

IKMG Update on MGRS: Future Associations and Mechanisms

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Brigham/Dana-Farber Onconeurology Symposium 2026

- Disclosures: None

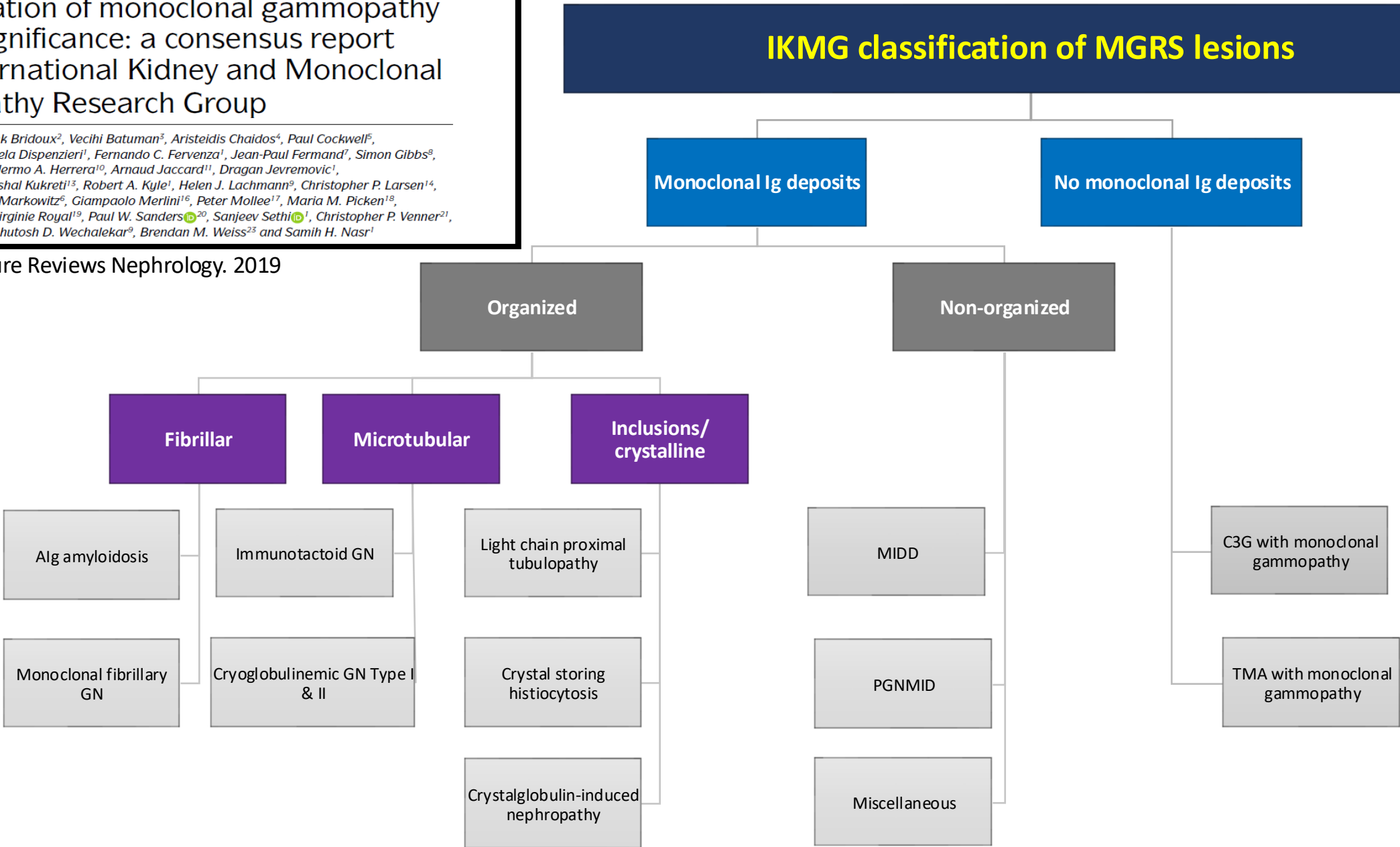
Learning objectives

- Know the expanded spectrum of MGRS lesions & variants
- Be familiar with new IKMG/RPS consensus diagnostic criteria & terminology of MG–associated kidney lesions
- Understand the difference between “monotypic” & “monoclonal” Ig deposits
- Know the new IKMG classification & terminology of PGNMID and its variants

The evaluation of monoclonal gammopathy of renal significance: a consensus report of the International Kidney and Monoclonal Gammopathy Research Group

Nelson Leung^{1*}, Frank Bridoux², Vecihi Batuman³, Aristeidis Chaidos⁴, Paul Cockwell⁵, Vivette D. D'Agati⁶, Angela Dispenzieri¹, Fernando C. Fervenza¹, Jean-Paul Fermand⁷, Simon Gibbs⁸, Julian D. Gillmore⁹, Guillermo A. Herrera¹⁰, Arnaud Jaccard¹¹, Dragan Jevremovic¹, Efsthios Kastiris¹², Vishal Kukreti¹³, Robert A. Kyle¹, Helen J. Lachmann⁹, Christopher P. Larsen¹⁴, Heinz Ludwig¹⁵, Glen S. Markowitz⁶, Giampaolo Merlini¹⁶, Peter Mollee¹⁷, Maria M. Picken¹⁸, Vincent S. Rajkumar¹, Virginie Royal¹⁹, Paul W. Sanders^{10,20}, Sanjeev Sethi¹, Christopher P. Venner²¹, Peter M. Voorhees²², Ashutosh D. Wechalekar⁹, Brendan M. Weiss²³ and Samih H. Nasr¹

Nature Reviews Nephrology. 2019



What has changed



- New RPS/IKMG consensus diagnostic criteria
- Lesions removed from MGRS spectrum
- Lesions added to MGRS spectrum
- New variants
- New terminologies and classification

Renal Pathology Society/International Kidney and Monoclonal Gammopathy Research Group consensus on pathologic definitions and terminology of monoclonal gammopathy-associated kidney lesions



Kidney Int. 2025
Aug;108(2):184-193

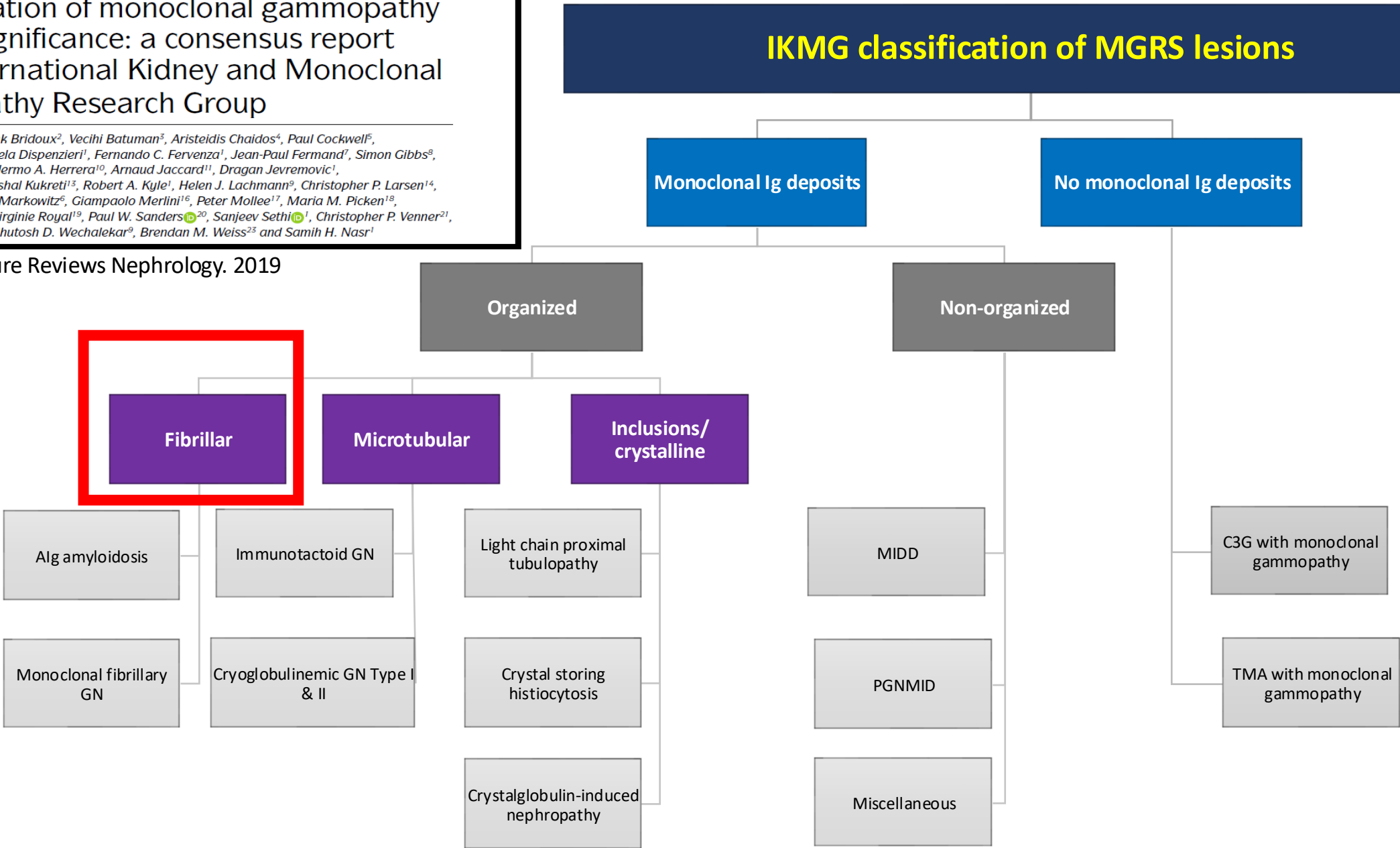
Samih H. Nasr¹, Virginie Royal², Alejandro Best Rocha³, Maike Büttner-Herold⁴, Candice Roufosse⁵, Frank Bridoux⁶, Wesam Ismail⁷, Lihong Bu¹, Lynn D. Cornell¹, Amélie Dendooven⁸, Rajib K. Gupta⁹, Shigeo Hara¹⁰, Vincent Javaugue⁶, Nicolas Kozakowski¹¹, Satoru Kudose¹², Gonzalo P. Méndez¹³, Kimberley Oliver¹⁴, Maria M. Picken¹⁵, Dominick Santoriello¹², Sanjeev Sethi¹, Akira Shimizu¹⁶, Geetika Singh¹⁷, M. Barry Stokes¹², Su-xia Wang¹⁸, Nelson Leung^{19,20}, Glen S. Markowitz¹² and Vivette D. D'Agati¹²

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The evaluation of monoclonal gammopathy of renal significance: a consensus report of the International Kidney and Monoclonal Gammopathy Research Group

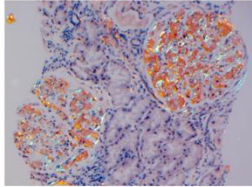
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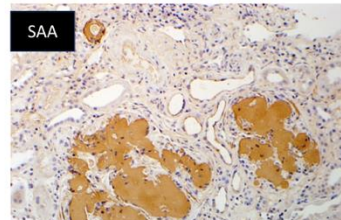
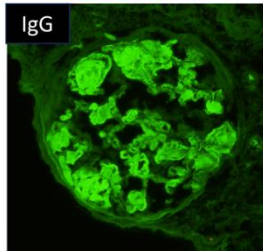
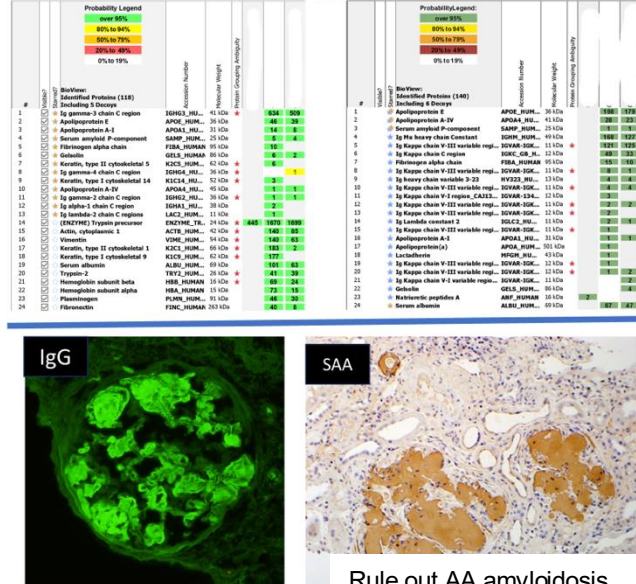
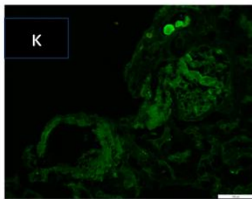
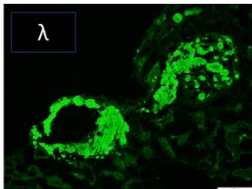


