JCJ 1st Case

62 yo Asian male of Korean ancestry developed rapid onset of severe edema

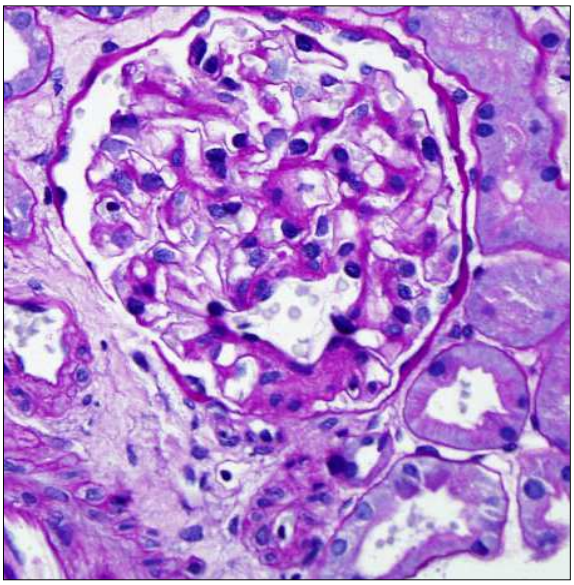
PE: 3+ edema extending above the knees, no rash, BP 122/87, BMI 29.

Lab data: creatinine 1.41, albumin 1.7, 9g/24h proteinuria, no hematuria, glucose 82, marked hyperlipidemia, SPEP M-spike, nl C3/C4, and negative serology for HCV/HBV, ANA, ANCA, HIV.

Medical History: History of hypothyroidism. No history of kidney, heart or liver disease. No history of allergy. Medications: levothyroxine, simvastatin, flu vaccine.

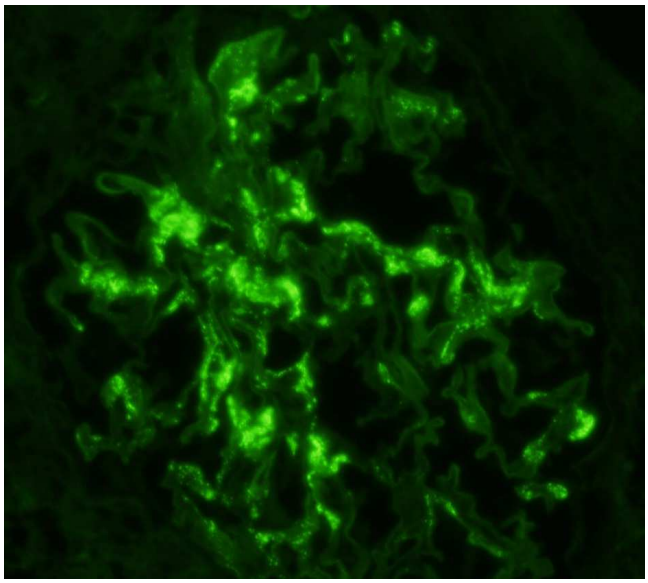
A renal biopsy was performed.

62 year old Asian male with nephrotic syndrome



PAS stain

62 year old Asian male with nephrotic syndrome

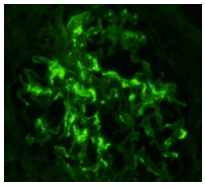


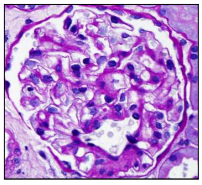
IgA 2+, C3 2+, kappa LC 2+, lambda LC 2+, IgG 0, IgM 0, C1q 0

