Renal Pathology Cases
FRCPath Part 2 Harlow Course
September 2019

Ranmith Perera
Guy's and St Thomas' NHS Foundation Trust

Case 1

- 26 yr old male
- Haematuria
- UPCR 60
- Normal serum creatinine
- Normal C3/C4

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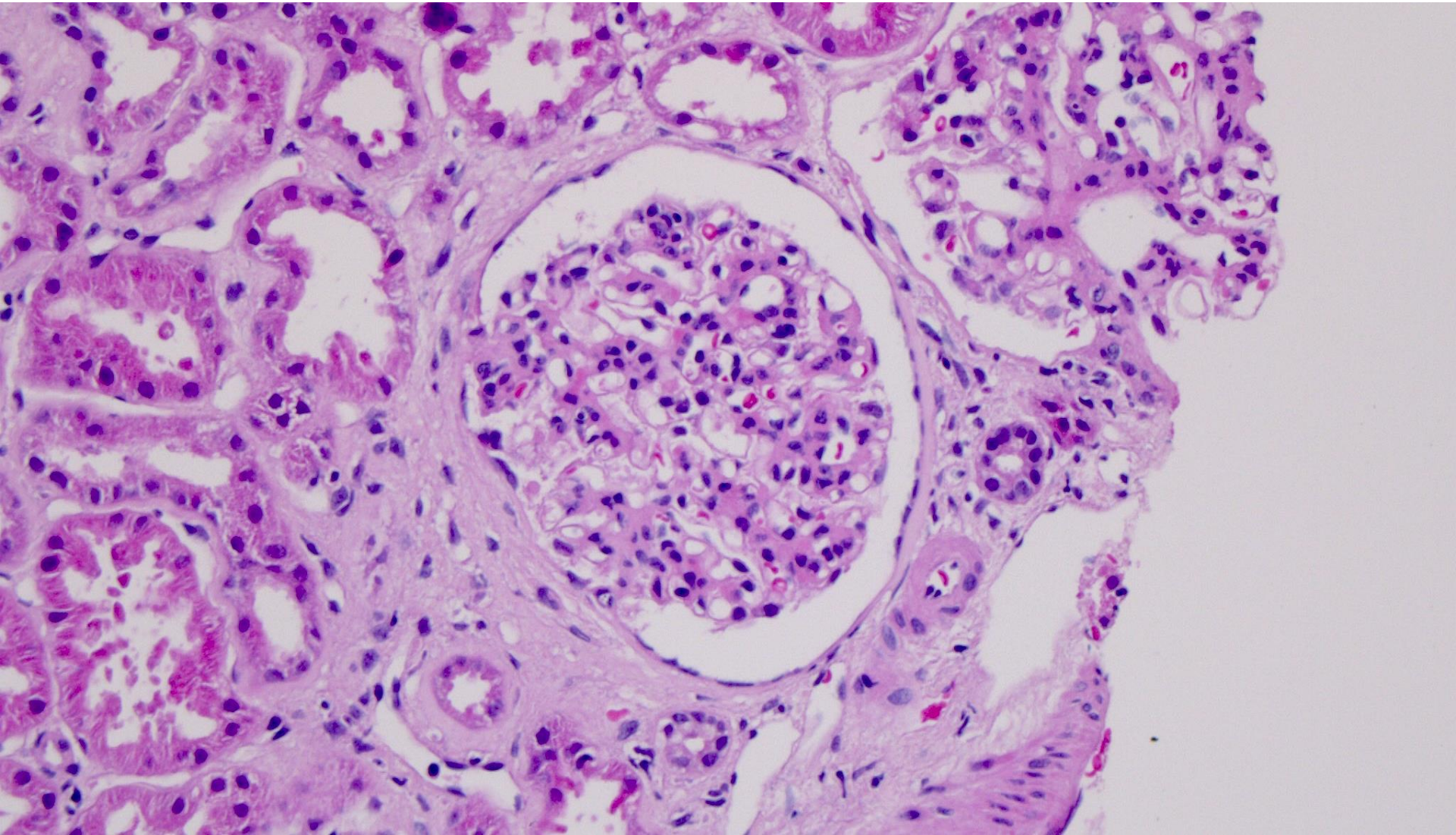
Haematuria – Glomerular cause?

- IgA nephropathy (IgAN)
- Postinfectious GN (PIGN)
- Lupus nephritis (LN)
- ANCA associated vasculitis
- Anti-GBM disease
- Henoch-Schonlein purpura (HSP)
- Cryoglobulins
- Thin basement membrane nephropathy/Alport's syndrome