Diagnosis of Renal Ig Amyloidosis

AL



AH & AHL



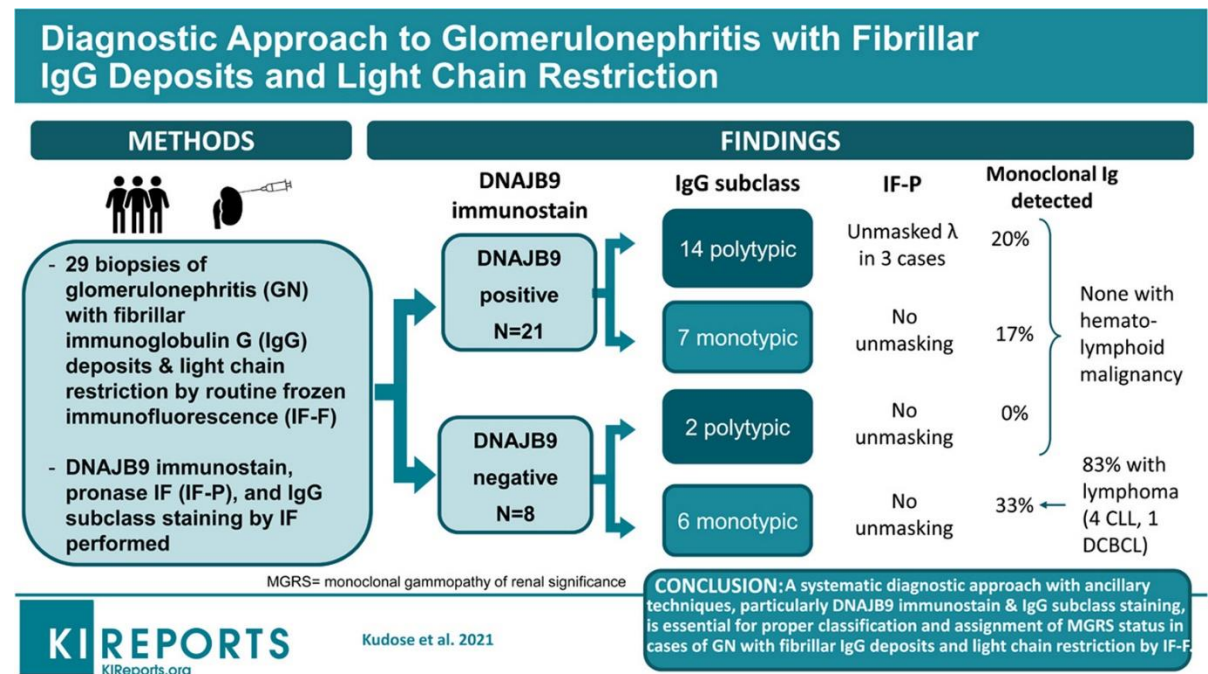
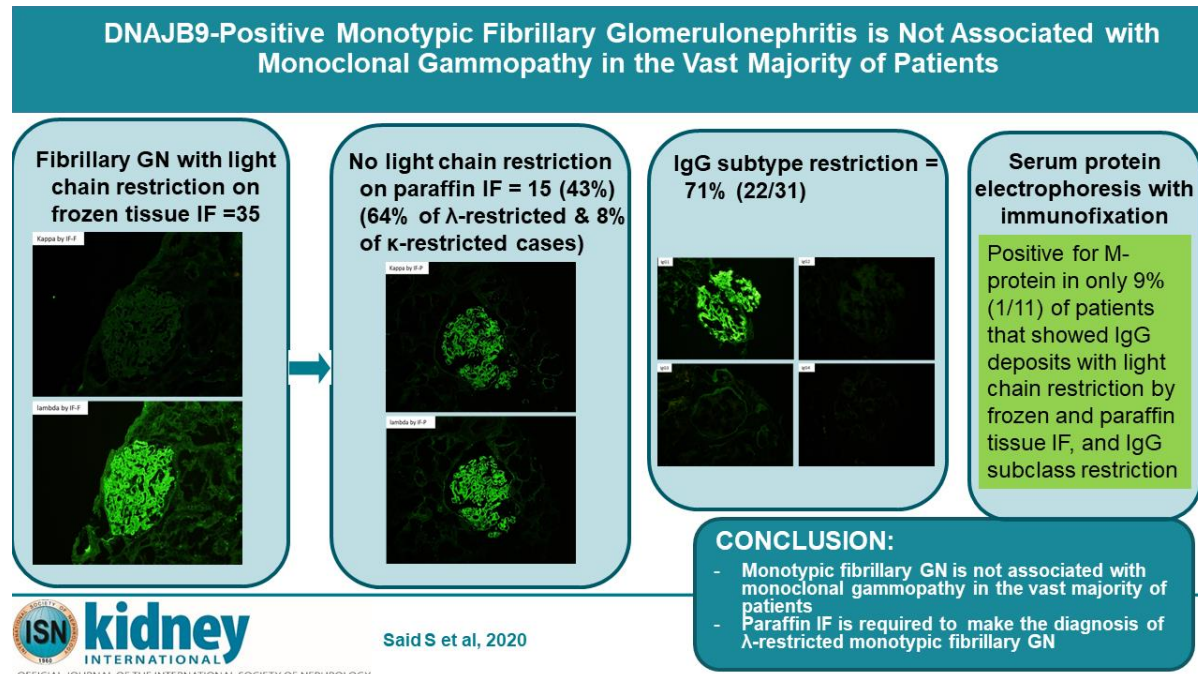
Rule out AA amyloidosis

Table 2 | Proposed diagnostic criteria for Ig amyloidosis

Lesion	Abbreviations	Prerequisite diagnostic criteria (all must be met)	Supportive features
Light chain amyloidosis	AL	- Congophilic^a acellular deposits in glomeruli, vessel walls, or interstitium by LM - Monotypic Ig LC staining with negative staining for Ig HC^b OR abundant spectra for 1 Ig LC and ≥ 2 amyloid signature proteins (SAP, Apo E, or Apo A-IV) by proteomics	- Pale on H&E; PAS and silver negative - Randomly oriented fibrils (8–14 nm) by EM - Amyloid spicules - MGRS in majority λ in ~80% - Other organ involvement in ~two-thirds
Heavy chain amyloidosis	AH	- Congophilic^a acellular deposits in glomeruli by LM - Abundant spectra for 1 Ig HC and ≥ 2 amyloid signature proteins (SAP, Apo E, or Apo A-IV) by proteomics OR intense staining for 1 Ig HC^b, with negativity for κ, λ, and SAA	- Pale on H&E; PAS and silver negative - Randomly oriented fibrils (8–14 nm) by EM - Amyloid spicules - MGRS in majority γ in majority
Heavy and light chain amyloidosis ^c	AHL	- Congophilic^a acellular deposits in glomeruli by LM - Abundant spectra for 1 Ig HC, 1 Ig LC, and ≥ 2 amyloid signature proteins (SAP, Apo E, or Apo A-IV) by proteomics OR intense staining for 1 Ig LC and 1 Ig HC^b with negative SAA	- Pale on H&E; PAS and silver negative - Randomly oriented fibrils (8–14 nm) by EM - Amyloid spicules - MGRS in majority $\gamma + \lambda$ or $\alpha + \kappa$ in majority

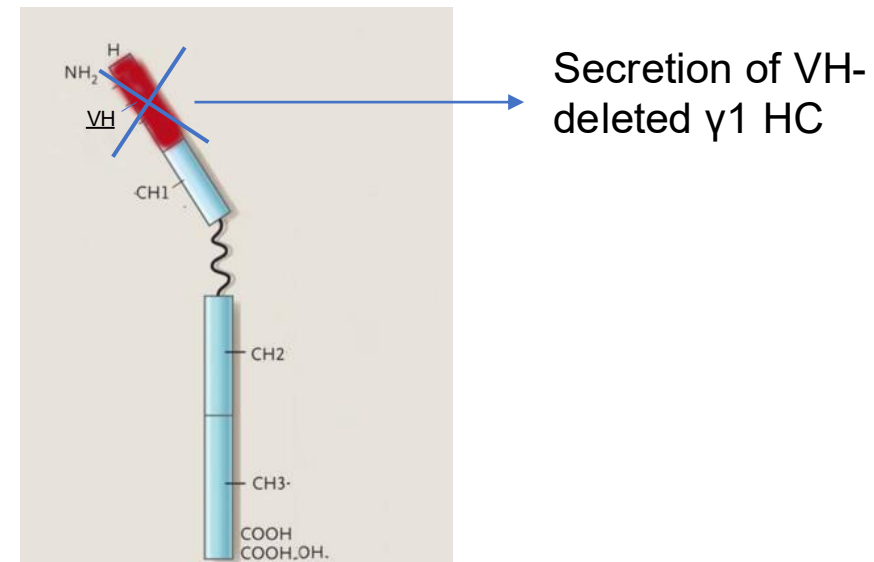
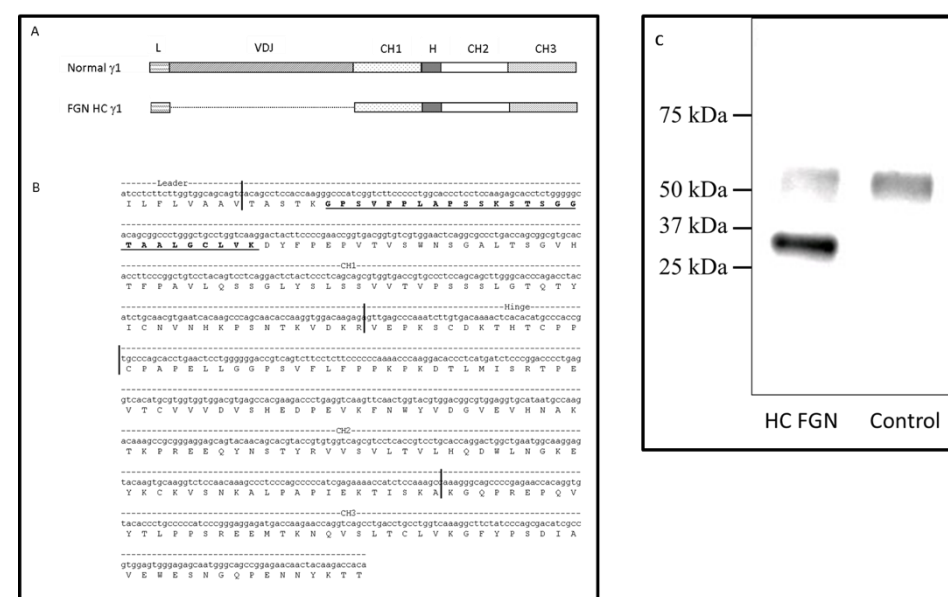
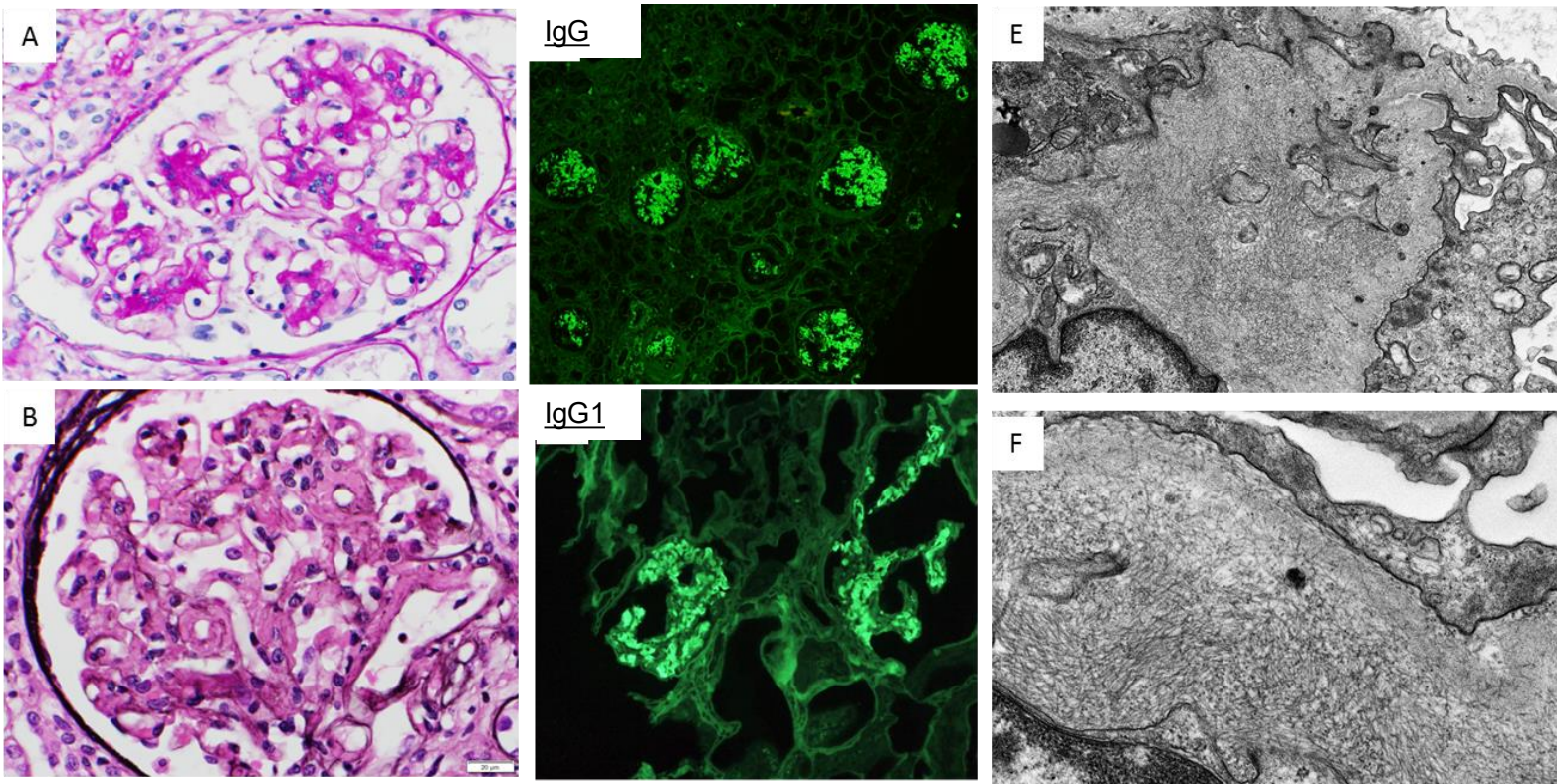
Kidney Int. 2025 Aug;108(2):184-193

Recent studies cast doubts on inclusion of DNAJB9-associated monotypic FGN as an MGRS lesion



- IF-P unmasked polytypic deposits in 2/3 of “ λ -restricted monotypic FGN by IF-F” cases
- IgG subtypes staining showed positivity for 2 subclasses in 2/3 of “monotypic FGN by IF-F” cases
- Incidence of dysproteinemia in monotypic FGN (confirmed by IF-P & subtypes) is very low (similar to polytypic FGN)