62 year old Asian male with nephrotic syndrome

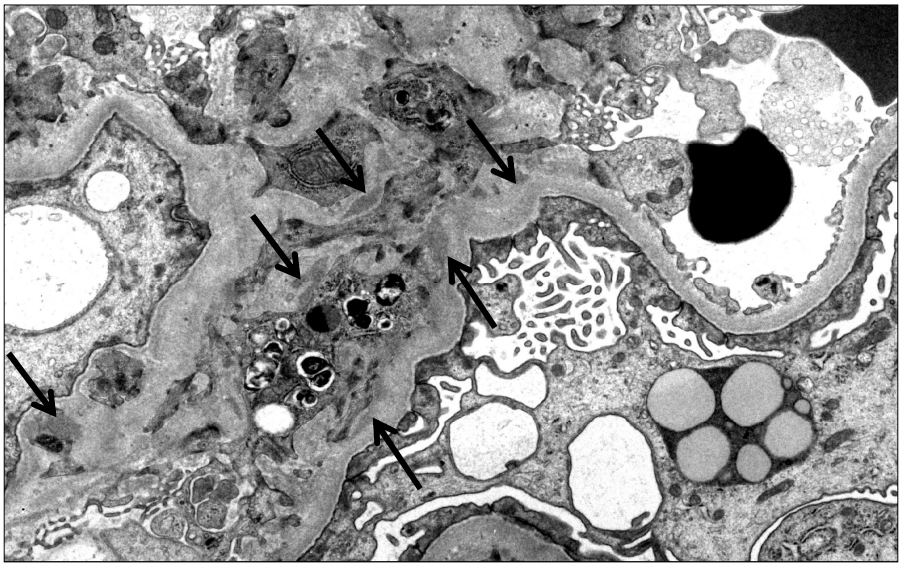
Renal Biopsy Interpretation:

1) **IgA Nephropathy with no lesion by light microscopy**



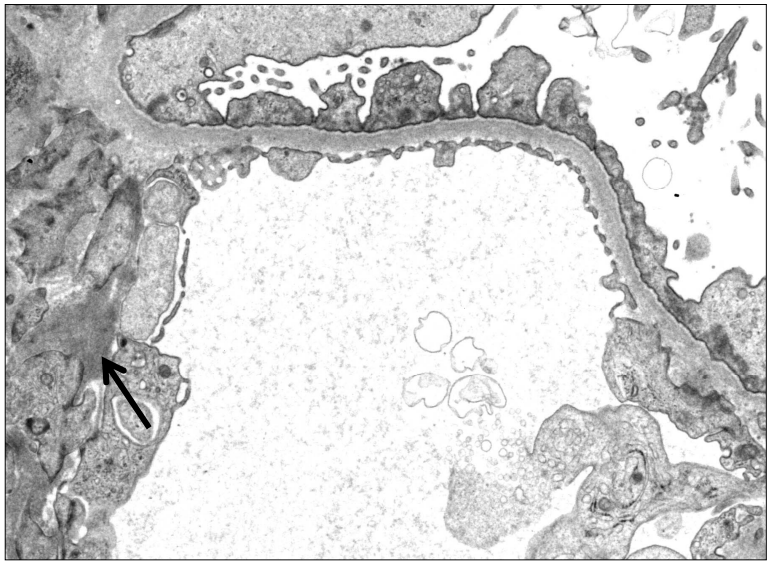


62 year old Asian male with nephrotic syndrome



Mesangial deposits (arrows) and podocyte foot process effacement

Electron Microscopy



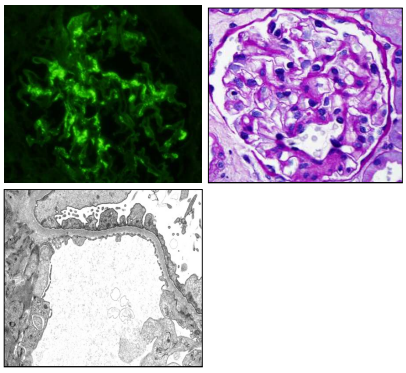
Mesangial deposits (arrow) and podocyte foot process effacement

62 year old Asian male with nephrotic syndrome

Renal Biopsy Interpretation:

1) **IgA Nephropathy with no lesion by light microscopy**

2) **Minimal Change Glomerulopathy**



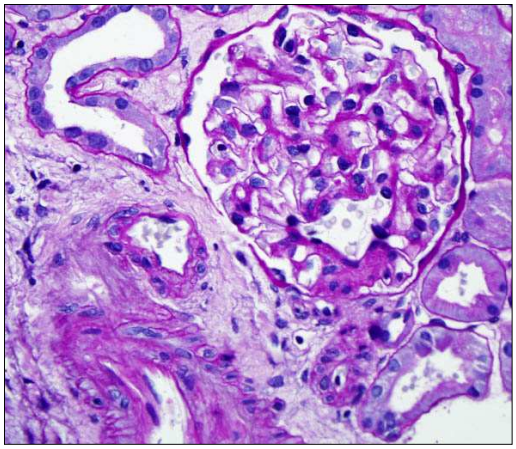
Clinicopathologic features and treatment response in nephrotic IgA nephropathy with minimal change disease.