H&E



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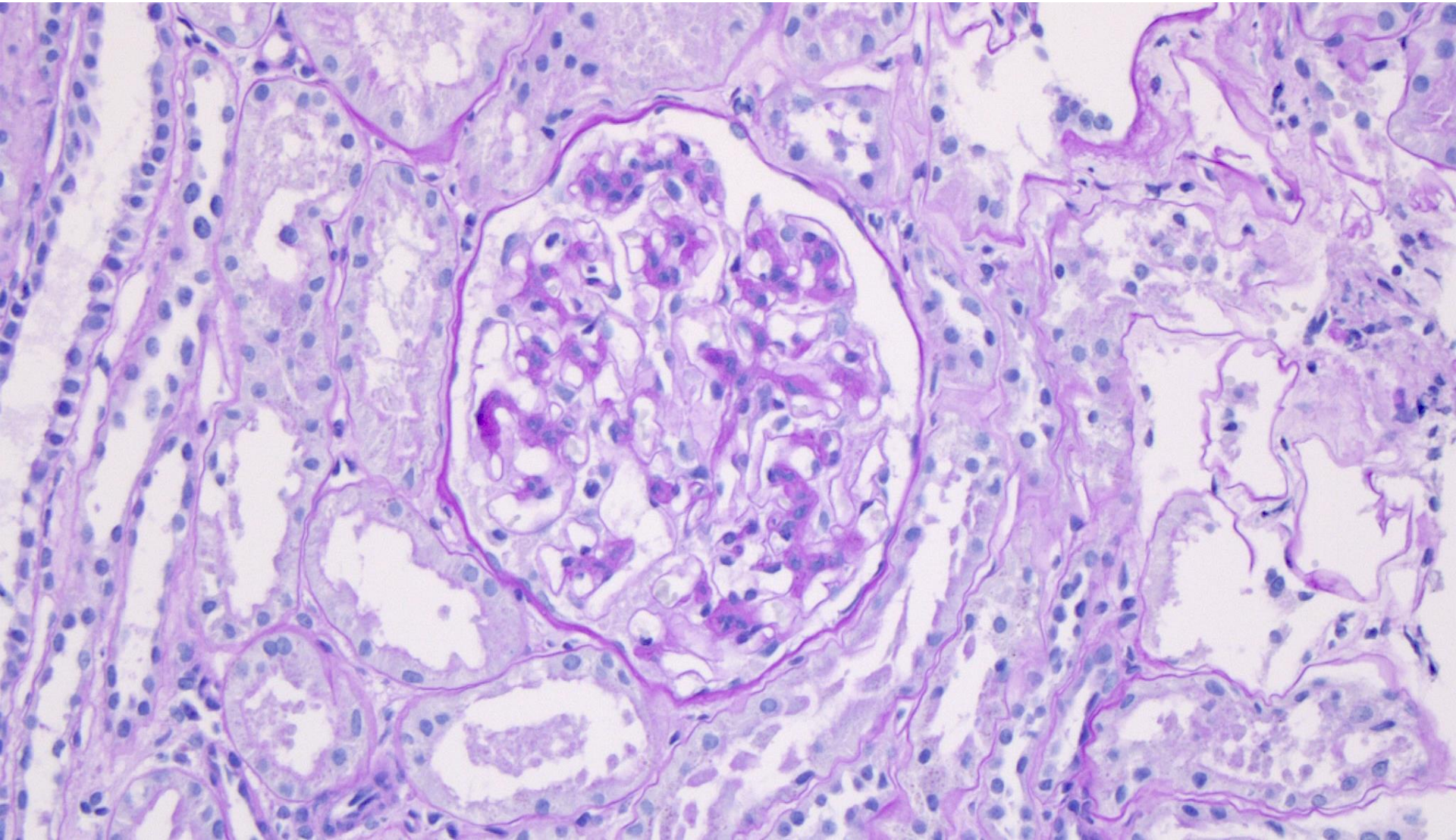
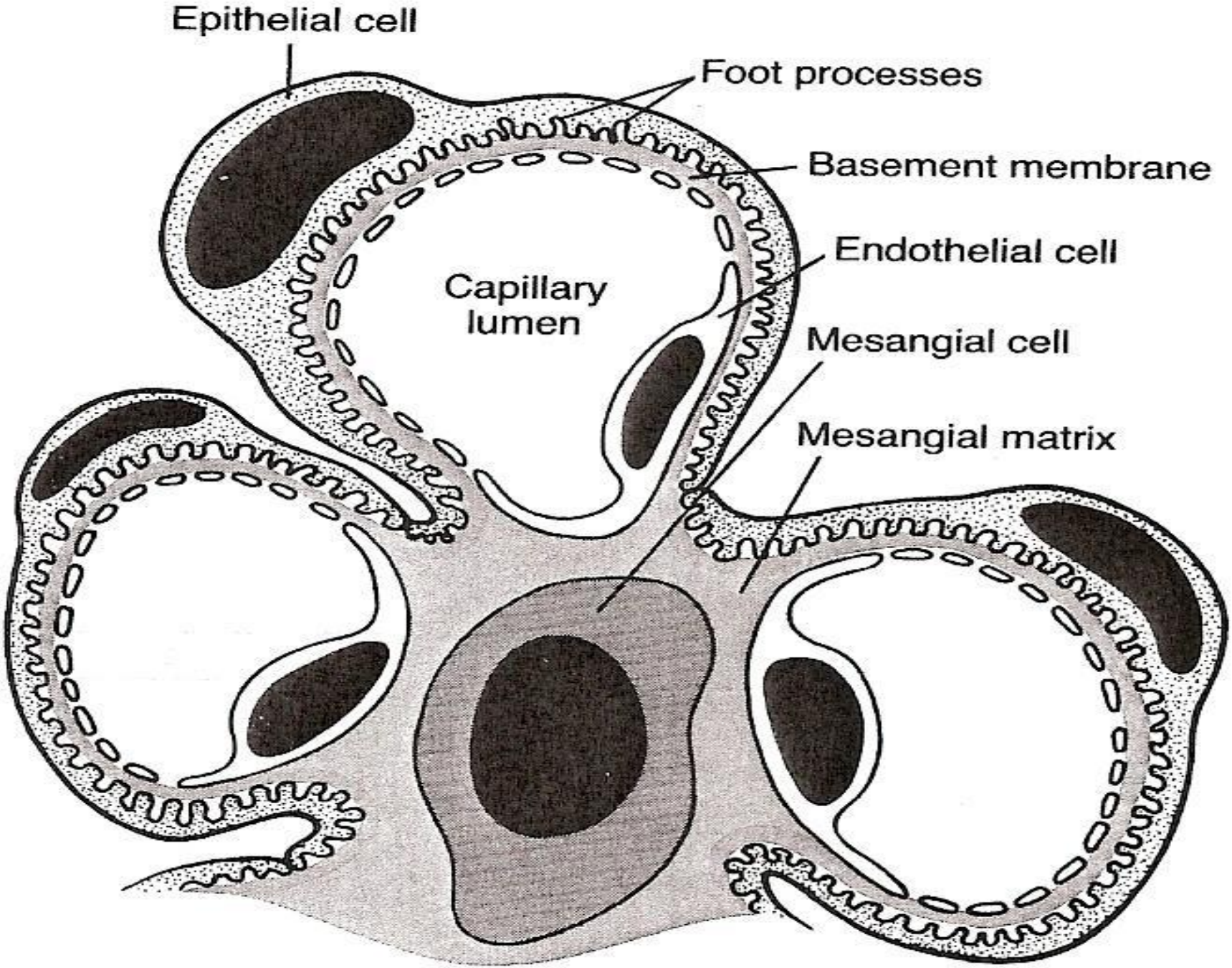
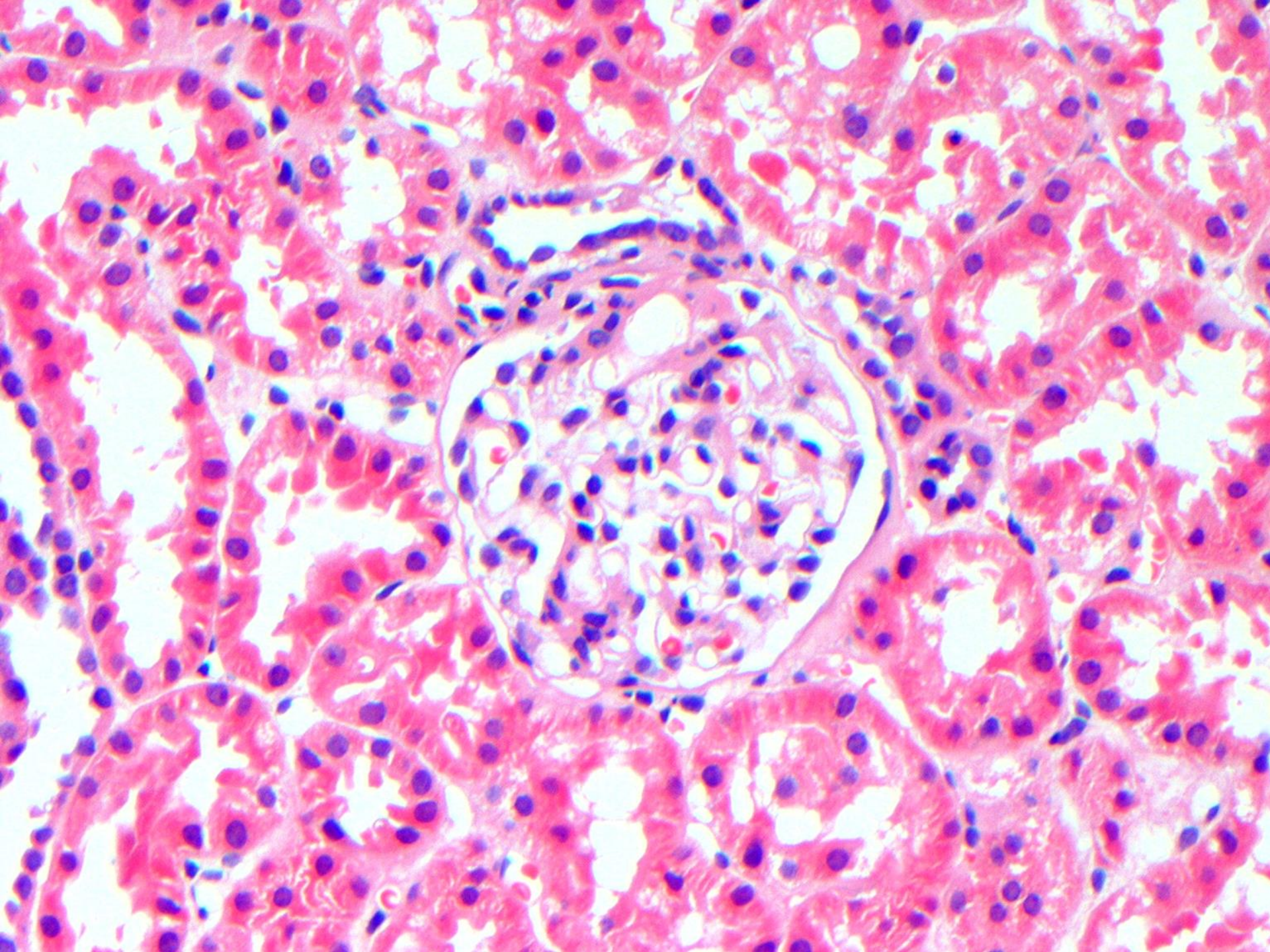


- Pattern of glomerular injury?