Heavy chain fibrillary GN



Neg for CR, DNAJB9, κ , & λ

AJKD

Case Report

Heavy Chain Fibrillary Glomerulonephritis: A Case Report

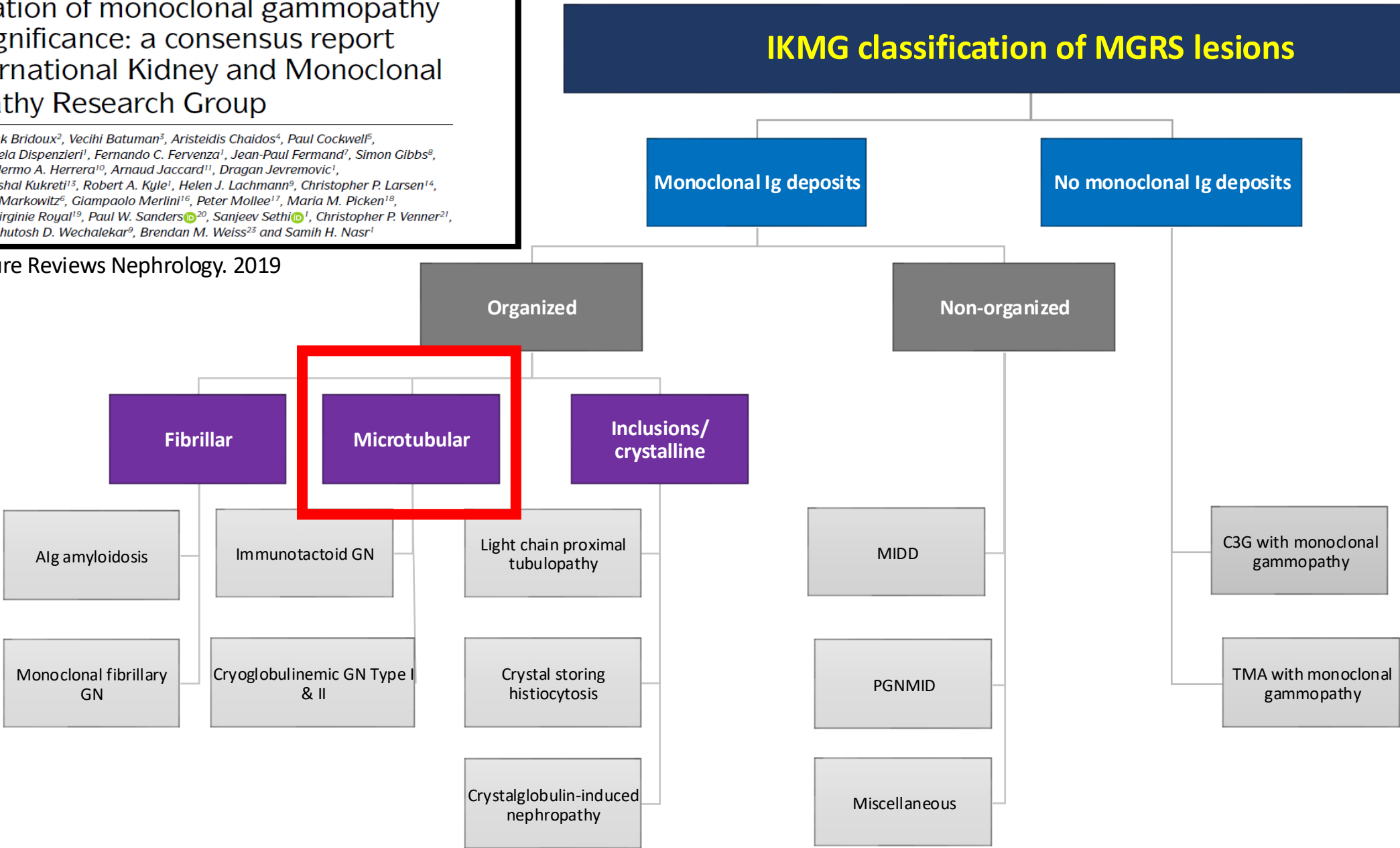
2019

Samih H. Nasr, Christophe Sirac,* Frank Bridoux, Vincent Javaugue, Sebastien Bender, Alexia Rinsant, Sihem Kaaki, Emilie Pinault, Surendra Dasari, Mariam P. Alexander, Samar M. Said, Jonathan J. Hogan, Angela Dispenzieri, Guy Touchard, Ellen D. McPhail, and Nelson Leung*

The evaluation of monoclonal gammopathy of renal significance: a consensus report of the International Kidney and Monoclonal Gammopathy Research Group

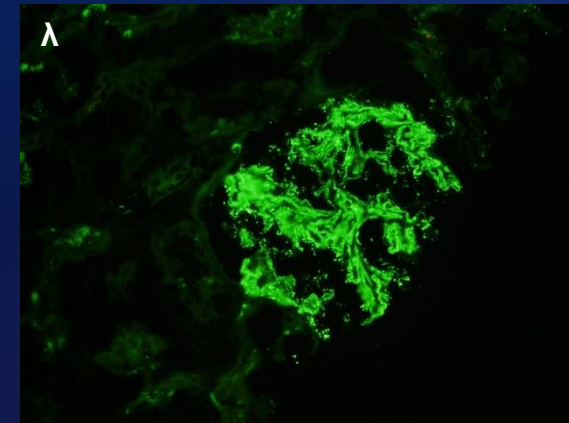
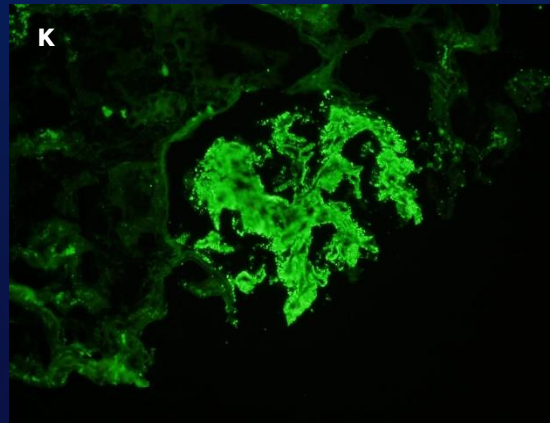
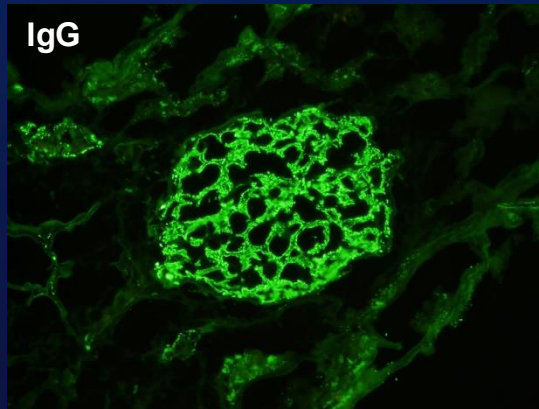
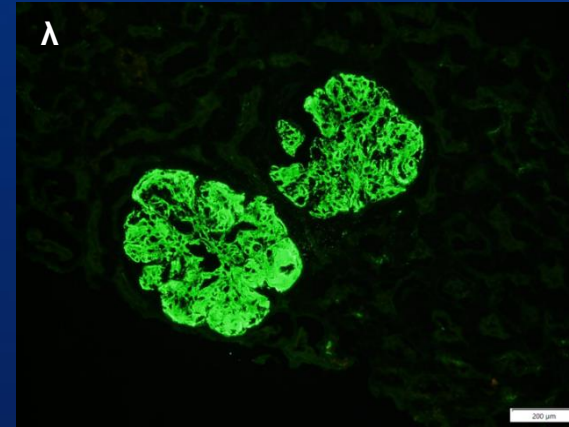
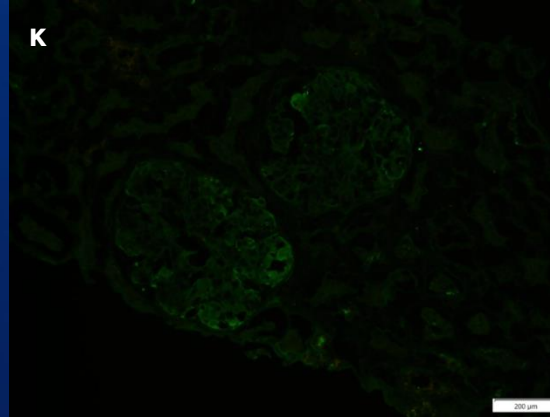
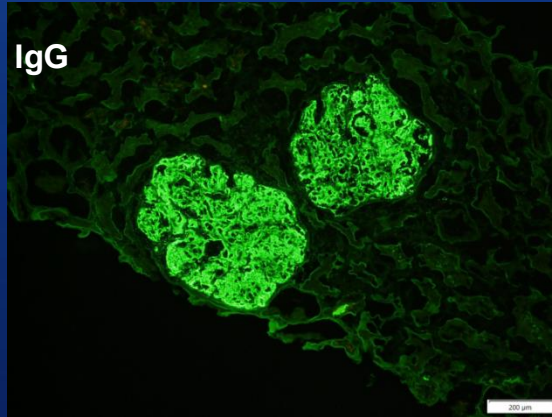
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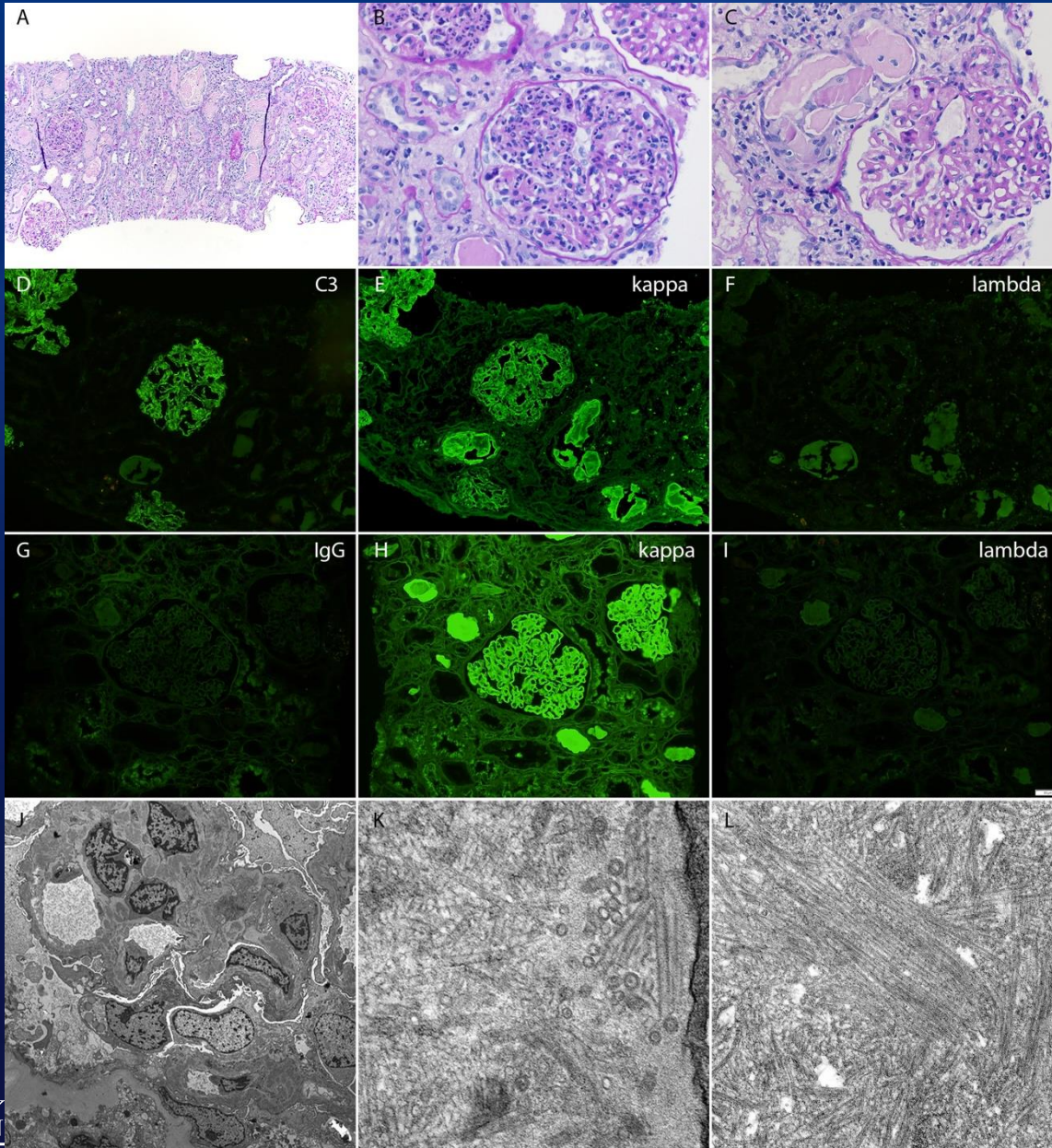
Immunotactoid GN: Not all are MGRS

Monoclonal = 49 (67%)



Polyclonal = 24 (33%)

Light chain variant of immunotactoid GN



				Probability Legend:			Molecular Weight	Glomeruli	Tubular Casts
				over 95%	80% to 94%	50% to 79%			
				20% to 49%	0% to 19%				
#	visible?	Starred	Bio View: Identified Proteins (220/221) Including 14 Decoys						
1	☒	★	Ig Kappa chain C region				12 kDa	370	650
2	☒	★	Ig Kappa chain V-III variable region-20-01				11 kDa	24	74
3	☒	★	Ig Kappa chain V-III variable region-15-01				12 kDa	25	56
4	☒	★	Complement C3				187 kDa	101	
5	☒	★	Complement component C9				63 kDa	34	
6	☒	★	Complement C5				188 kDa	21	
7	☒	★	Complement component C7				94 kDa	14	
8	☒	★	Complement component C8 beta chain				67 kDa	11	
9	☒	★	Complement factor H-related protein 1				38 kDa	11	
10	☒	★	Complement factor H-related protein 5				64 kDa	5	
11	☒	★	Complement component C6				105 kDa	9	
12	☒	★	Complement component C8 alpha chain				65 kDa	9	
13	☒	★	Complement component C8 gamma chain				22 kDa	5	
14	☒	★	Complement C4-A				193 kDa	1	
15	☒	★	Filaggrin-2				248 kDa		34
16	☒	★	Uromodulin				70 kDa		15
17	☒	★	Desmoglein-1				114 kDa		12
18	☒	★	Alpha-1-acid glycoprotein 1				24 kDa		9
19	☒	★	Matrilysin				30 kDa		6
20	☒	★	Loricrin				26 kDa		5
21	☒	★	Alpha-actinin-4				105 kDa	66	
22	☒	★	Myosin-9				227 kDa	49	
23	☒	★	Vitronectin				54 kDa	44	
24	☒	★	Apolipoprotein E				36 kDa	43	
25	☒	★	Laminin subunit beta-2				196 kDa	21	
26	☒	★	Collagen alpha-1(IV) chain				161 kDa	18	
27	☒	★	Laminin subunit alpha-5				400 kDa	14	
28	☒	★	Calmodulin-1, 2, or 3				17 kDa	12	
29	☒	★	Keratin, type I cytoskeletal 10				59 kDa	75	621
30	☒	★	Keratin, type II cytoskeletal 2 epidermal				65 kDa	59	606

Bu et al.
AJKD 2022

Seronegative CryoGN

The Characteristics of Seronegative vs. Seropositive non-Hepatitis-Associated Cryoglobulinemic Glomerulonephritis

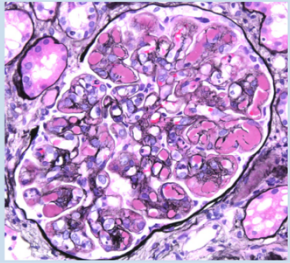


81 patients with kidney biopsy-proven cryoglobulinemic GN



59 seropositive

22 seronegative

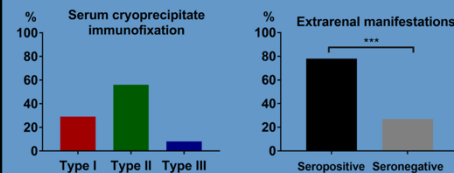


Comparison between seropositive and seronegative patients

- ✓ Clinical characteristics
- ✓ Extrarenal manifestations
- ✓ Etiology
- ✓ Pathologic characteristics
- ✓ Treatment and outcomes



89% of patients had an underlying hematologic condition: MGRS (65%) and overt lymphoproliferative disorder (35%)



Most seronegative cases had monotypic (i.e., type I cryoglobulin) and organized deposits

After clone-directed therapy, 76% of patients had partial or complete remission

CONCLUSION

Seronegative cryoglobulinemic GN is not uncommon and is mostly a kidney-limited disease. Most cryoglobulinemic GN cases (type I and II) are due to hematologic condition and are associated with favorable outcome after clone-directed therapy.