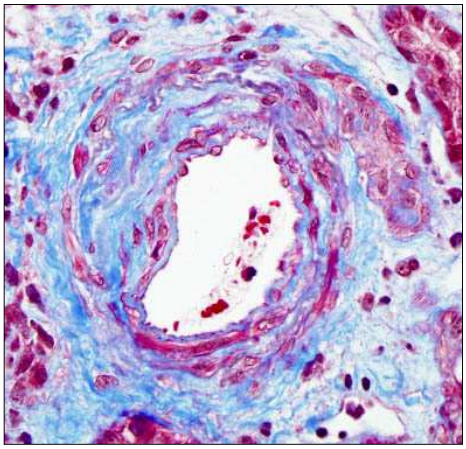
Qin J, Yang Q, Tang X, Chen W, Li Z, Mao H, Jiang Z, Huang F, Yu X
Clin Nephrol. 2013;79:37-44.

Patients with MCD-like pathology had more proteinuria and hypoalbuminemia, and higher hemoglobin.

Response to steroid therapy	MCD-like pathology	No MCD-like pathology	P=
	N=13	N=49	
Complete Remission	84.6%	34.7%	P=0.008
Relapse	53.8%	20.4%	P=0.03

62 year old Asian male with nephrotic syndrome



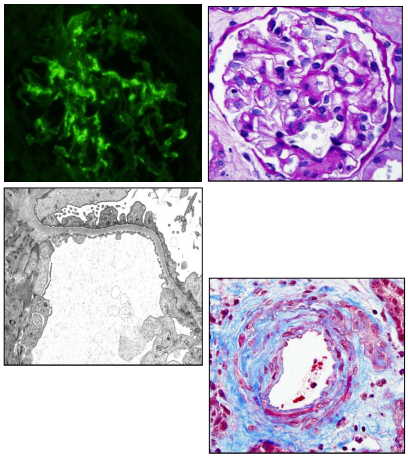


Arteriosclerosis

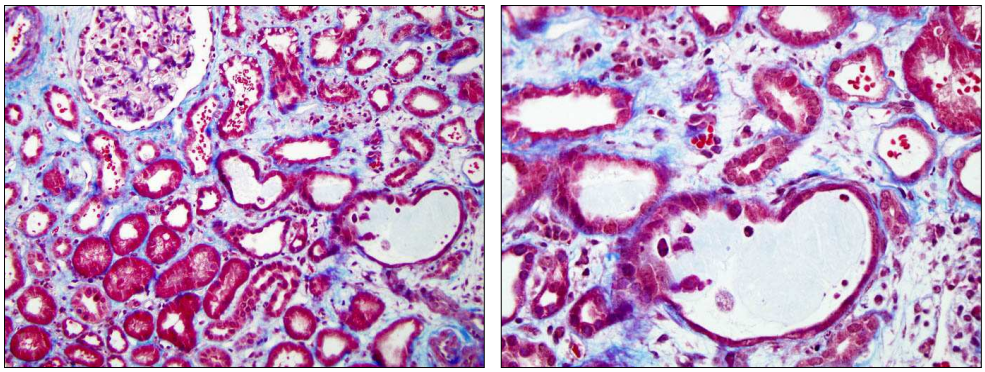
62 year old Asian male with nephrotic syndrome

Renal Biopsy Interpretation:

1) **IgA Nephropathy with no lesion by light microscopy**
2) **Minimal Change Glomerulopathy**
3) **Arteriosclerosis**



62 year old Asian male with nephrotic syndrome

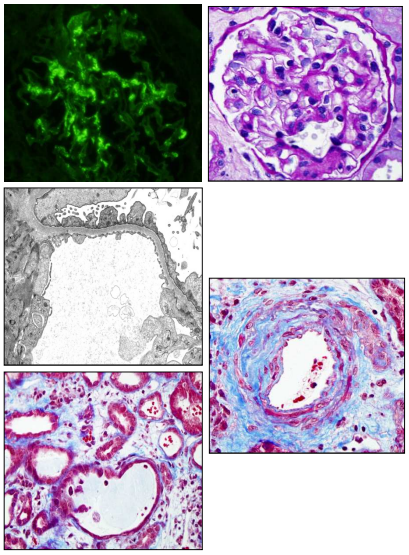


Acute Tubular Epithelial Injury ("ATN")

62 year old Asian male with nephrotic syndrome

Renal Biopsy Interpretation:

1) **IgA Nephropathy with no lesion by light microscopy**
2) **Minimal Change Glomerulopathy**
3) **Arteriosclerosis**
4) **Acute Tubular Epithelial Injury ("ATN")**