Epithelial cell
Foot processes
Basement membrane
Endothelial cell
Capillary lumen
Mesangial cell
Mesangial matrix



Histology associated with haematuric syndromes

- Mesangial proliferative (IgAN, HSP)
- Focal and segmental proliferative (LN, IE)
- Diffuse proliferative (PIGN, LN)
- Crescentic (Anti-GBM, ANCA)
- Membranoproliferative (PIGN, Cryoglobulins)

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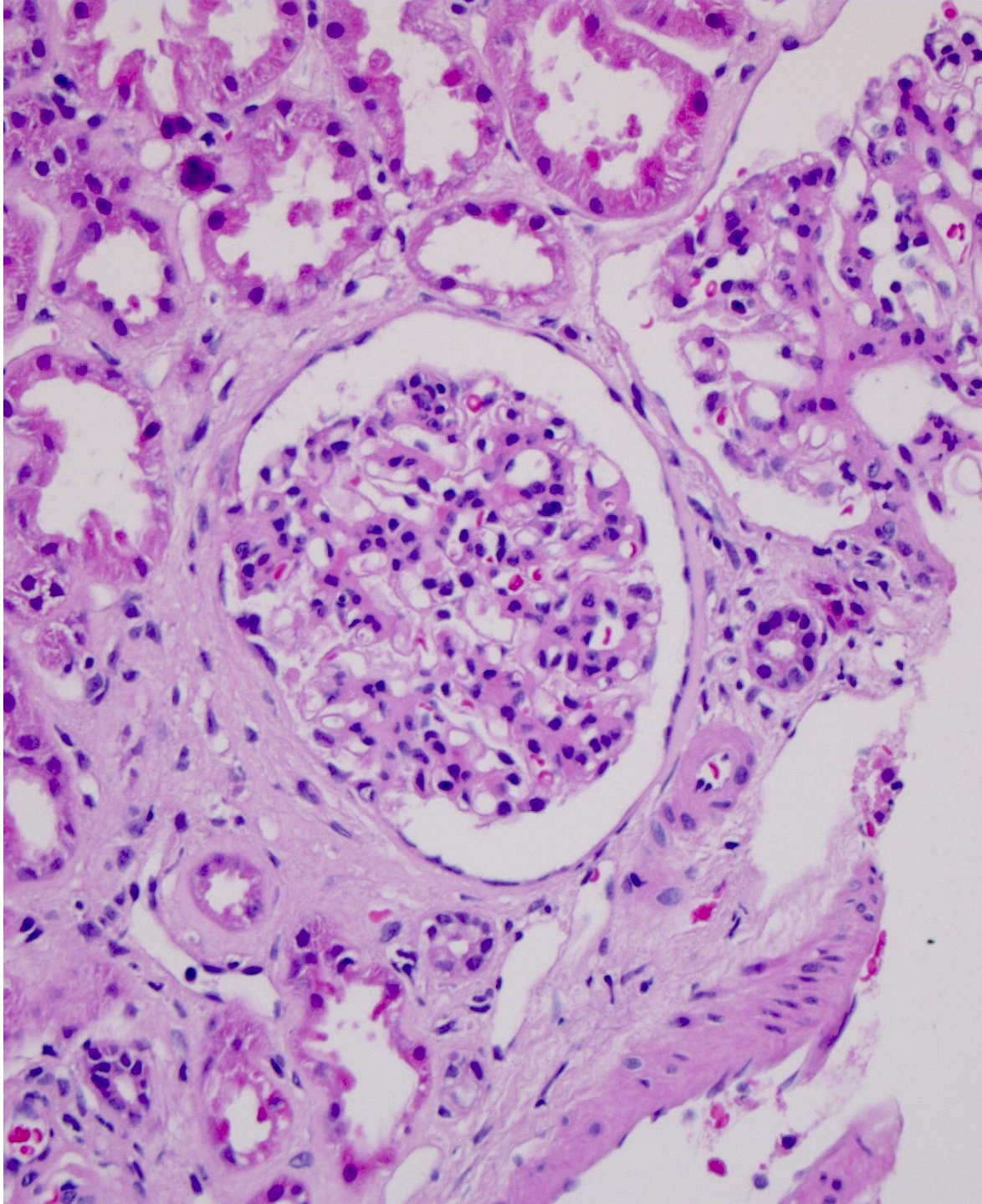
- Mesangial proliferation



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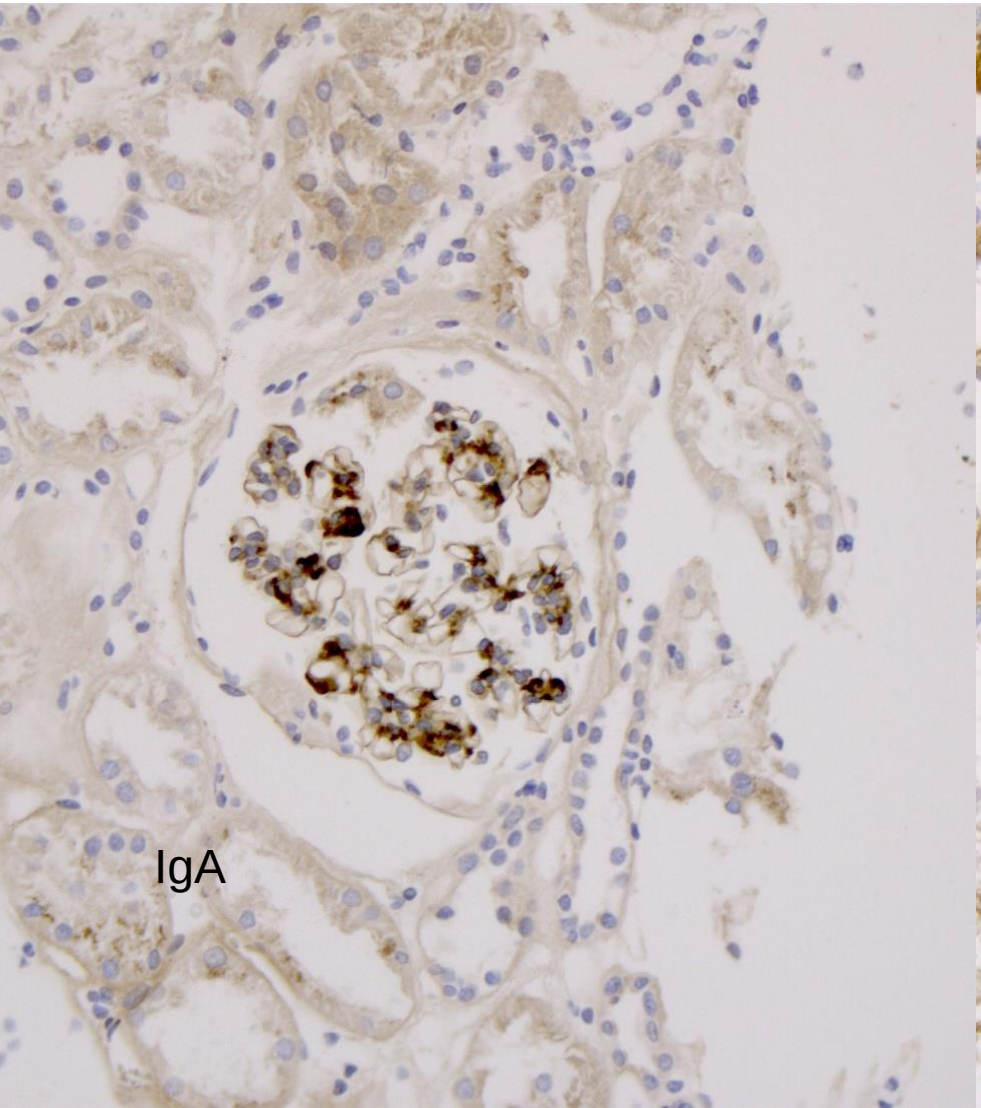