Javaugue V et al, 2022

scientific reports



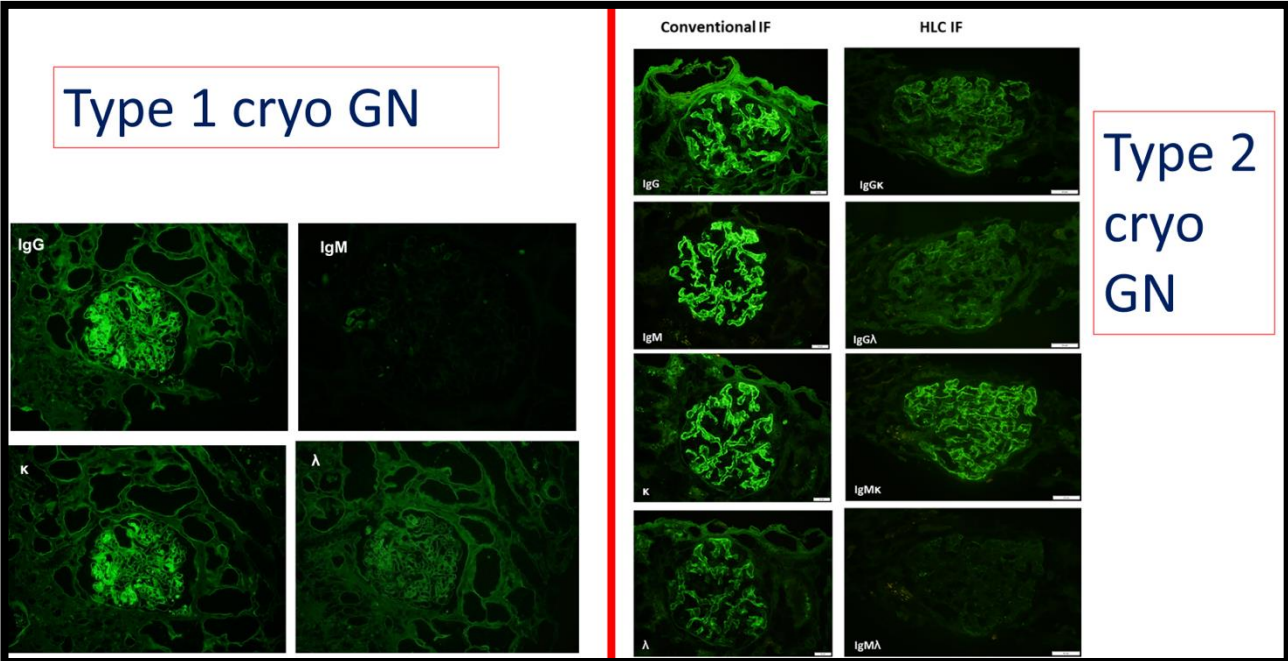
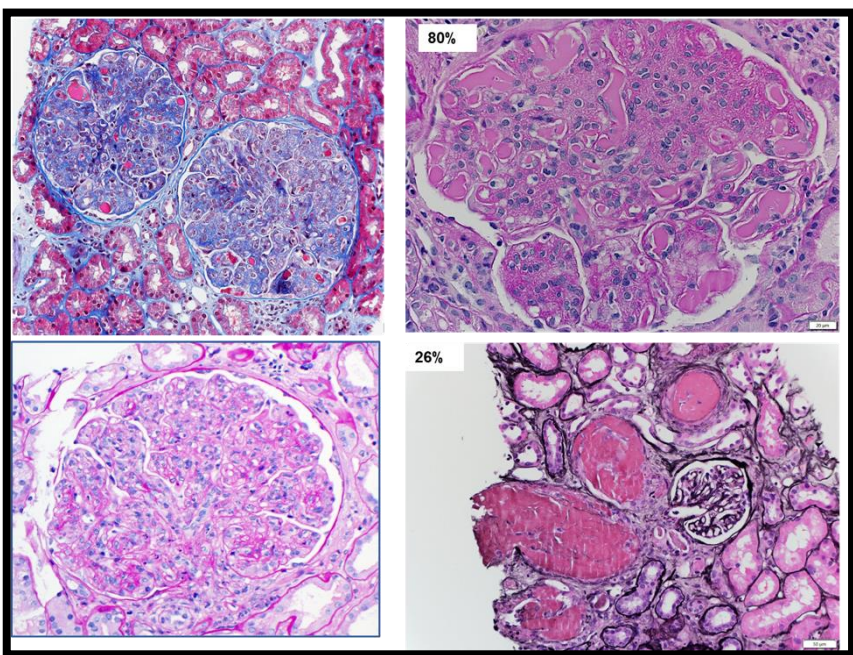
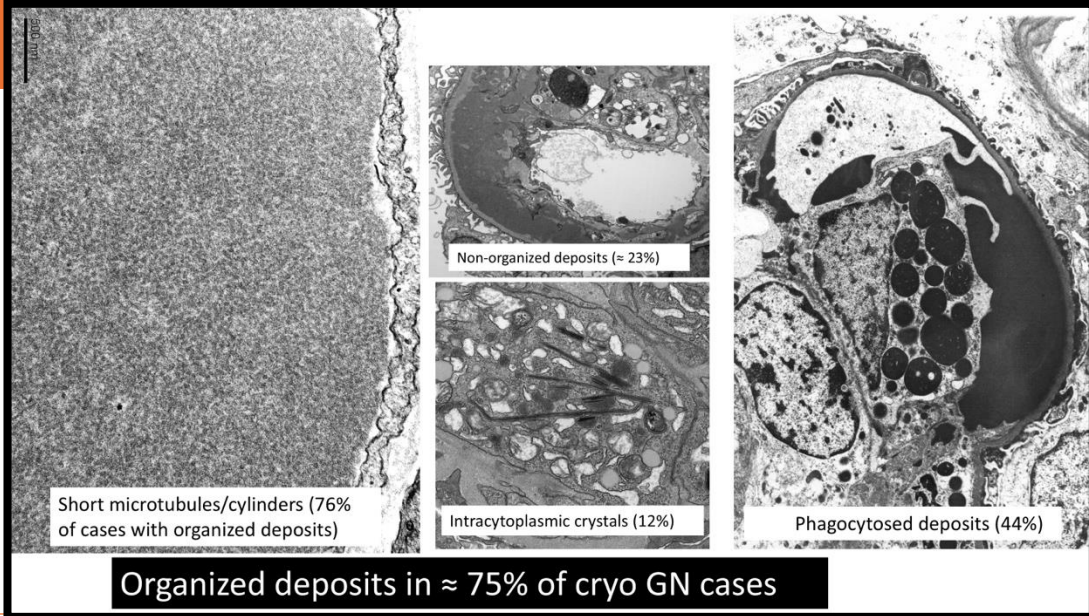
OPEN

Recognizing the new disorder “idiopathic hypocryoglobulinaemia” in patients with previously unidentified clinical conditions

Dario Roccatello^{1,3}, Savino Sciascia^{1,3}, Carla Naretto¹, Antonella Barreca², Laura Solfietti¹, Laura Battaglia¹, Lucia Viziello¹, Roberta Fenoglio¹ & Daniela Rossi¹

RPS/IKMG diagnostic criteria for CryoGN types I & II

Abbreviations	Prerequisite diagnostic criteria (all must be met)	Supportive features
CryoGN	- Monocyte-rich endocapillary proliferative GN or MPGN - At least two of the following additional findings: - Glomerular intraluminal pseudothrombi - Deposits with substructure characteristic of cryoglobulin on EM[¶] - Positive serum cryoglobulin - Glomerular monotypic Ig deposits:	- Phagocytosed immune deposits - Vascular deposits or arteriolitis - IgG1 or IgG3 restriction in majority of type I - Lymphoma or MGRS - Hypocomplementemia in ½ (low C4 or low C4&C3) - Extrarenal manifestations of cryoglobulinemia
CryoGN type I	IgG, IgM, or IgA with LC restriction	
CryoGN type II	IgM (dominant) & IgG, κ (dominant) & λ; not associated with HCV	