62 year old Asian male with nephrotic syndrome and acute kidney injury

Date	Creatinine	Albumin
12/14	1.24	1.7
12/19	1.41	1.7
12/23 (Biopsy)		1.1
1/23	1.63	1.7
2/15	1.15	

Adult minimal change glomerulopathy with acute renal failure

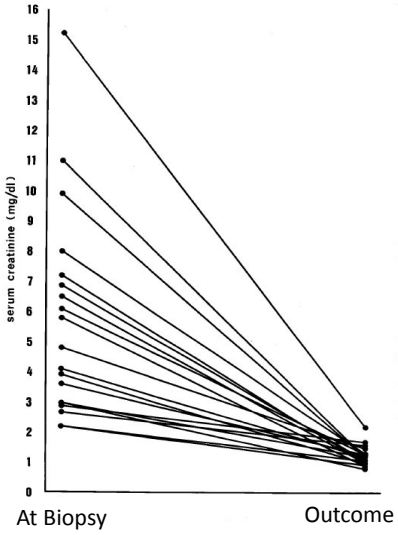
Jennette JC, Falk RJ

Am J Kidney Dis 1990; 16:432-437

	Cr <1.5	Cr >2.0	P
	N=50	N=21	
Cr	1.0 ± 0.2	5.5 ± 3.3	<0.001
Age	40.3 ± 15	59.5 ± 16	0.001
Albumin	2.7 ± 1.0	2.1 ± 0.8	0.03
Proteinuria/24h	7.9 ± 5.6	13.5 ± 9.4	0.01
Arteriosclerosis	0.7 ± 0.9	1.7 ± 1.4	0.005
% "ATN"	0%	71%	

Risk Factors for AKI in MCD:

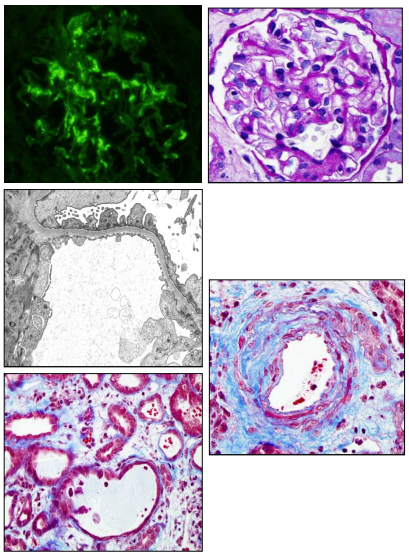
- Older age
- Lower albumin
- More proteinuria
- Arteriosclerosis



62 year old Asian male with nephrotic syndrome

Renal Biopsy Interpretation:

1) **IgA Nephropathy with no lesion by light microscopy**
2) **Minimal Change Glomerulopathy**
3) **Arteriosclerosis**
4) **Acute Tubular Epithelial Injury ("ATN")**



62 year old Asian male with nephrotic syndrome

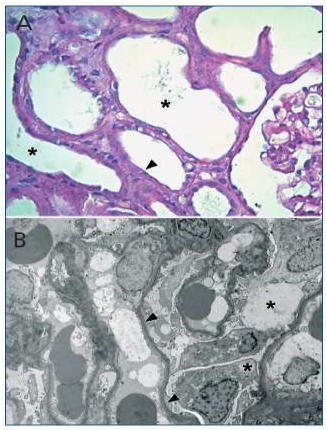
Social History: Lives with wife and son, cleaning/custodial work at night, stopped smoking 1 month ago, no NSAIDs, no herbal meds in 2 years, has lived in NC for last 10 years.

Medical History: History of hypothyroidism. No history of kidney, heart or liver disease. No history of allergy. Medications: levothyroxine, simvastatin, **flu vaccine.**

A renal biopsy was performed.

Minimal change disease following influenza vaccination and acute renal failure: just a coincidence?

Gutiérrez S, Dotto B, Petiti JP, De Paul AL, Dionisio de Cabalier ME, Torres AI, Mukdsi JH.
Nefrologia. 2012;32:414-5.