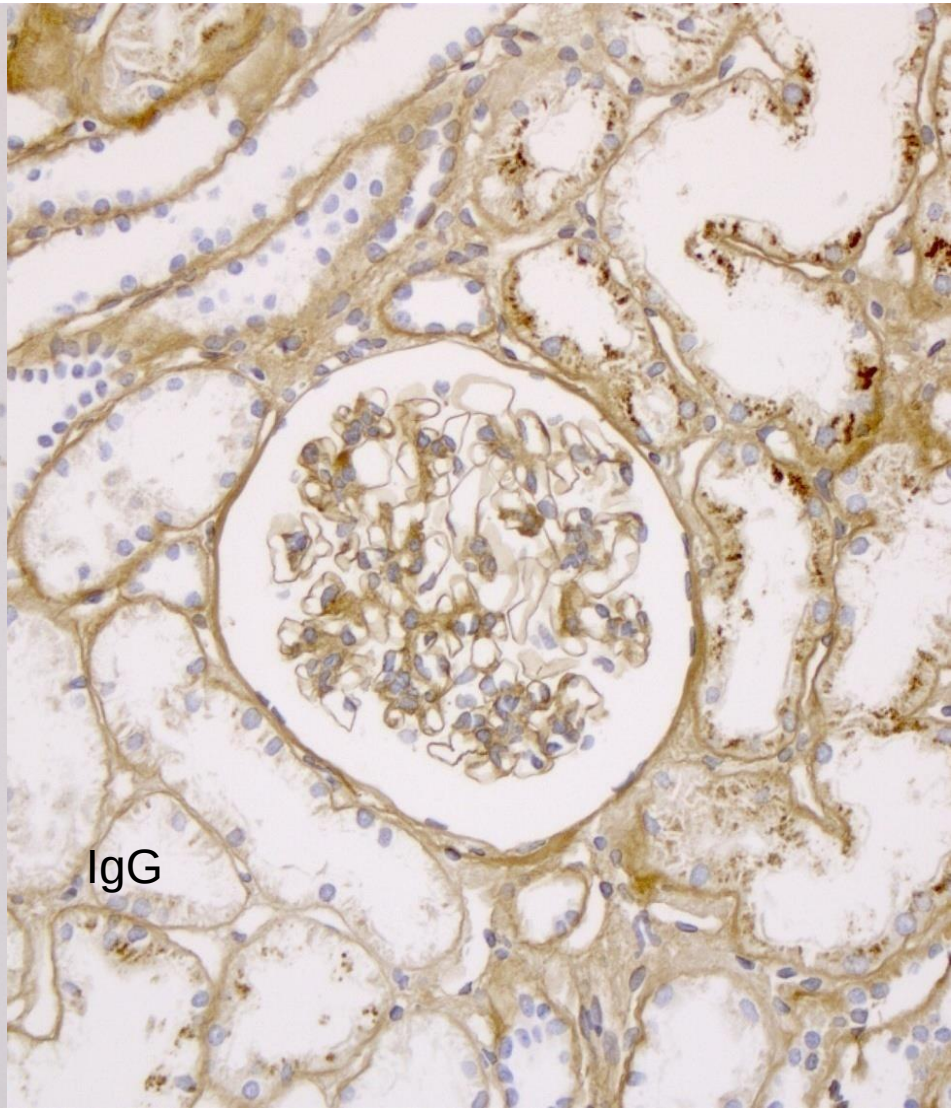

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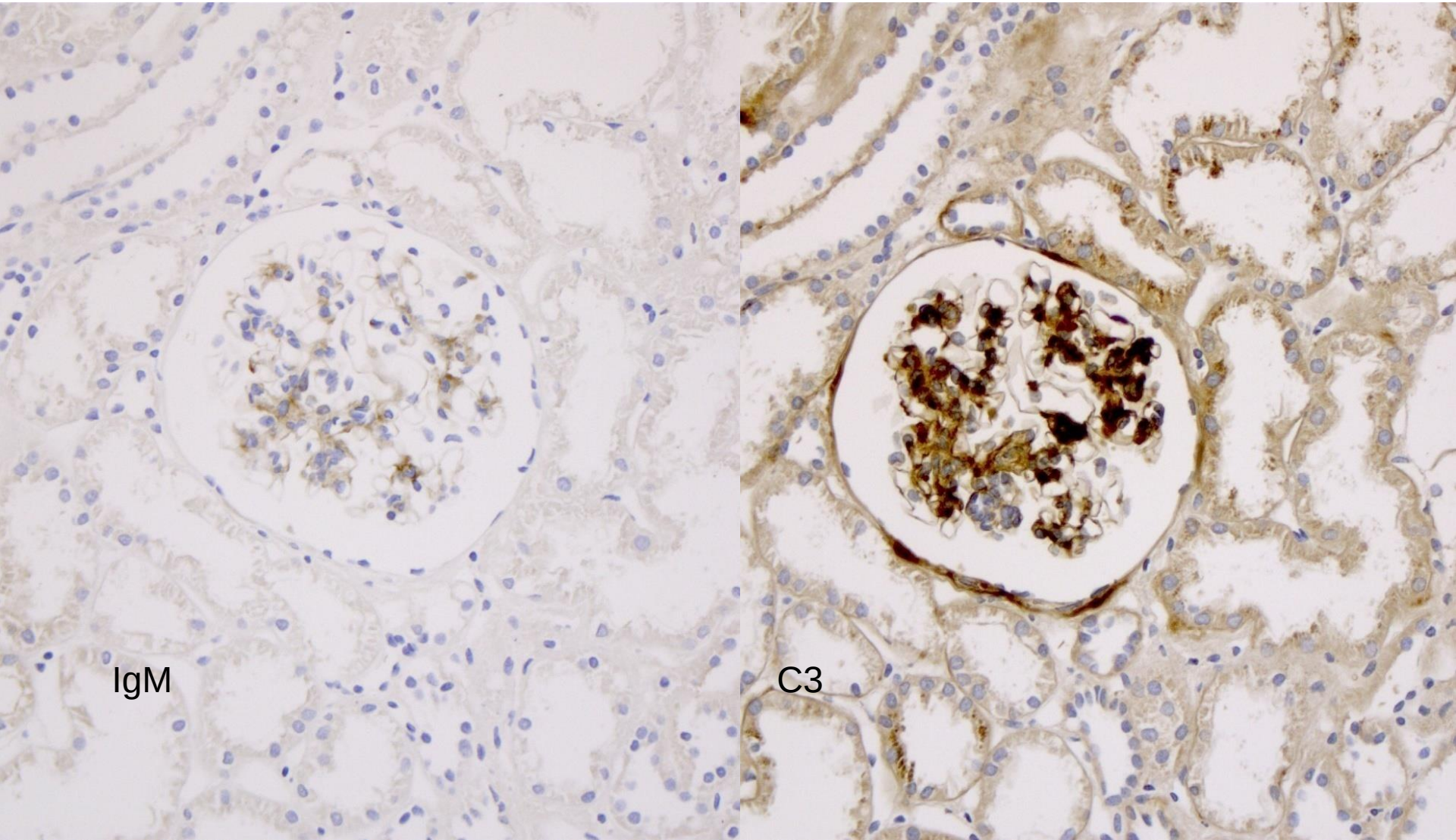