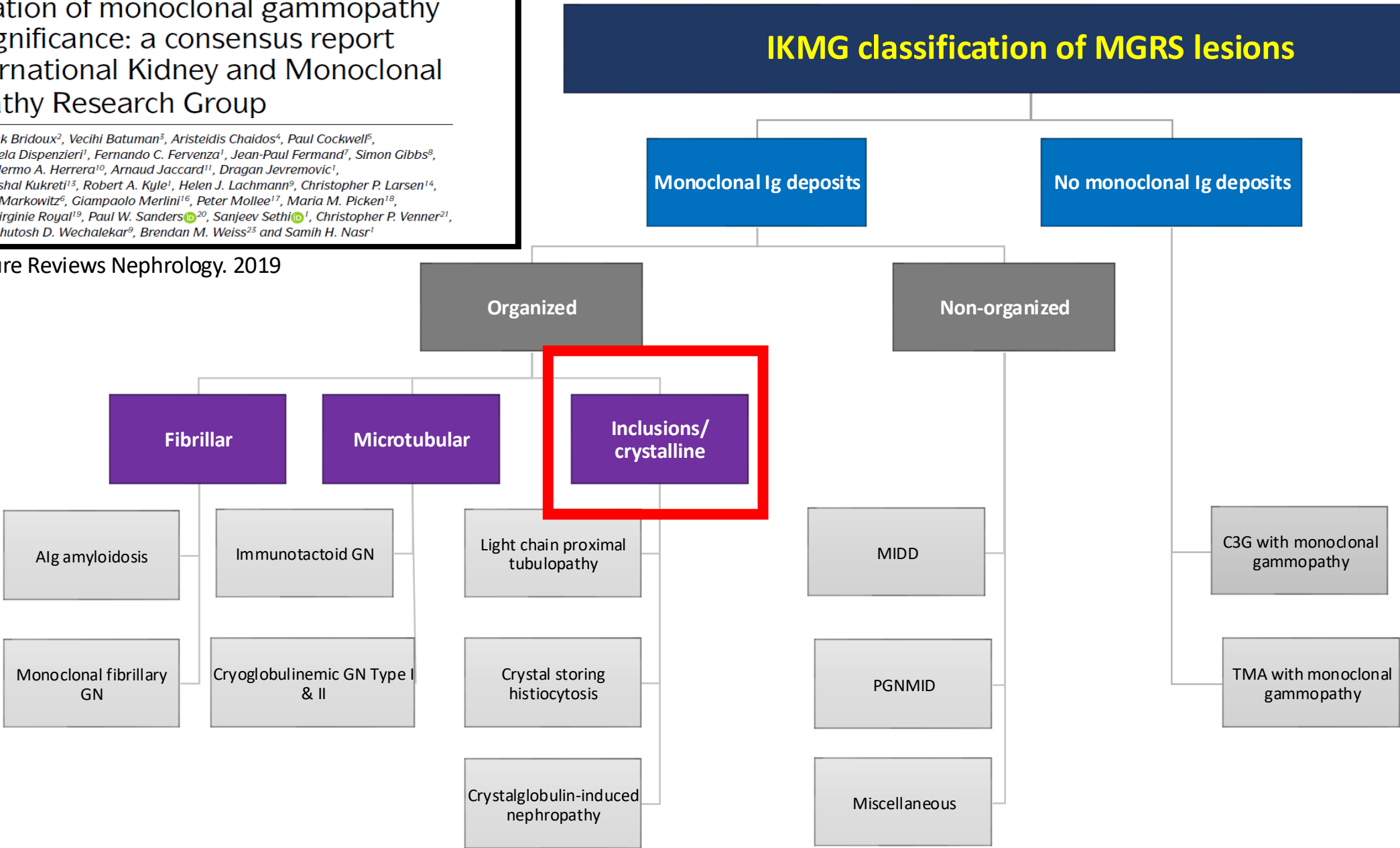


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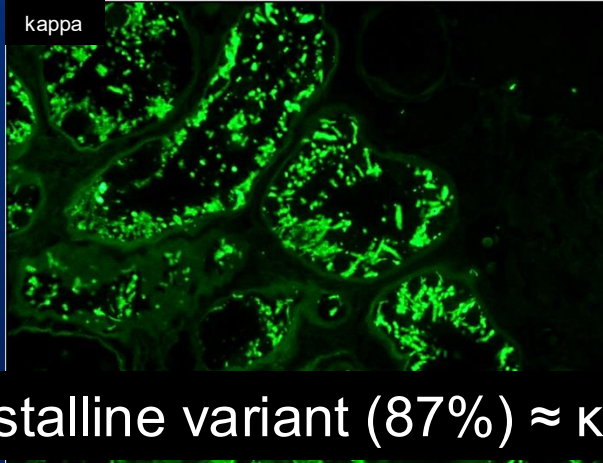
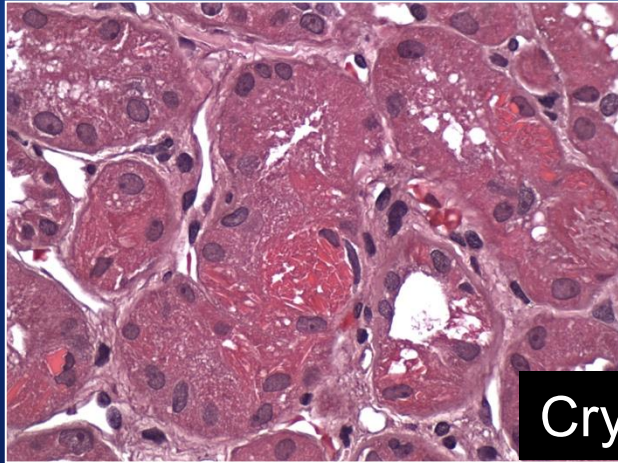
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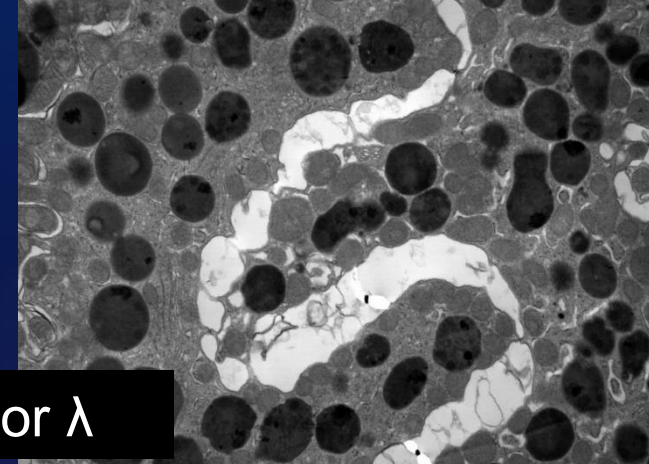
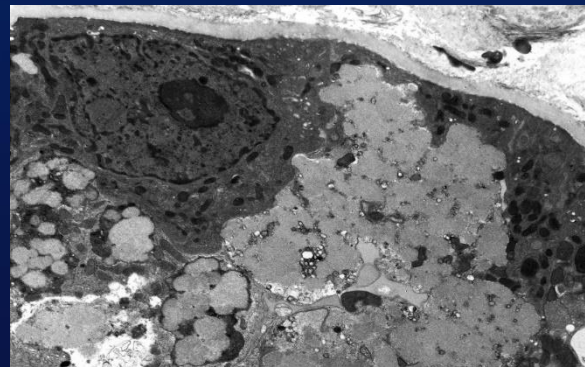
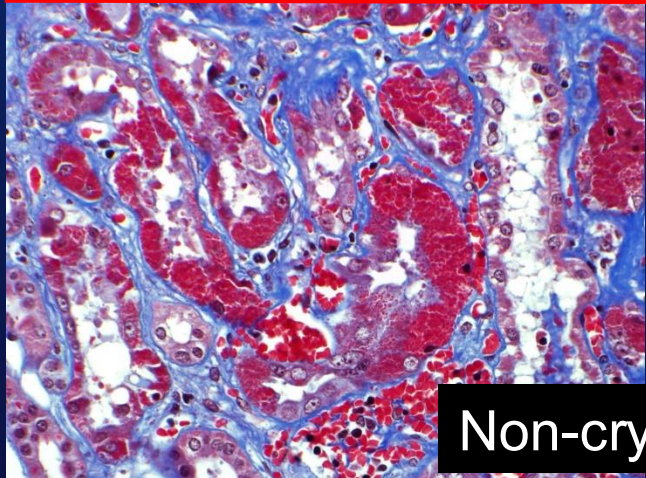
Nature Reviews Nephrology. 2019



Light Chain Proximal Tubulopathy



Crystalline variant (87%) $\approx$ κ

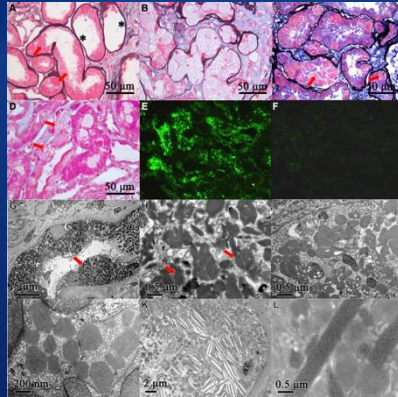


Non-crystalline variant (13%) - κ or λ

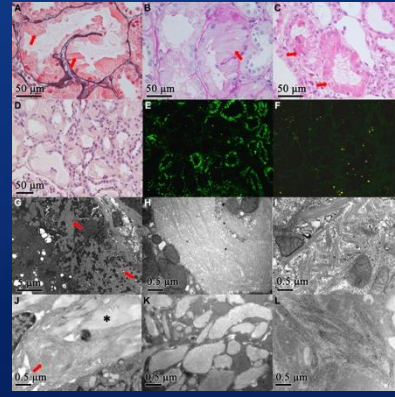
Stokes et al. JASN 2016

Ultrastructural classification of LCPT

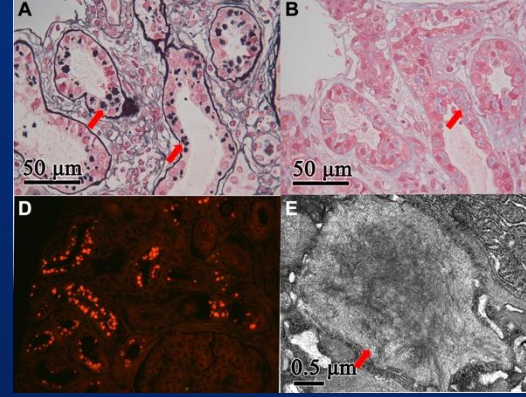
Crystalline



Fibrillary



Amyloid



Lysosomal indigestion

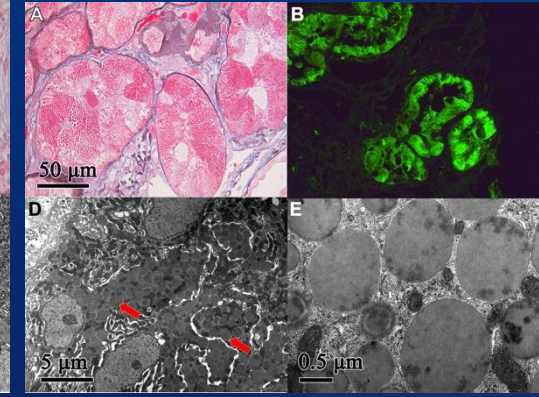


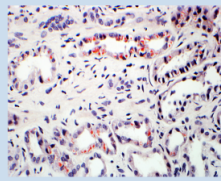
Table 1

Pathologic features of the 4 light chain proximal tubulopathy subtypes

Pathological features	Crystalline LCPT (n = 22)	Fibrillary LCPT (n = 11)	Amyloid LCPT (n = 2)	LCPT with lysosomal indigestion (n = 6)	P (overall)	P (crystalline vs fibrillary)
LM morphology/EM morphology ^a					.001	.005
Coarse granular, foam-like/rhomboid or polygonal, fibrillary, or increased lysosomes	11 (50.0)	2 (18.2)	0 (0.0)	1 (16.7)		
Fissured or rectilinear/needle like or stream like	4 (18.2)	0 (0.0)	0 (0.0)	0 (0.0)		
Fibrillary or large bundle like/fibrillary	0 (0.0)	3 (27.3)	0 (0.0)	0 (0.0)		
Globular, argyrophilic/amyloid	0 (0.0)	0 (0.0)	2 (100.0)	0 (0.0)		
Invisible/small or sparse, or increased lysosomes	7 (31.8)	6 (54.5)	0 (0.0)	5 (83.3)		
LM score						
Acute tubular injury score ^b	2.8 ± 0.4	2.9 ± 0.3	2.5 ± 0.7	1.5 ± 0.8	<.001	.508
Interstitial fibrosis/tubular atrophy score ^b	1.7 ± 1.0	1.2 ± 0.8	2.0 ± 1.4	0.3 ± 0.5	.014	.152
Interstitial inflammation ^b	1.7 ± 0.9	1.2 ± 0.8	2.0 ± 1.4	0.3 ± 0.5	.007	.103
Multisite intracellular deposition ^a	10 (45.5)	0 (0.0)	0 (0.0)	0 (0.0)	.002	.001
Concurrent CSH ^a	3 (13.6)	0 (0.0)	0 (0.0)	0 (0.0)	.884	.883
Concurrent LCCP ^a	5 (22.7)	0 (0.0)	0 (0.0)	0 (0.0)	.078	.034
IF and/or IEM findings						
κ Light chain (IF and/or IEM) ^a	22 (100.0)	11 (100.0)	0 (0.0)	3 (50.0)	<.001	/
Sensitivities on IF on frozen tissue ^a	4/22 (18.2)	0/11 (0.0)	0/2 (0.0)	4/6 (66.7)	.007	.061
Sensitivities on IF after pronase digestion ^a	18/18 (100.0)	7/11 (63.6)	2/2 (100.0)	5/6 (83.3)	.022	.002
Sensitivities on IEM ^a	19/19 (100.0)	10/10 (100.0)	2/2 (100.0)	6/6 (100.0)	.575	.700

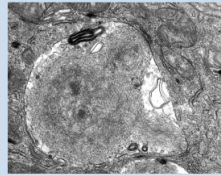
Zhang
et al.
Mod
Pathol
2026

**Intratubular cytoplasmic
AL-amyloidosis (ITC-AL)**

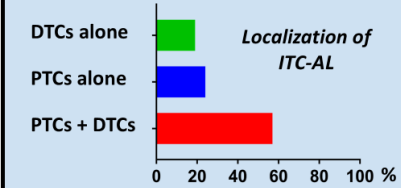


21 patients

Bx incidence:
0.003% of renal
amyloidosis



✓ Acute kidney injury (AKI): n=19 (90%)



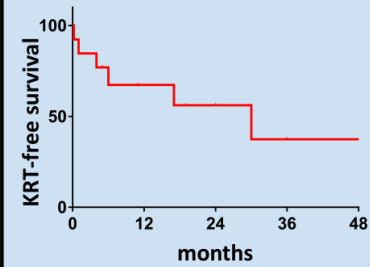
✓ Concurrent light chain cast nephropathy (LCCN): n=18 (86%)

✓ Extrarenal amyloidosis: n=3 (14%)

✓ Proteomic analysis: IGLV1-47 (n=2),
IGLV1-44 (n=1) and IGLV3-21 (n=1)

➤ Multiple myeloma in all cases
(symptomatic in 85%,
smoldering in 15%)

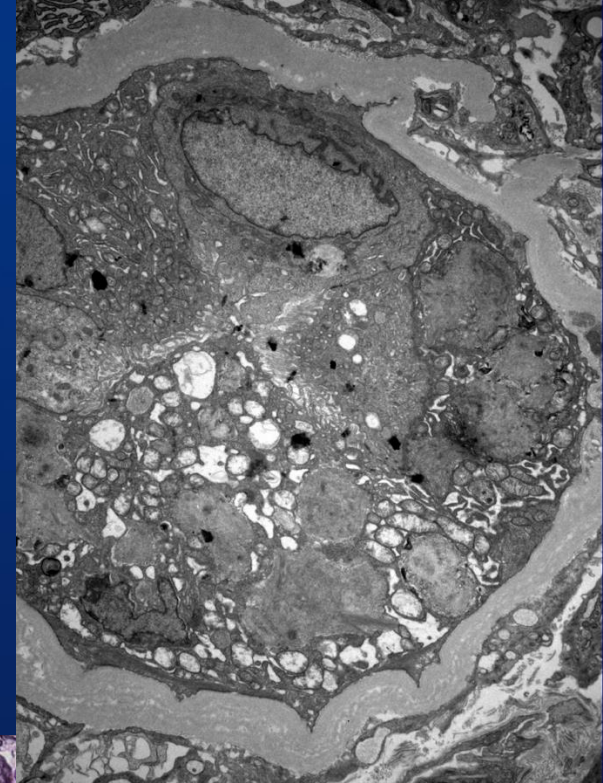
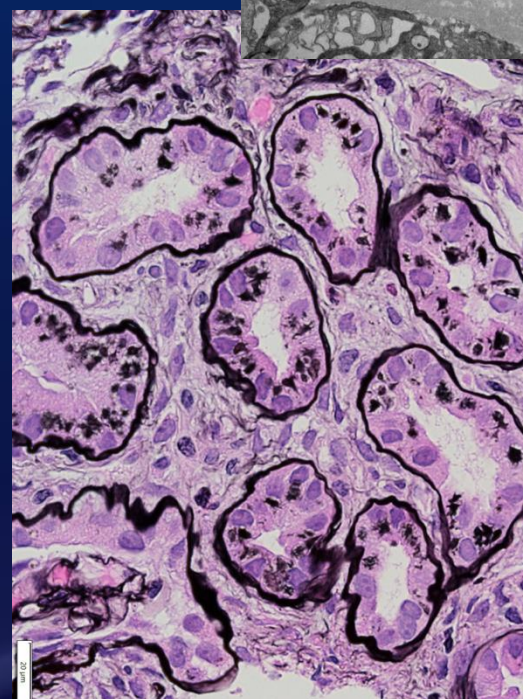
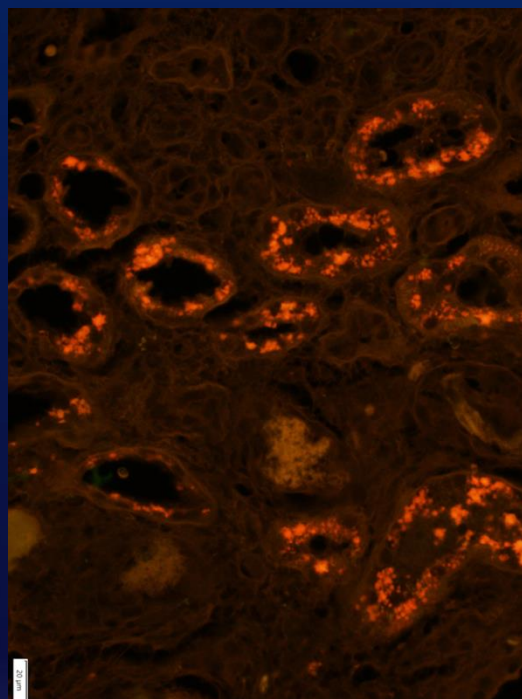
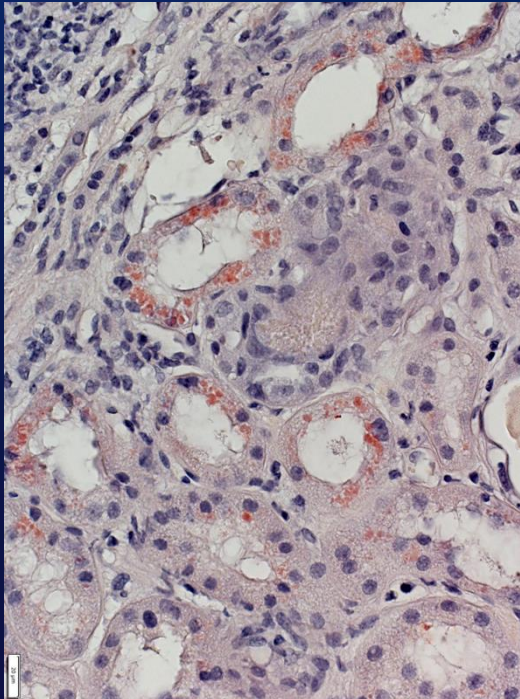
➤ Median dFLC = 804 mg/L