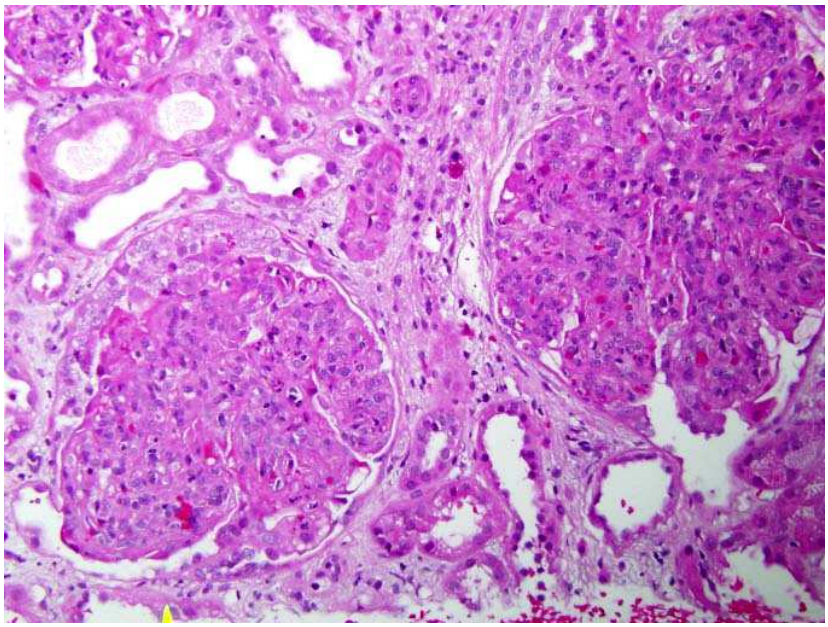
JCJ 2nd Case

A 73 year old Caucasian male developed a staphylococcal urinary tract infection and bacteremia, and was treated with IV vancomycin.

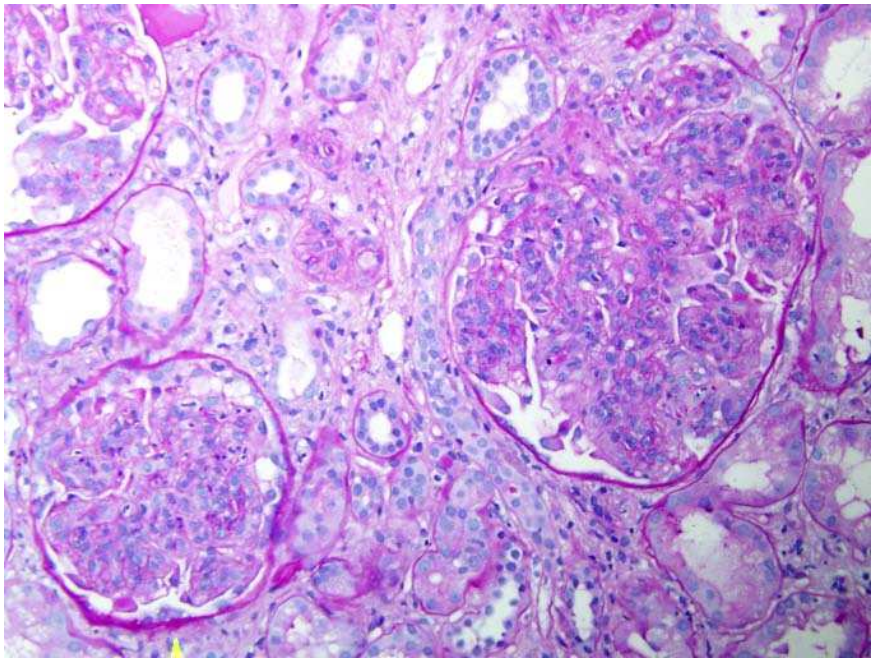
Within two weeks he was found to have acute renal failure with a rise in serum creatinine from 1.1 to 2.5. Data included BP 180/92, lower extremity edema, 3+ hematuria, rare RBC casts, 8.0 gm/24 hr proteinuria, creatinine 2.5, BUN 51, creatinine clearance 27 cc/min, albumin 2.3, slight hycomplementemia, glucose 86, cholesterol 120, and negative ANA.

A renal biopsy was performed.