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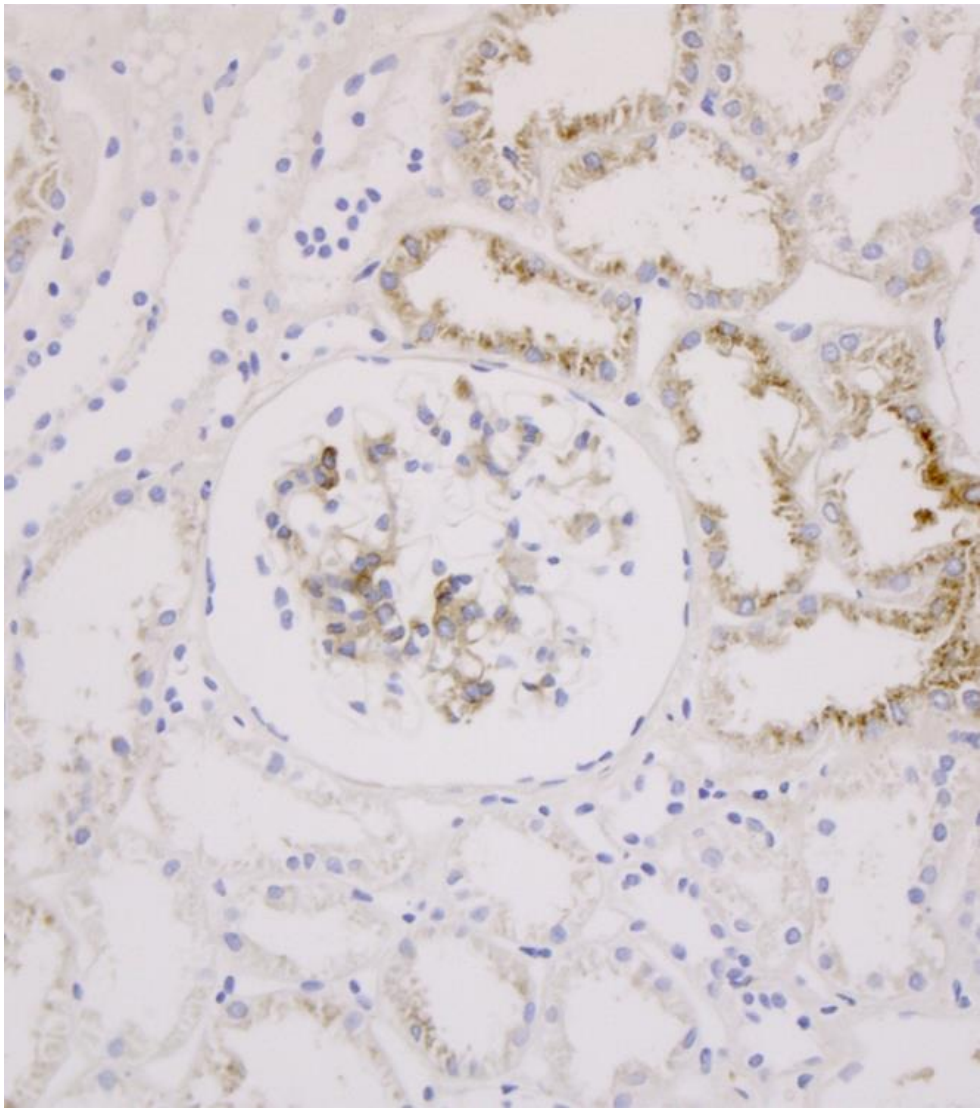

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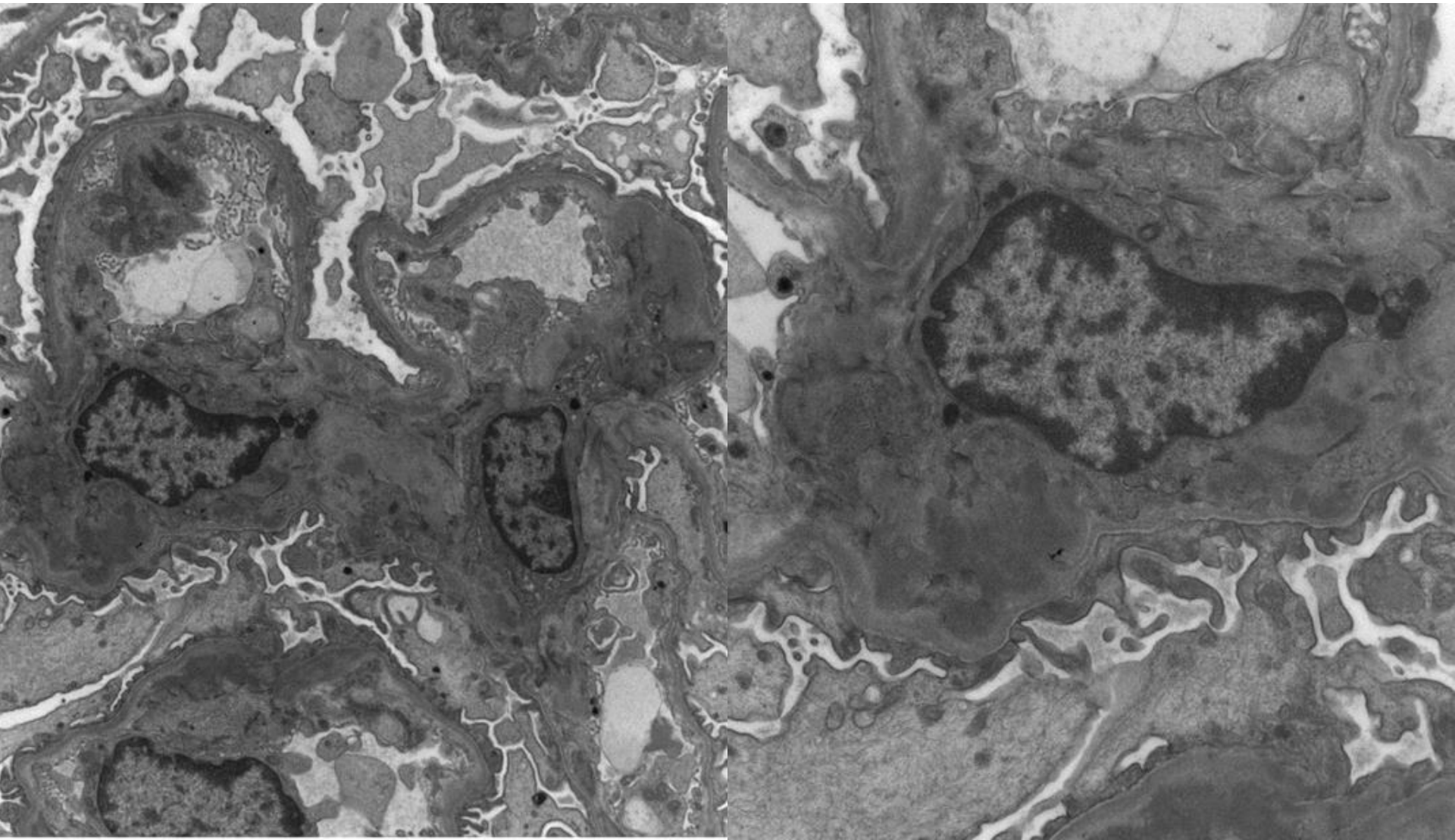

