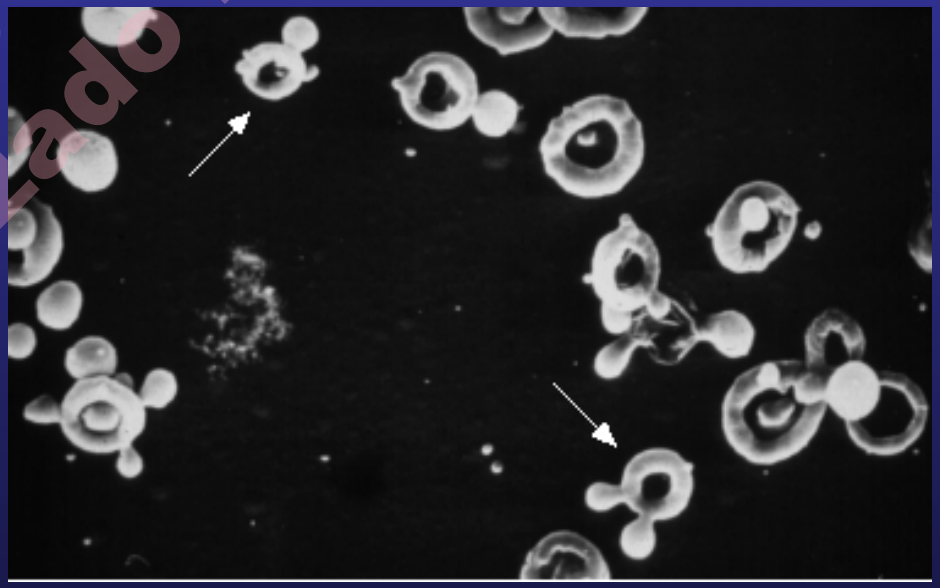
- **Se decide no biopsiar e iniciar ttº con Esteroides (0.75 mg/kg/d, con rápido descenso a dosis de mantenimiento) y Micofenolato sódico (720 mg/12 h) con descenso paulatino de dosis. DURACIÓN de TTº: 1 año**

Caso Clínico (II)

	Basal	4 m	10 m	14m
Crs (mg/dl)	2	1.8	1.5	1.4
Proteinuria (g/24h)	0.8	0.4	0.2	0.3
Sedimento	Incontables hematies	30 h xc	4-6xc	Normal

ESTUDIO DE HEMATURIA
Necesidad de prueba de imagen

- Ecografía renal
- Urografía I.V.
- Cistoscopia (varones >50 años, fumadores, consumo de analgésicos...)



Conclusiones (I)

- Todo paciente con microhematuria persistente necesita un diagnóstico diferencial y un seguimiento periódico, al menos durante un período prudencial de tiempo
- No datos concluyentes que permitan afirmar todavía que la microhematuria, en ausencia de proteinuria o lesiones histológicas graves, contribuya significativamente a la progresión del daño renal
- No obstante, en nuestra experiencia, la desaparición de la microhematuria en la nefropatía IgA se asocia a un buen pronóstico

Conclusiones (II)

- Además de cuantificar con precisión la hematuria en el sedimento, necesitamos nuevos marcadores para evaluar su significado real y diseñar estudios prospectivos
- Necesitamos tratamientos eficaces para los FRA asociados a macrohematuria, en la IgAN y en otras entidades glomerulares
- El impacto de los tratamientos anticoagulantes en la aparición de hematuria y daño renal debe de ser estudiado prospectivamente

Estudios

- Revisión de todos los casos de IgA, para confirmar o no, si la desaparición de la microhematuria (<3 hxc en todos los sedimentos durante al menos al menos 2 años, se asocia a un pronóstico favorable (estabilización-mejoría de función renal) independiente de la proteinuria y si precede o no a un descenso de esta última.
- IgA del anciano: resultados preliminares que muestran una mucho mayor agresividad: muchas presentaciones como brotes de hematuria con FRA, que no se recupera completamente. ¿Influencia del Sintrom? ¿Ttº?

Multiple kidney cysts in thin basement membrane disease with proteinuria and kidney function impairment

Table 4. Clinical, histological and radiological findings in TBMD patients with proteinuria, at the end of follow up.