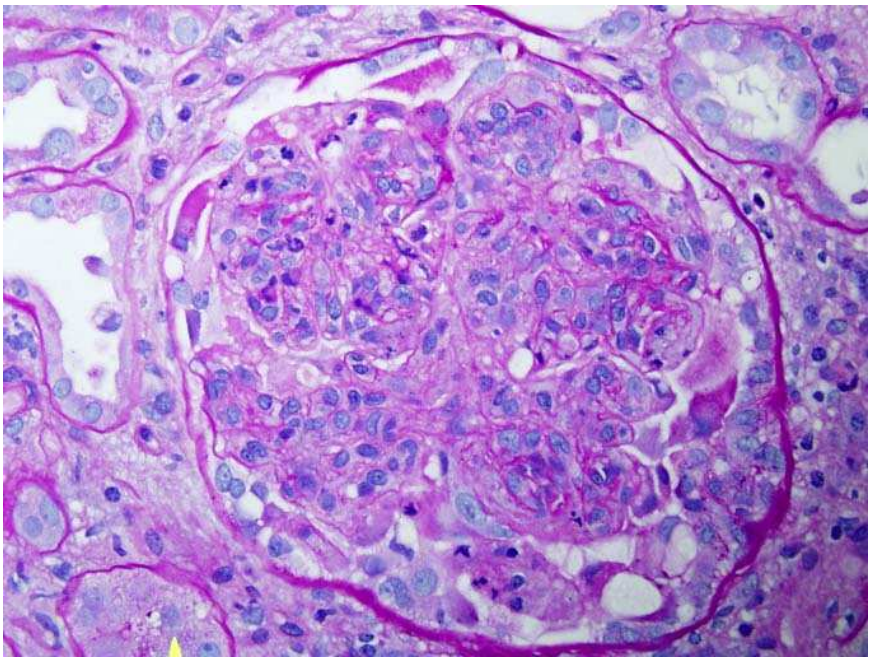
Staphylococcal Urinary Tract Infection and Nephritis



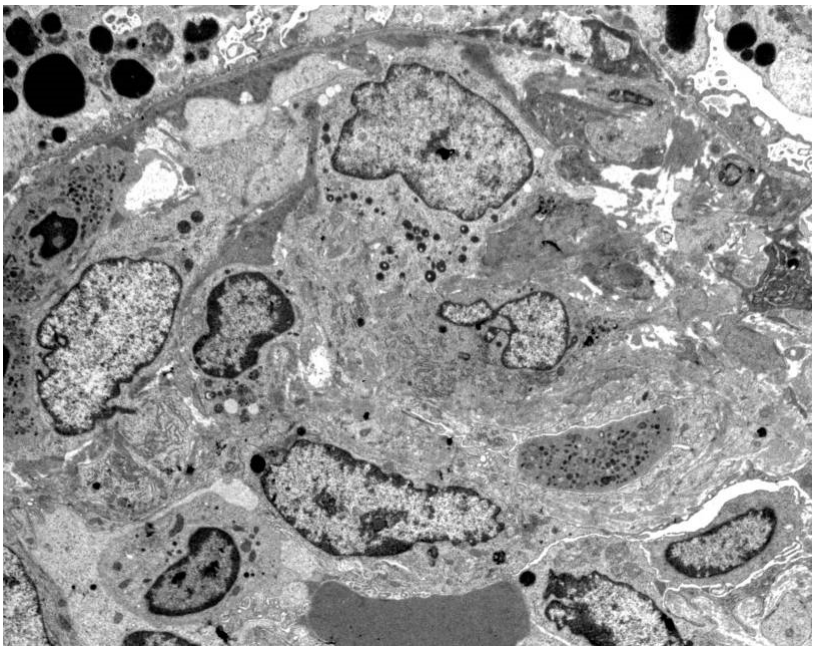
Staphylococcal Urinary Tract Infection and Nephritis



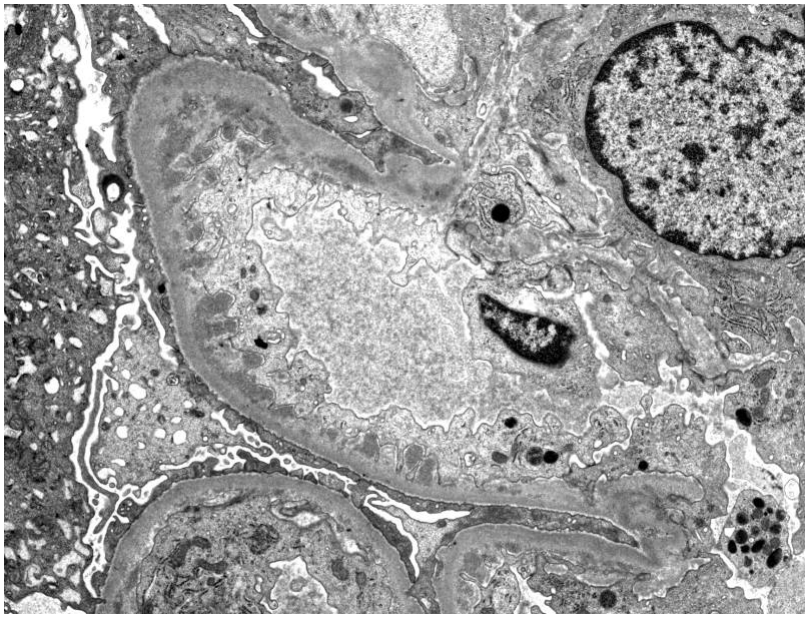
Staphylococcal Urinary Tract Infection and Nephritis