IgA nephropathy

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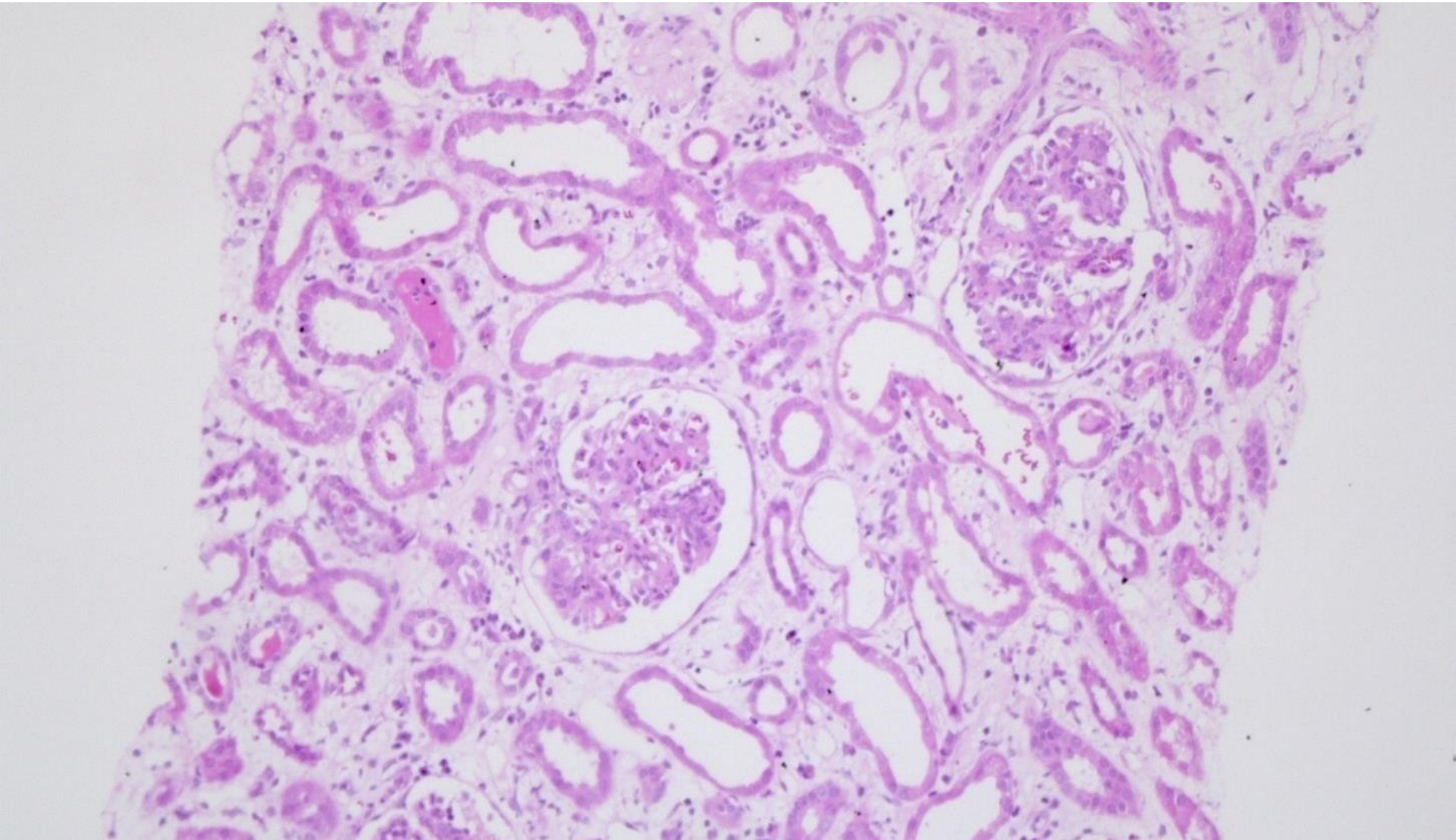
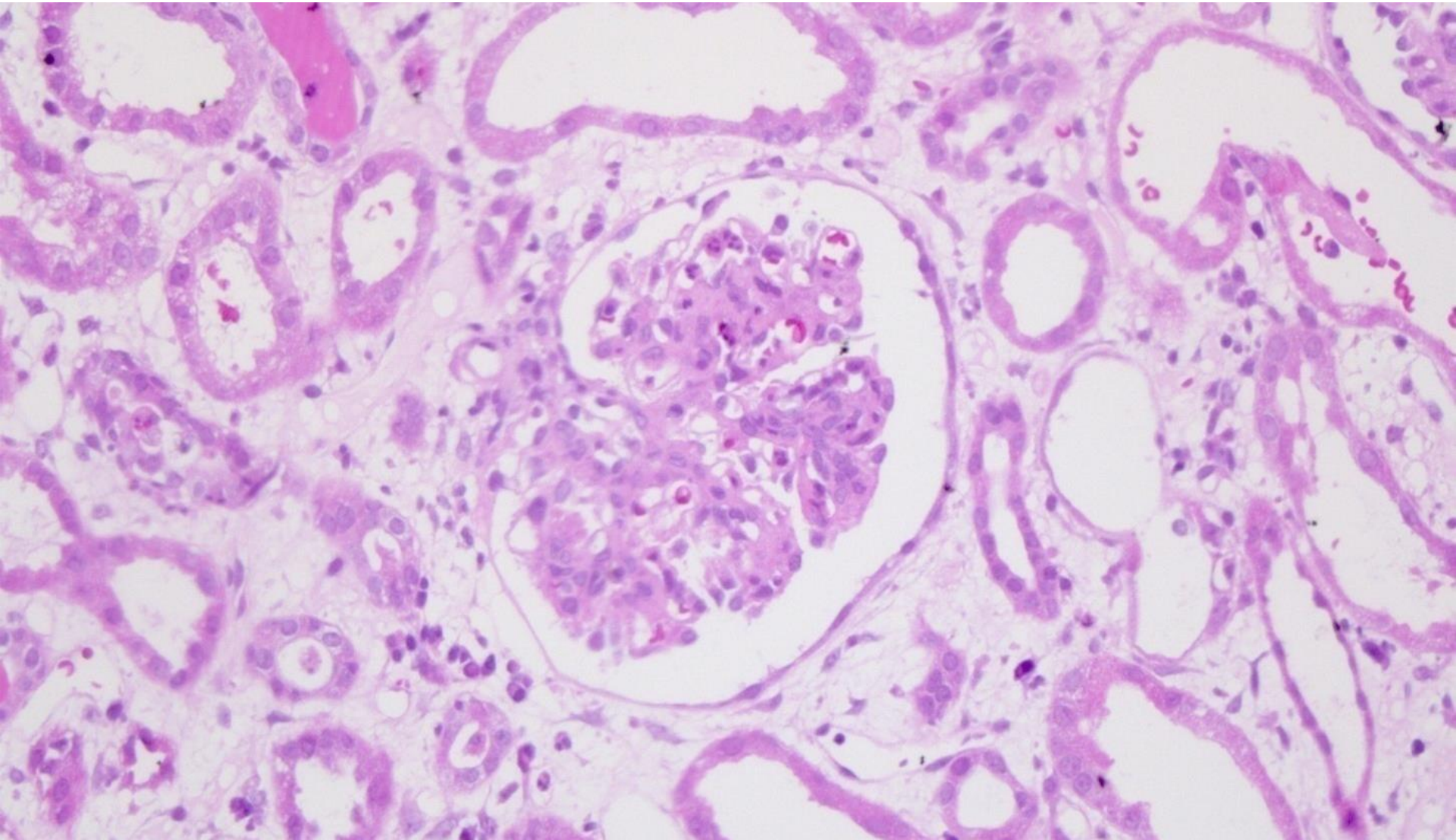
Case 2

- 22 yr old female
- Haematuria
- History of malaise and sore throat 3 weeks ago
- UPCR 120
- Rising serum creatinine
- Low C3 and near normal C4