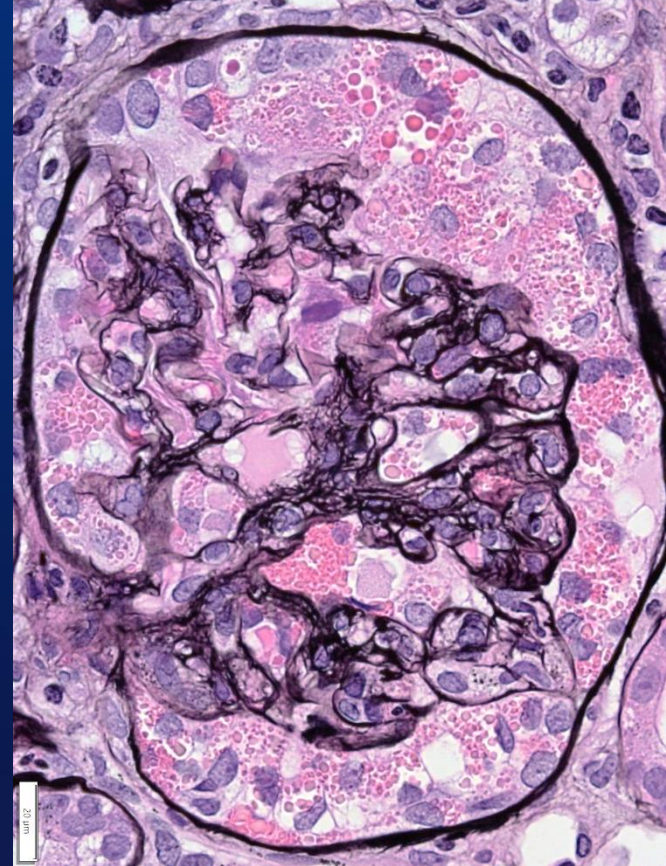
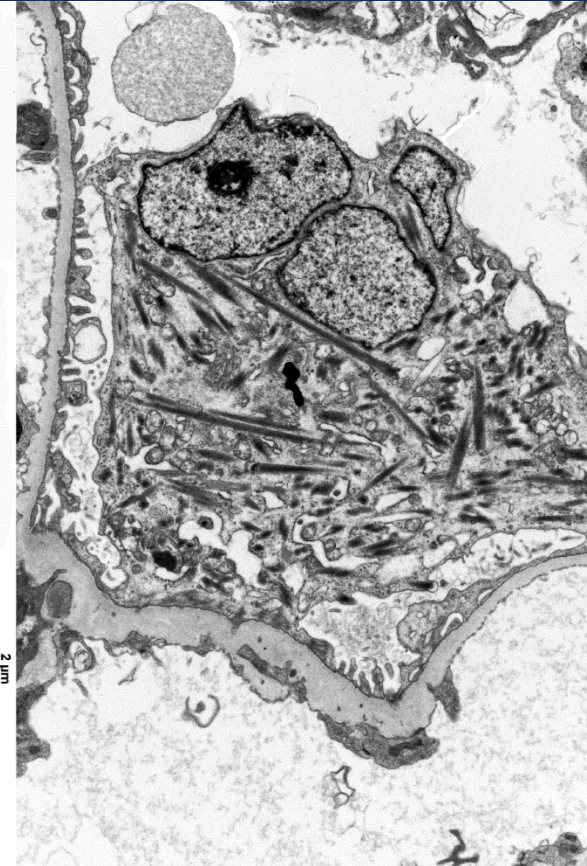
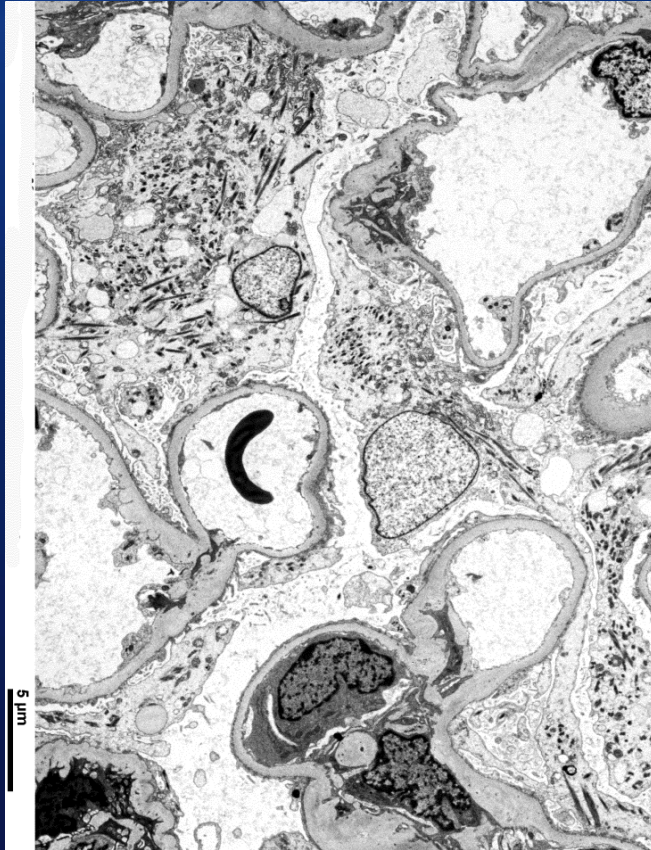
Javaugue V et al, 2022

CONCLUSION

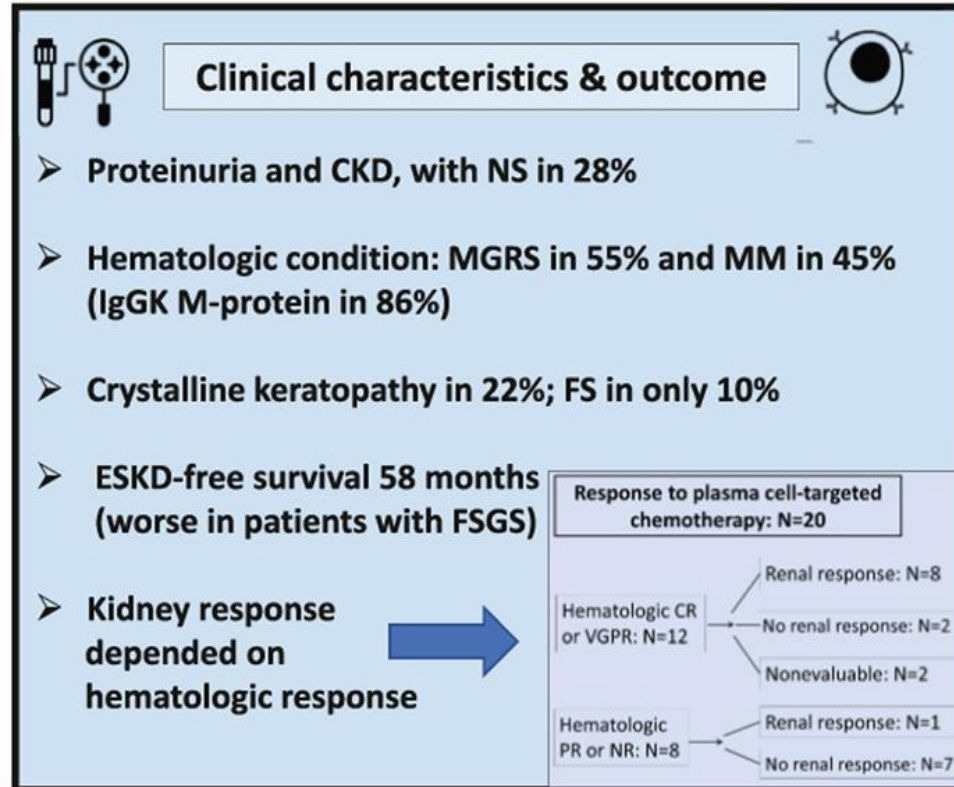
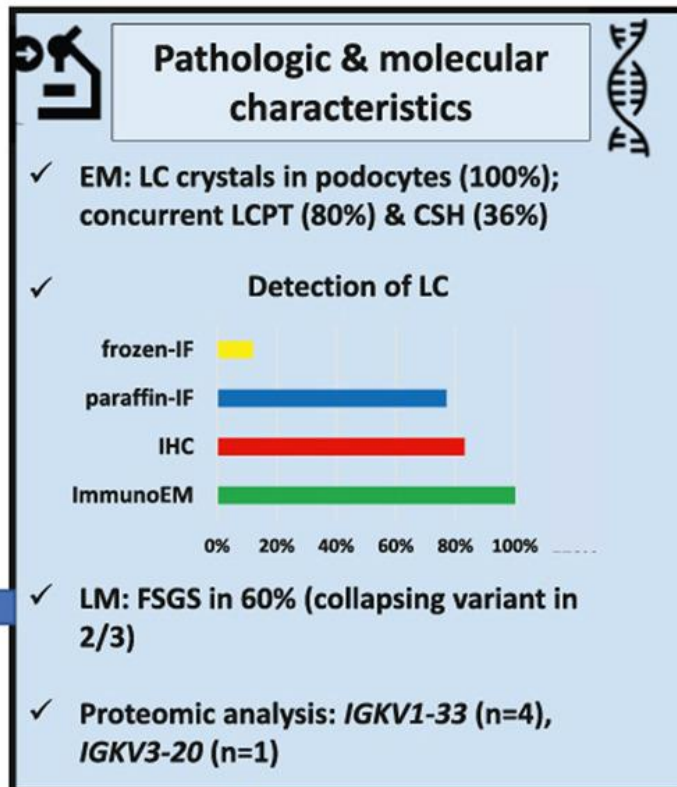
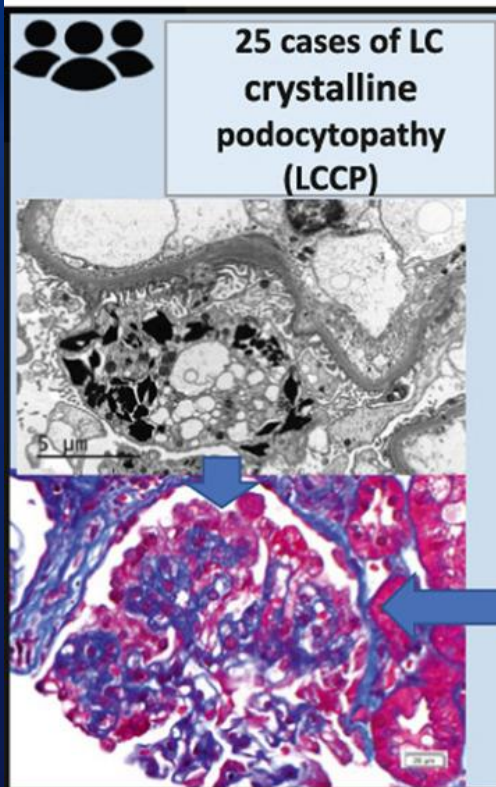
ITC-AL occurs mostly concurrent with LCCN and most commonly presents as AKI.
A subset of cases are associated with extrarenal amyloidosis.



Light Chain Crystalline Podocytopathy



Pathological characteristics of light chain crystalline podocytopathy.

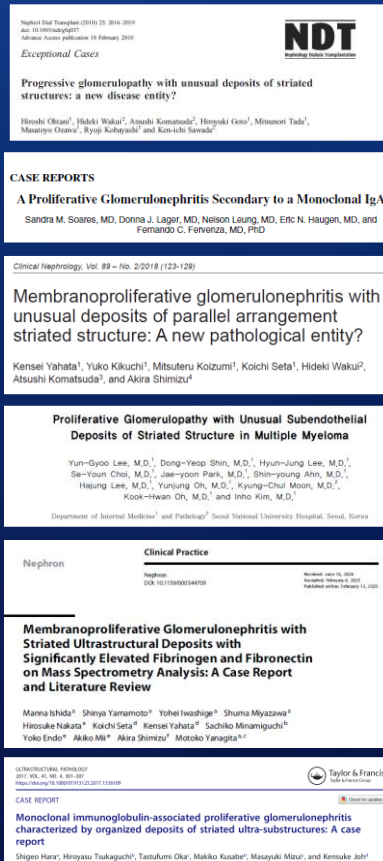


Nasr, Kudose, & Javaugue et al, 2022

CONCLUSION

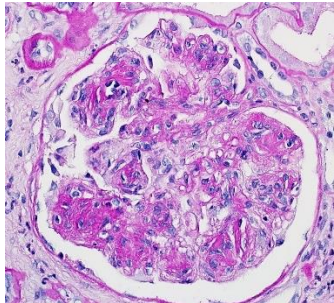
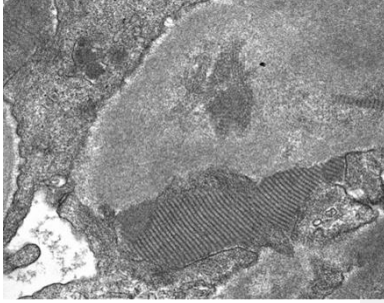
LCCP is mostly associated with IgGk MGRS. Despite frequently concurrent LCPT, FS is uncommon. Paraffin-IF and EM are essential for diagnosis. Kidney survival depends on early diagnosis and clone-directed therapy.