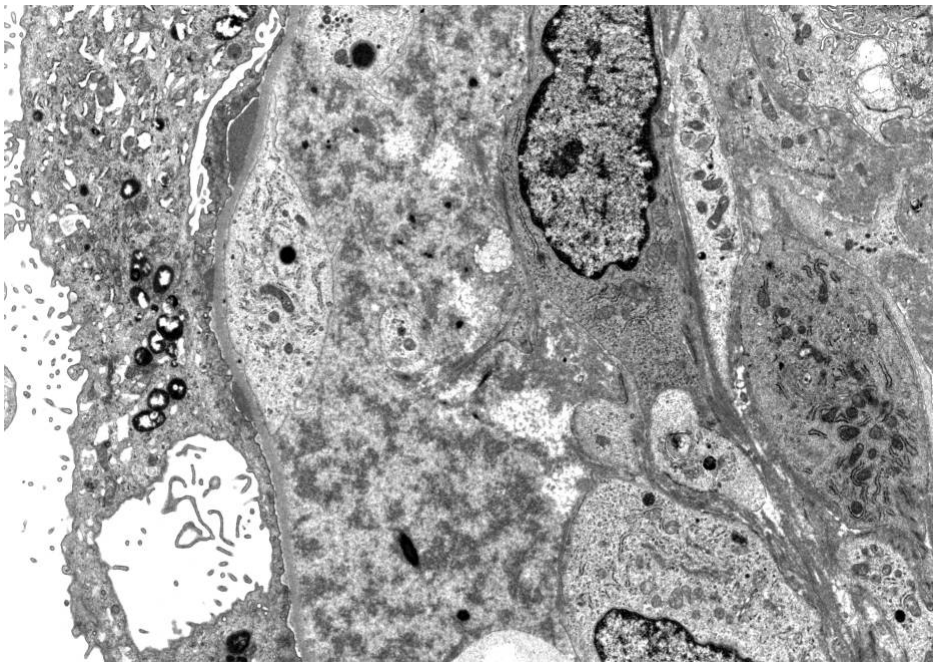
Staphylococcal Urinary Tract Infection and Nephritis



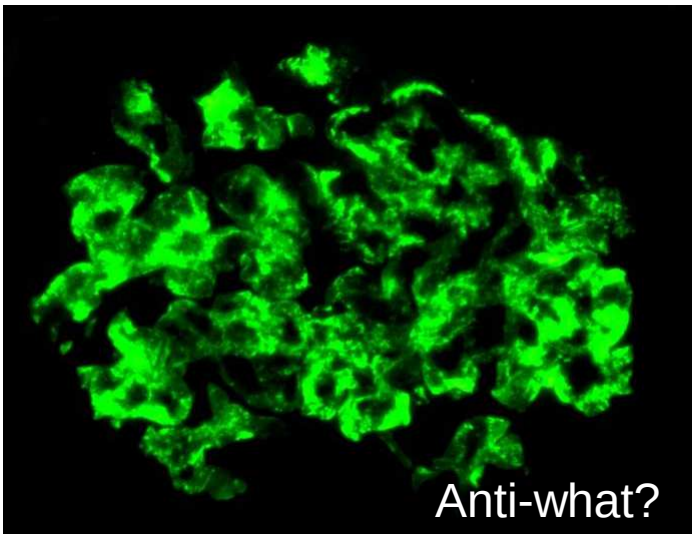
Staphylococcal Urinary Tract Infection and Nephritis