H&E



H&E



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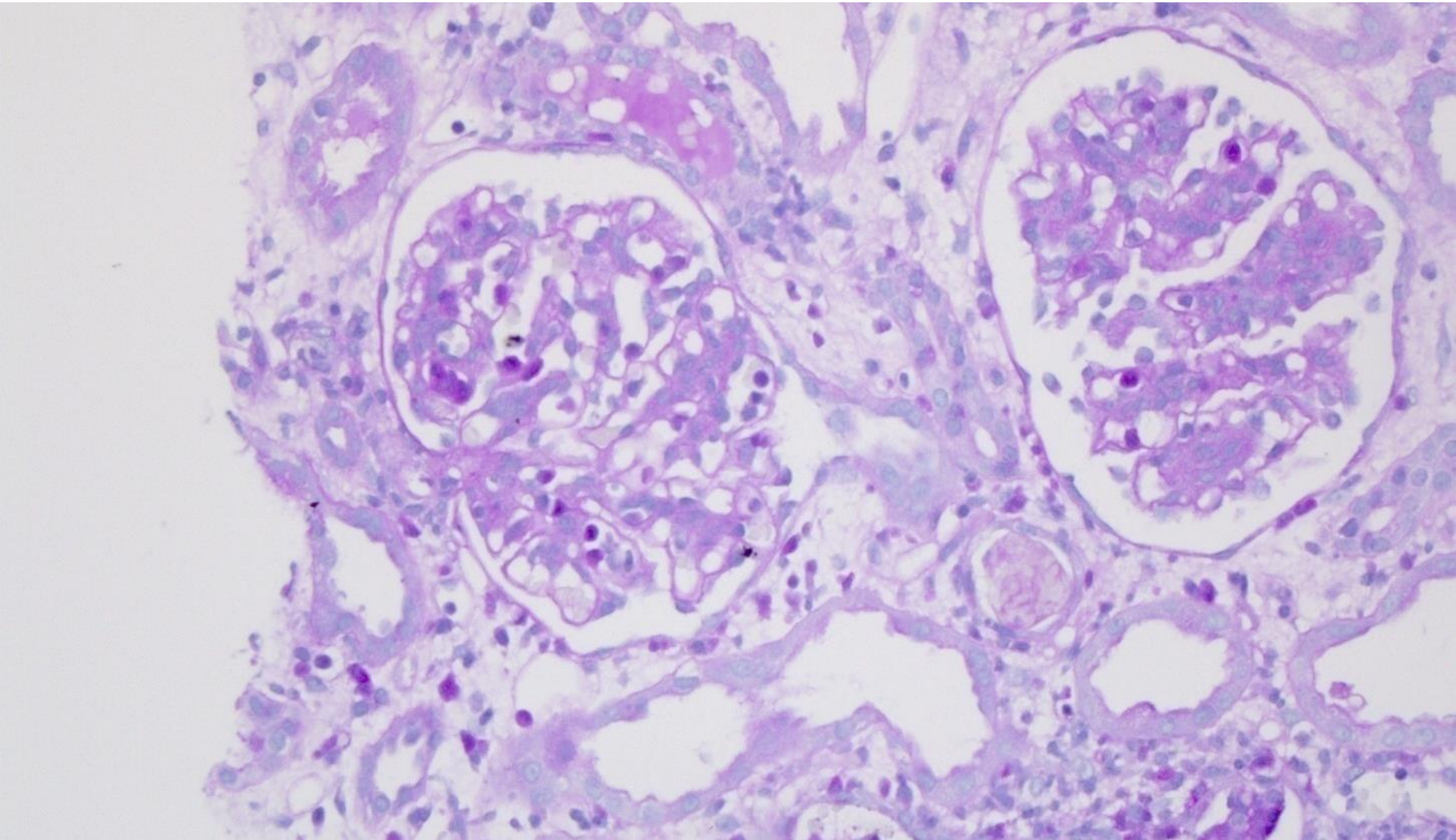

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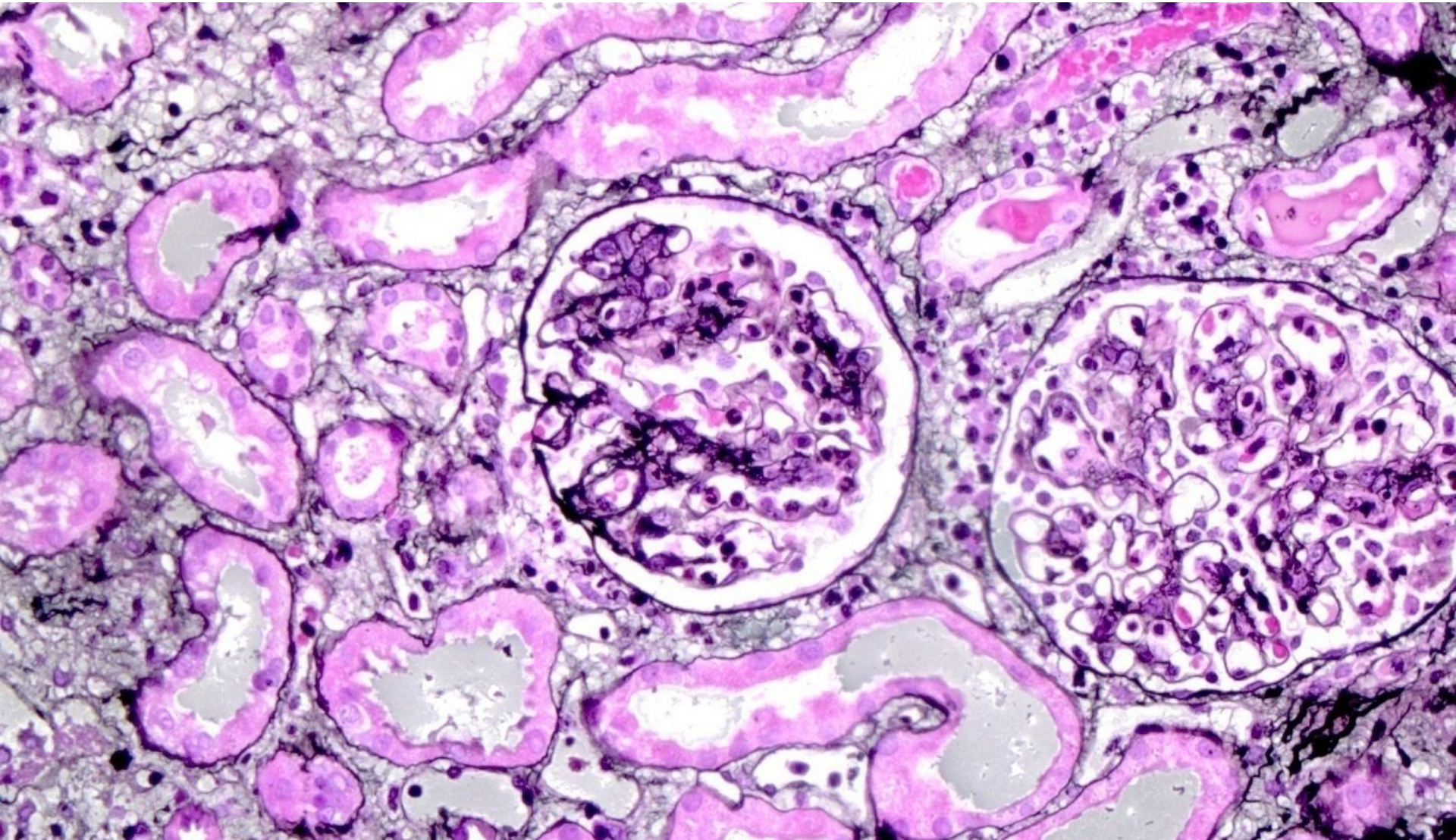
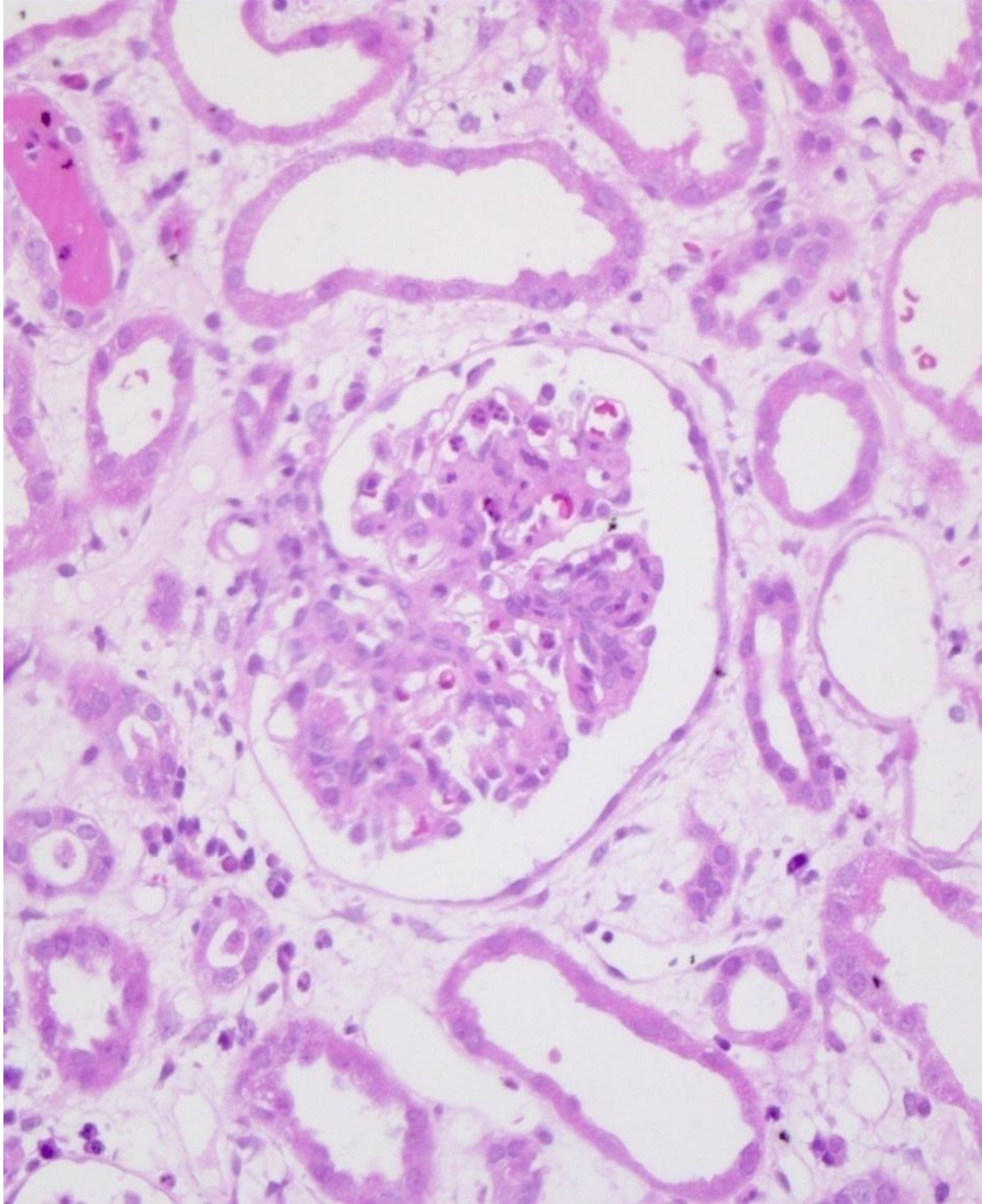