Patient	Age	Gender	SCr	eGFR	Proteinuria (g/day)	GBM Thickness (nm)	Kidney size RK/LK (cm)	Kidney cysts	Size of largest cyst (cm)	Lithiasis
1	53	Male	138.79 (1.57)	67	1.85	240	15/15	Multiple, bilateral	7	No
2	54	Female	44.20 (0.50)	136	0.43	225	11.6/11.2	2 in RK, 1 in LK	4.5	Yes
3	61	Male	82.21 (0.93)	87	1.34	200	12/12	Multiple, bilateral	2	No
4	46	Male	115.80 (1.31)	59	1.15	230	11.8/11.3	Multiple, bilateral	2	No
5	71	Female	156.47 (1.77)	30	0.29	190	9/10	Multiple, bilateral	2	No
6	68	Male	173.26 (1.96)	36	0.26	210	9.4/10	Multiple, bilateral	5.1	No
7	37	Male	84.86 (0.96)	93	3.76	205	12/13	1 in RK, 10 in LK	3	No
8	66	Female	52.15 (0.59)	108	0.34	230	12.2/12.8	Multiple, bilateral	1	Yes
9	64	Male	277.58 (3.14)	21	0.32	210	10/10	4 in RK, 2 in LK	4	No
10	53	Male	78.67 (0.89)	95	0.42	220	9.5/11.5	No		No
11	23	Female	45.96 (0.52)	155	0.65	200	12.3/12	No		No
12	39	Male	167.08 (1.86)	43	2	250	11.5/12	No		Yes
13	36	Female	87.51 (0.99)	67	0.18	210	10.8/11.6	No		No
14	56	Female	104.31 (1.18)	50	0.16	190	9/8,8	No		No
15	25	Male	188.29 (2.13)	40	4.9	240	12.5/11	No		No
16	43	Male	70.72 (0.80)	112	0.27	210	11/9	No		No

SCr: Serum creatinine (μmol/l, in parentheses mg/dl); eGFR: estimated glomerular filtrate rate (ml/min/1.73 m2); GBM: glomerular basement membrane; RK: Right Kidney; LK: Left Kidney

Clinical Kidney Journal in press

Long-Term Outcomes of IgA Nephropathy Presenting with Minimal or No Proteinuria

Gutiérrez E et al, JASN 2012

- Our results indicate that IgAN presenting with normal renal function and minimal or negative proteinuria is not a progressive disease and has an excellent prognosis without the need of aggressive treatments.

Lai FM, Szeto CC, Choi PC, Li PK, Chan AW, Tang NL, Lui SF, Wang AY, To KF: Characterization of early IgA nephropathy. *Am J Kidney Dis* 36: 703–708, 2000

Szeto CC, Lai FM, To KF, Wong TY, Chow KM, Choi PC, Lui SF, Li PK: The natural history of immunoglobulin a nephropathy among patients with hematuria and minimal proteinuria. *Am J Med* 110: 434–437, 2001

Li PK, Ho KK, Szeto CC, Yu L, Lai FM: Prognostic indicators of IgA nephropathy in the Chinese—clinical and pathological perspectives. *Nephrol Dial Transplant* 17: 64–69, 2002

Shen P, He L, Huang D: Clinical course and prognostic factors of clinical early IgA nephropathy. *Neth J Med* 66: 242–247, 2008

Koyama A, Igarashi M, Kobayashi M; Research Group on Progressive Renal Diseases: Natural history and risk factors for immunoglobulin A nephropathy in Japan. *Am J Kidney Dis* 29: 526–532, 1997

- By contrast, other studies (all of them coming from China or Japan) in IgAN having benign presentations showed proteinuria increase (33-46%), hypertension (26-38%) and renal function decline (7-24%). Spontaneous remission were very rare.

The occurrence of warfarin-related nephropathy
and effects on renal and patient outcomes in korean patients.

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METHODS:

During the period of March 2003 to December 2011, the data about a total of 1297 patients who had serum creatinine (sCr) level measured within 1 week after INR >3.0 and within 6 months before INR >3.0 was analyzed

RESULT:

WRN developed in 19.3% of patients having excessive warfarinization.
The incidence was higher in the chronic kidney disease (CKD) group
The mortality rates were also higher in patients with WRN.

CONCLUSIONS:

WRN developed in 19.3% of patients having excessive warfarinization.
The development of WRN adversely affected renal and patient outcomes.

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