GLOMERULOPATHY WITH STRIATED DEPOSITS



Striated (muscle like) deposits: regularly stacked straight electron dense bands

Clinicopathologic and Outcome Characteristics of Glomerulopathy with Striated Deposits: A Case Series

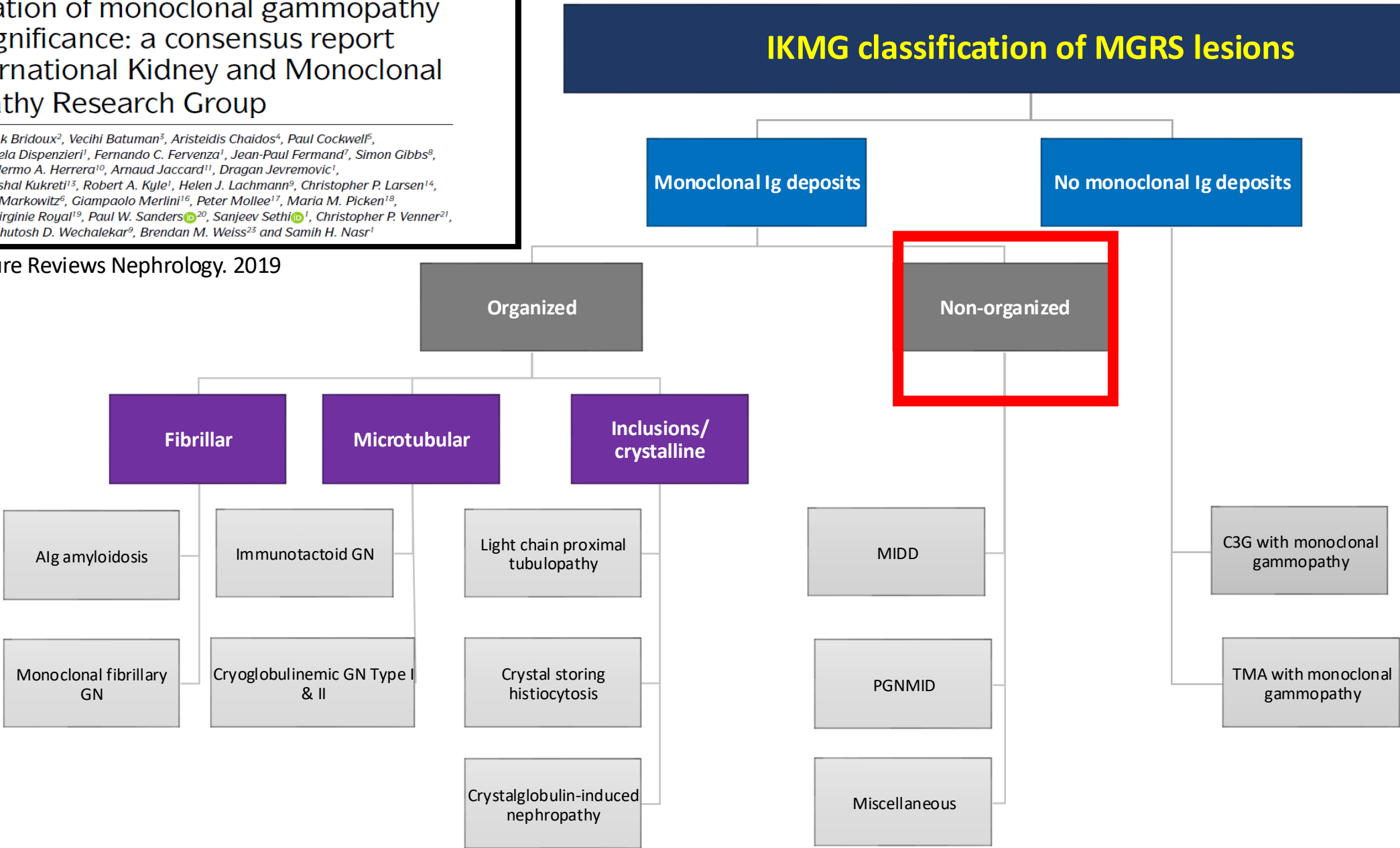
Setting & Participants	Clinicopathologic Findings	Outcome
18 patients with glomerulopathy with striated deposits (GSD) diagnosed on kidney Bx after excluding cryoglobulinemic GN and crystalglobulin-induced nephropathy  	• 78% Caucasian, 50% male, median age 73 years • Proteinuria (median 3.8 g/day), hematuria (80%), and CKD (median creatinine 2.6 mg/dl) • Hematologic condition in 88% (including MGRS in 56%) • Light microscopy: MPGN pattern in 67%, endocapillary proliferative GN in 22% • Immunofluorescence: Monotypic Ig deposits in 10 (often masked), polytypic Ig deposits in 4 and no Ig deposits in 4 • Electron microscopy: striated deposits mostly in subendothelial and mesangial regions	• Follow-up (median 14 months in 15 patients): 40% progressed to kidney failure within median 11 months, including 1 with recurrence in the kidney allograft. • Kidney response to clone-directed therapy occurred in all 4 evaluable patients

CONCLUSION: GSD is a rare heterogeneous glomerulopathy presenting in older patients with CKD and proteinuria, and frequently associated with hematologic conditions, particularly MGRS. We propose adding GSD with monotypic Ig deposits to the spectrum of MGRS lesions.

The evaluation of monoclonal gammopathy of renal significance: a consensus report of the International Kidney and Monoclonal Gammopathy Research Group

Nelson Leung^{1*}, Frank Bridoux², Vecihi Batuman³, Aristeidis Chaidos⁴, Paul Cockwell⁵, Vivette D. D'Agati⁶, Angela Dispenzieri¹, Fernando C. Fervenza¹, Jean-Paul Fermand⁷, Simon Gibbs⁸, Julian D. Gillmore⁹, Guillermo A. Herrera¹⁰, Arnaud Jaccard¹¹, Dragan Jevremovic¹, Efsthios Kastiris¹², Vishal Kukreti¹³, Robert A. Kyle¹, Helen J. Lachmann⁹, Christopher P. Larsen¹⁴, Heinz Ludwig¹⁵, Glen S. Markowitz⁶, Giampaolo Merlini¹⁶, Peter Mollee¹⁷, Maria M. Picken¹⁸, Vincent S. Rajkumar¹, Virginie Royal¹⁹, Paul W. Sanders^{10,20}, Sanjeev Sethi¹, Christopher P. Venner²¹, Peter M. Voorhees²², Ashutosh D. Wechalekar⁹, Brendan M. Weiss²³ and Samih H. Nasr¹

Nature Reviews Nephrology. 2019



Proliferative glomerulonephritis with monoclonal IgG deposits: A distinct entity mimicking immune-complex glomerulonephritis

SAMIH H. NASR, GLEN S. MARKOWITZ, M. BARRY STOKES, SURYA V. SESHAN, ELSA VALDERRAMA,
GERALD B. APPEL, PIERRE AUCOUTURIER, and VIVETTE D. D'AGATI

Proliferative Glomerulonephritis with Monoclonal IgG Deposits

Samih H. Nasr,* Anjali Satoskar,[†] Glen S. Markowitz,* Anthony M. Valeri,[‡]
Gerald B. Appel,[‡] Michael B. Stokes,* Tibor Nadasdy,[†] and Vivette D. D'Agati*

*Department of Pathology and [†]Division of Nephrology, Columbia University, College of Physicians and Surgeons, New York, New York; and [‡]Department of Pathology, Ohio State University Medical Center, Columbus, Ohio

Initial diagnostic criteria for PGNMID

1. Glomerular monotypic IgG deposits (restricted to a single IgG subclass and a single LC isotype) by IF
2. DPGN, MPGN, MGN, Mes.GN by LM
3. Granular (nonorganized) deposits by EM
4. No clinical or laboratory evidence of cryoglobulinemia

Clinical clues suggesting that most PGNMID-IgG3 cases are not monoclonal lesions

- IgG3 rare in IgG MGUS & MM
- Normal serum IgG3 in most pts
- Younger age at Dx than prototypical MGRS lesions
- Occurs in children
- Can be associated with prodromal, concurrent or recent bacterial or viral infection
- Allograft PGNMID occasionally changes its IF phenotype between monotypic and polytypic
- HLC IF excludes monotypic Ig deposits in 20% of cases

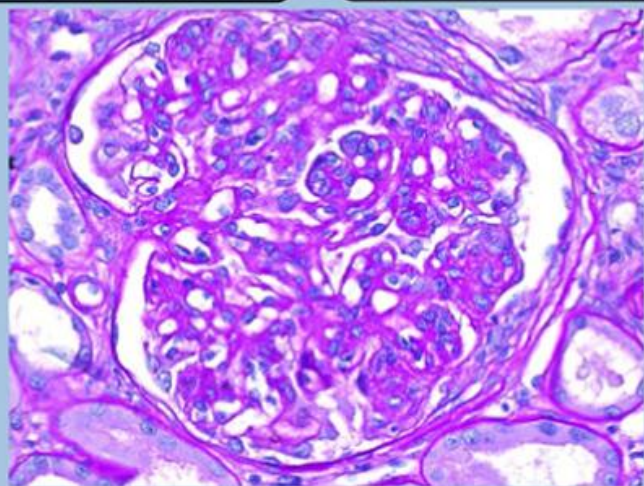
Revisiting proliferative glomerulonephritis with monoclonal immunoglobulin deposits through immunoglobulin repertoire sequencing

56 patients with kidney biopsy-proven PGNMID and Ig repertoire sequencing analysis



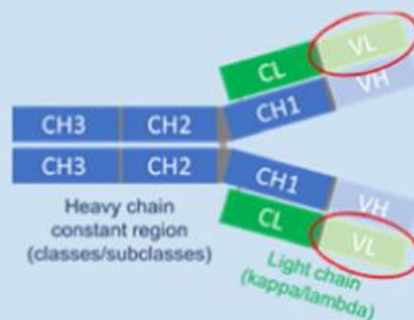
13 with clone

43 without clone

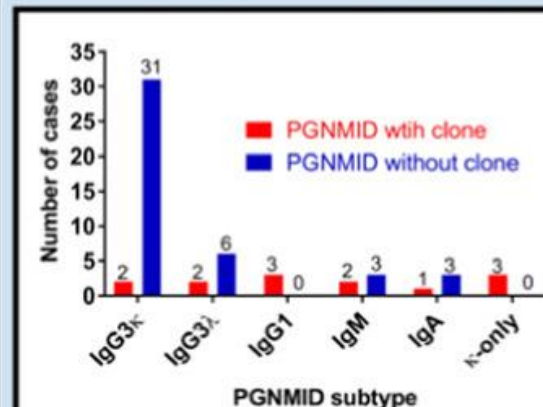


Comparison between clone-positive and clone-negative patients

- ✓ Clinical data
- ✓ Hematologic workup
- ✓ Pathologic analysis (proteomic and IF on kidney biopsies using anti-V κ antibodies)



PGNMID subtypes according to clone detection using RACE-RepSeq analysis

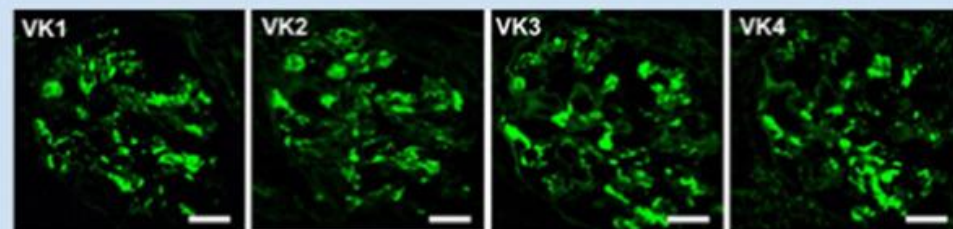


Clone-positive patients :

- ✓ Older age
- ✓ Lower proteinuria
- ✓ More frequent hypocomplementemia

Clone-negative patients :

- ✓ More frequent PGNMID-IgG3 subtype
- ✓ Polyclonal deposits (anti-V κ)



IF analysis (anti-V κ antibodies) in a PGNMID-IgG3 κ case without clone

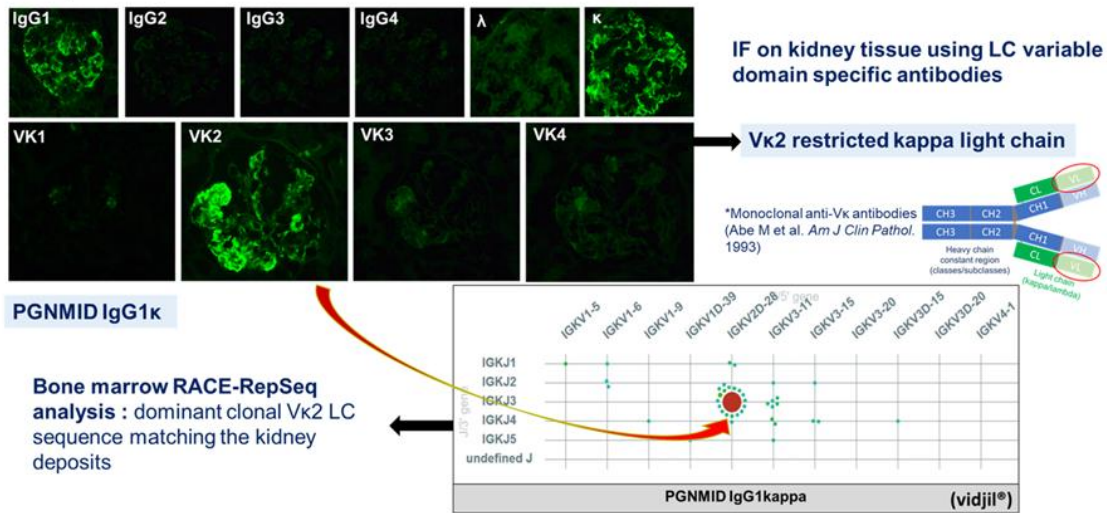
Javaugue, Pascal et al, 2025

CONCLUSION: PGNMID cases with undetectable clones after thorough hematologic workup, including most IgG3 subtypes, are associated with oligoclonal deposition and should be excluded from the MGRS spectrum