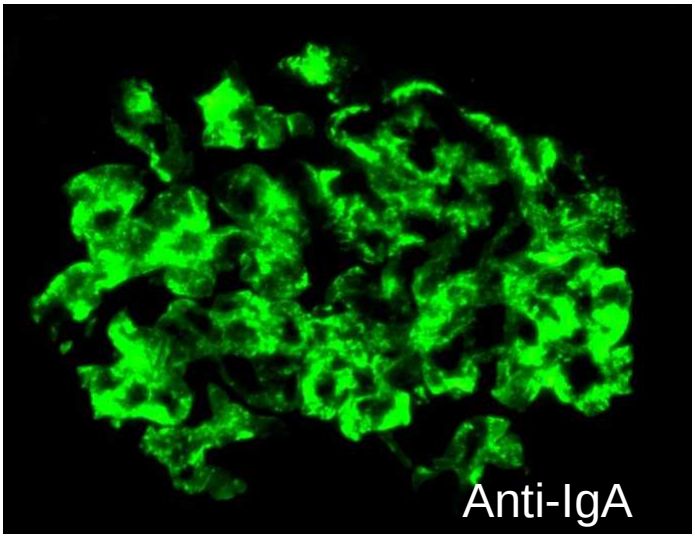
Staphylococcal Urinary Tract Infection and Nephritis



Staphylococcal Urinary Tract Infection and Nephritis



Staphylococcal Urinary Tract Infection and Nephritis



IgG trace, IgA 2-3+, IgM 0+, C3 3+, C1Q 0+, kappa LC 1+, lambda LC 1+, fibrin 0+

Features favoring IgA-dominant IgA-dominant infectious GN over IgA nephropathy

Clinical features

- ✓ Intercurrent culture-documented staphylococcal infection
- ✓ Hypocomplementemia
- ✓ Presentation in older age
- History of diabetes mellitus
- ✓ Acute renal failure at presentation

Pathologic features

- ✓ Endocapillary proliferation with neutrophil infiltration on LM
- ✓ Stronger staining for C3 than IgA on IF
- ‘Starry sky’ pattern on IF
- ✓ Subepithelial ‘humps’ on EM

Nasr SH, D'Agati VD. Nephron Clin Pract. 2011;119(1):c18-25.

Diagnosis

IgA-dominant infection-associated glomerulonephritis with diffuse proliferative glomerulonephritis

(“Infection-associated” not “post-infectious”)

Clinicopathologic features of IgA-dominant infection-associated glomerulonephritis: a pooled analysis of 78 cases.

Bu R, Li Q, Duan ZY, Wu J, Chen P, Chen XM, Cai GY. Am J Nephrol. 2015;41(2):98-106.

Table 2. Comparison of clinical parameters between remission, persistent renal dysfunction, end-stage renal disease and dead patients

Variables	RFI group (n = 42)	PRD group (n = 9)	ESRD group (n = 15)	Death group (n = 11)
Age, years (≥65/<65)	11/31	4/5	9/6	8/3
Age, years	54±15	57±22	64±16	67±17
Gender, M/F	34/8	5/4	14/1	9/2
Region, Asians/Non-Asians	25/17	6/3	6/9	5/6
AKI at presentation, n (%)	34 (81.0)	6 (66.7)	15 (100)	10 (90.9)
DM	5 (11.9)	2 (22.2)	7 (46.7)	4 (36.4)
Hypertension	9 (21.4)	3 (33.3)	1 (6.7)	5 (45.5)
Heart diseases	5 (11.9)	0	4 (26.7)	4 (36.4)
Malignancy	7 (16.7)	0	2 (13.3)	3 (27.3)
Hypocomplementemia	24 (60)	6 (66.7)	7 (46.7)	6 (54.5)
Hematuria	42 (100)	8 (88.9)	15 (100)	10 (90.9)
Proteinuria, g/day	4.01±3.62 (n = 30)	5.51±3.19 (n = 4)	4.10±3.02 (n = 10)	4.44±4.20 (n = 5)
Scr at onset, mg/dl	2.10±1.54 (n = 34)	1.42±0.87 (n = 4)	4.03±3.43 (n = 13)	1.52±2.13 (n = 10)
Peak Scr, mg/dl	4.51±3.03 (n = 26)	4.55±2.79 (n = 6)	8.02±3.27 (n = 6)	5.47±2.85 (n = 7)
Cultures (*staphylococcal/non-staphylococcal*)	30/9	2/2	15/0	8/1
Therapy (SI/non-SI)	12/23	0/6	0/13	5/4

Values are mean ± SD or n (%).

M = Male; F = female; SD = standard deviation; RFI = renal function improved; PRD = persistent renal dysfunction; ESRD = end stage renal disease; AKI = acute kidney injury; DM = diabetes mellitus; Scr = serum creatinine; EGFR = evaluate glomerular filtration rate; SI = steroids and/or immunosuppressants; non-SI = non-steroids and immunosuppressants.