IF staining for LC variable region distinguishes polyclonal from monoclonal deposits in PGNMID

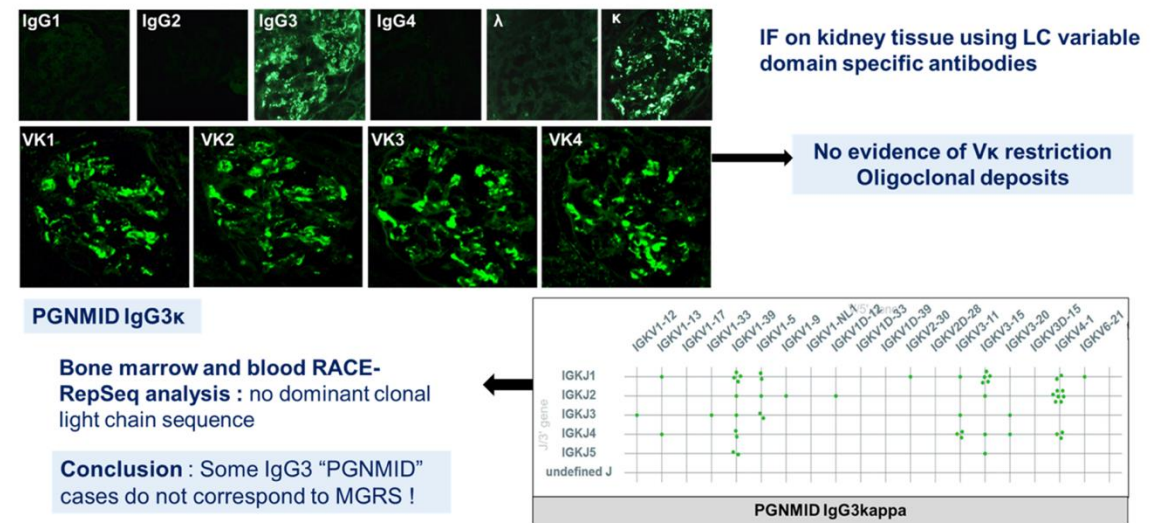
RACE-RepSeq results correlate with Ig deposit composition in PGNMID

61st ERA
CONGRESS
STOCKHOLM & VIRTUAL
MAY 23-26, 2024



RACE-RepSeq results correlate with Ig deposit composition in PGNMID

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STOCKHOLM & VIRTUAL
MAY 23-26, 2024



REVISING THE NAME

**PROLIFERATIVE GLOMERULONEPHRITIS
WITH MONOTYPIC IMMUNOGLOBULIN
DEPOSITS (PGNMID)**

Six PGNMID
morphologic
variants

Demographic, renal, hematologic, and pathologic characteristics of PGNMID variants						
Variant	IgG3	IgG1	IgG2	IgM	IgA	LC-only
Age (years)	59 (19-81)	57 (6-87)	58 (5-86)	72 (28-87)	55 (33-75)	62 (44-84)
Male (%)	37%	57%	60%	78%	64%	76%
Pro. (g/day)	5.3 (0.3-18)	4.8 (0.4-20)	3.5 (0.2-12.3)	3.1 (0.3-25)	4.3 (0.4-7.8)	4.7 (2-12)
NS (%)	46%	50%	32%	36%	15%	56%
Hematuria (%)	70%	78%	78%	91%	93%	94%
Scr. (mg/dl)	1.6 (0.8-5.5)	1.6 (0.3-20)	1.5 (0.4-23)	1.9 (0.6-11)	1.6 (0.8-2)	2 (0.9-5.7)
MIg on SPEP/SIFE (%)	9%	33%	23%	27%	36%	65%
MIg on UPEP/UIFE (%)	9%	25%	17%	5%	29%	73%
Detectable clone on BMB (%)	10% (B-cell > PC)	40% (B-cell > PC)	40% (B-cell > PC)	25% (B-cell > PC)	21% (PC > B-cell)	94% (PC)
Light microscopy	MPGN (46-85%);	MPGN (55%); EPGN	MPGN (36%);	MPGN (83%);	MPGN (43%);	MPGN (76%);
	EPGN (9-25%);	(13%); MesGN	EPGN (20%);	EPGN (4%);	EPGN (0%);	EPGN (24%);
	MesGN (3-13%); MN	(33%); MN features	MesGN (44%); MN	MesGN (13%);	MesGN (50%); MN	MesGN (0%); MN
	features (<7%)	(43%)	features (48%)	MN features (9%)	(7%)	features (0%)
Immunofluorescence	κ/λ (73-80%)/(20-	κ/λ (67%)/(33%); C3	κ/λ (56%)/(44%);	κ/λ (52%)/(48%);	κ/λ (50%)/(50%);	κ/λ (71%)/(29%);
	23%); C3 (98-100%);		C3 (96%); C1q	C3 (96%); C1q	C3 (79%); C1q	C3 (100%); C1q
	C1q (60-72%)	(89%); C1q (34%)	(28%)	(8%)	(NA)	(0%)
Electron microscopy	Mes (95%); Subendo	Mes (100%);	Mes (100%);	Mes (100%);	Mes (≈100%);	Mes (100%);
	(≥95%); Subepi	Subendo (72%);	Subendo (64%);	Subendo (96%);	Subendo (≈100%);	Subendo (100%);
	deposits (52%, global	Subepi deposits	Subepi deposits	Subepi deposits	Subepi deposits	Subepi deposits
	in 5%)	(76%, global in 41%)	(76%, global in 21%)	(61%)	(NA)	(76%, global in 18%)
Differential diagnosis	IgG type I CryoGN*	IgG type I CryoGN*; MGMID ^ε ; "monoclonal" MN [#] ; ITG ^β	IgG type I CryoGN*; ITG ^β	IgM type I CryoGN*; ICMG-	IgA nephropathy with LC-restricted deposits [¥]	LCDD [±]

Kidney Bx (LM,
EM, IF, IgG
subclass staining

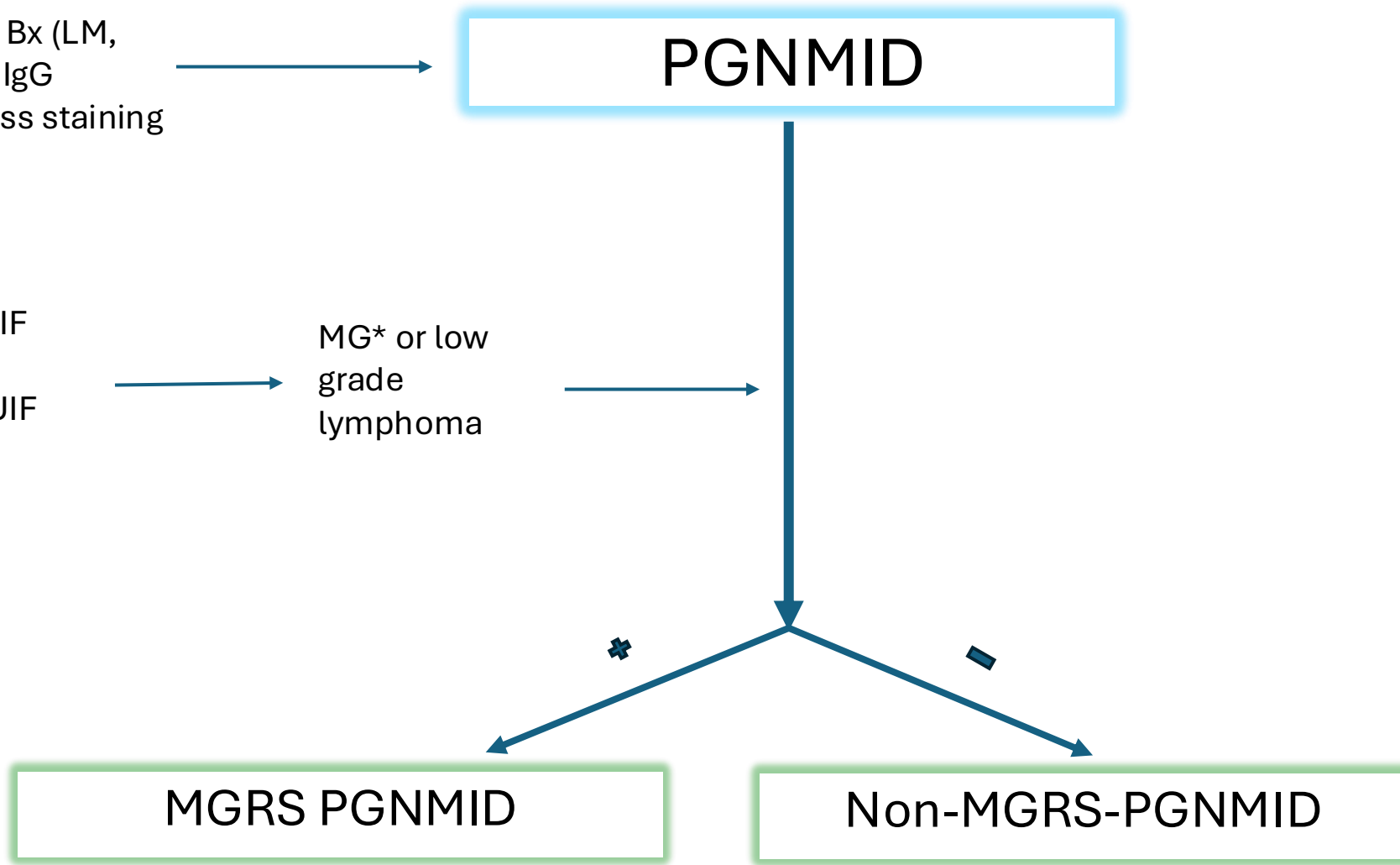
PGNMID

SPEP/SIF
sFLC
UPEP/UIF
BMB

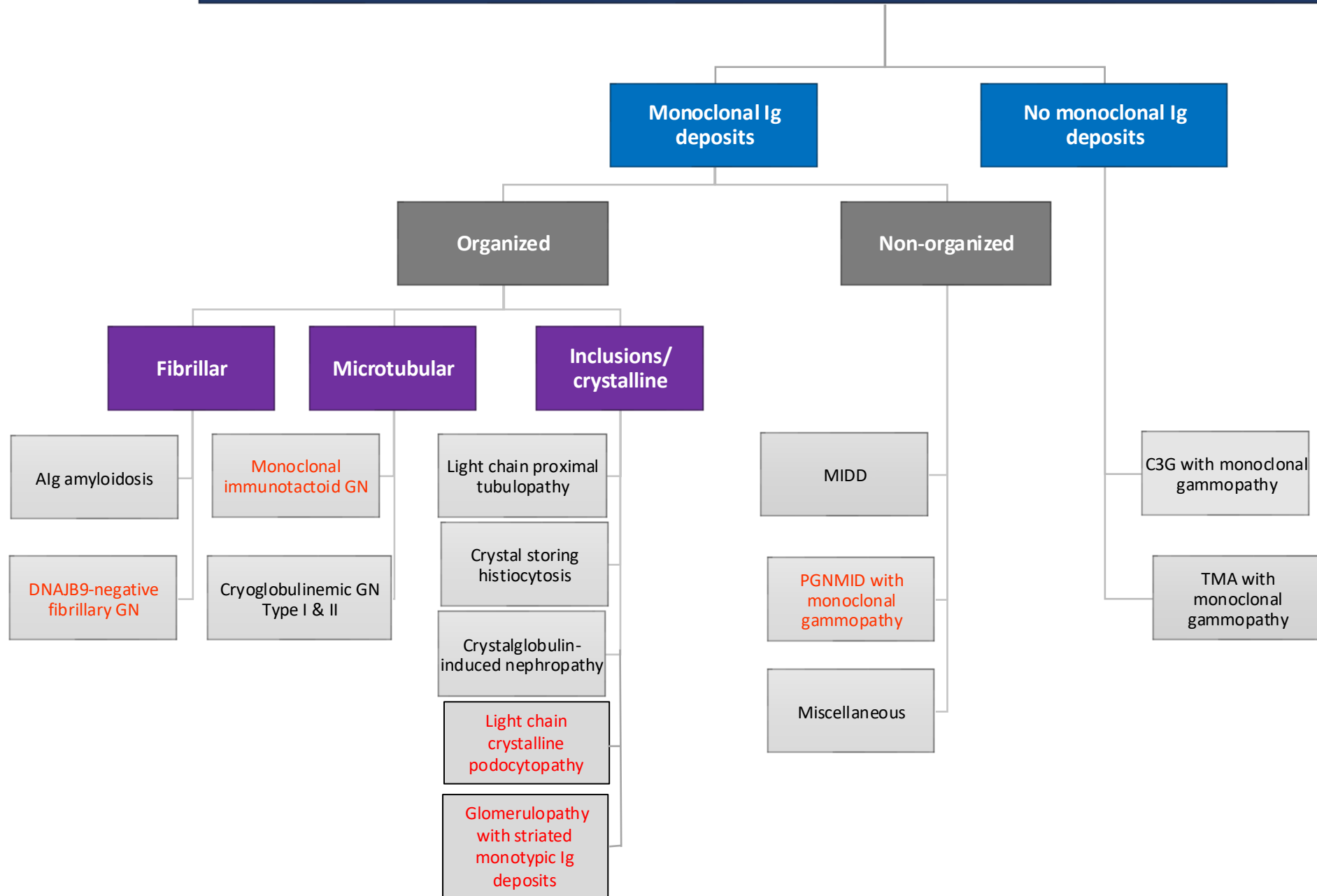
MG* or low
grade
lymphoma

MGRS PGNMID

Non-MGRS-PGNMID



Proposed modifications of IKMG classification of MGRS lesions



Key Takeaways

- ❑ Most cases of DNAJB9-associated monotypic FGN are not MGRS
- ❑ Not all cases of immunotactoid GN are MGRS
- ❑ New lesions associated with MGRS (eg, LC crystalline podocytopathy, glomerulopathy with striated monotypic Ig deposits)
- ❑ There has been a paradigm shift in our understanding of PGNMID and its relation to MGRS
- ❑ Most PGNMID-IgG3 cases are not clonal, whereas PGNMID-LC and PGNMID-IgG1 & PGNMID-IgG2 in older adults still strongly align with MGRS biology
- ❑ There is a need for increased access to specialized sequencing techniques (eg RACE-RepSeq) and commercial availability of antibodies specific for κ and λ V_L subgroups to fully characterize PGNMID