- Pattern of glomerular injury?

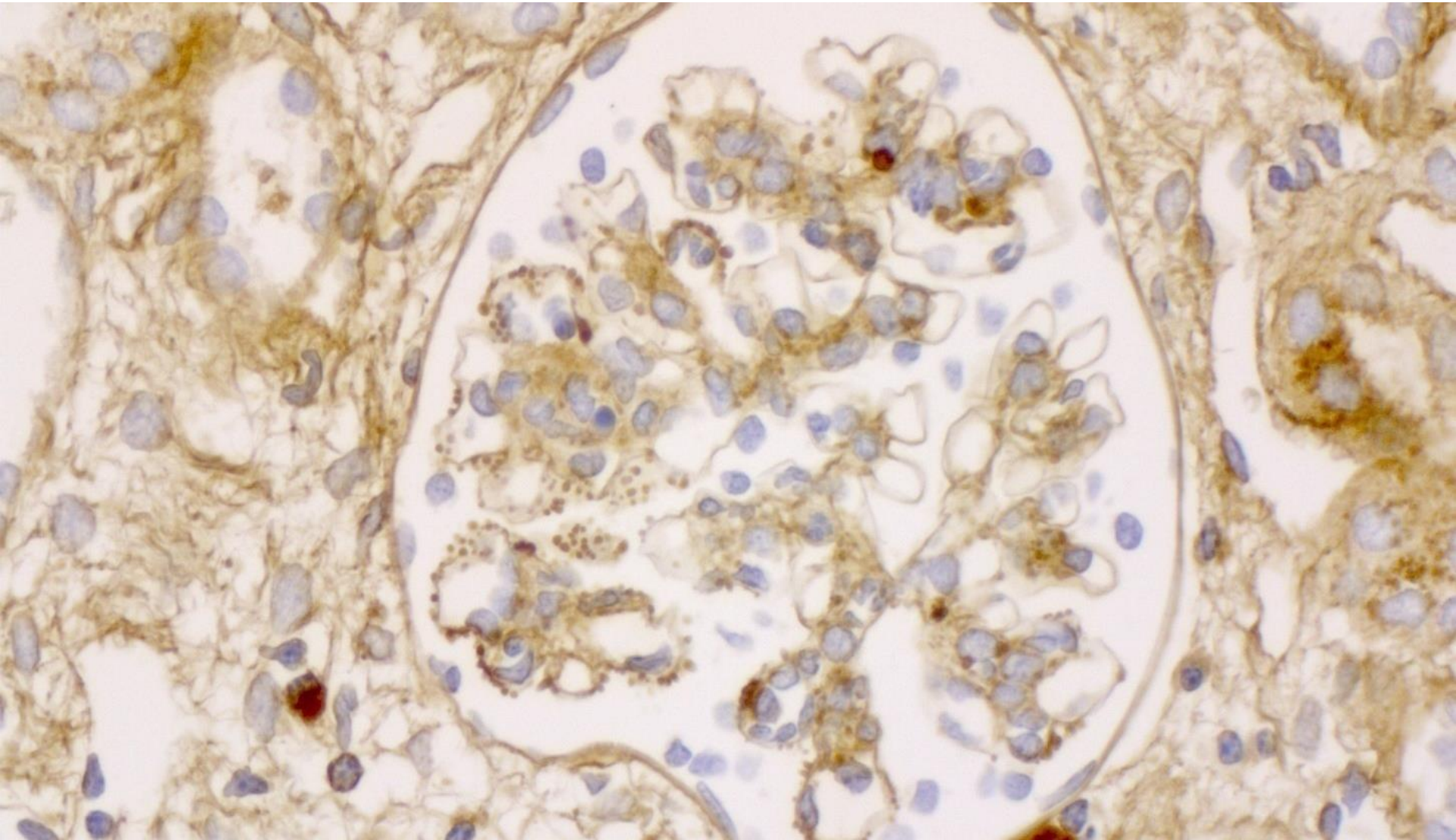
- Mesangial proliferation
- Endocapillary hypercellularity



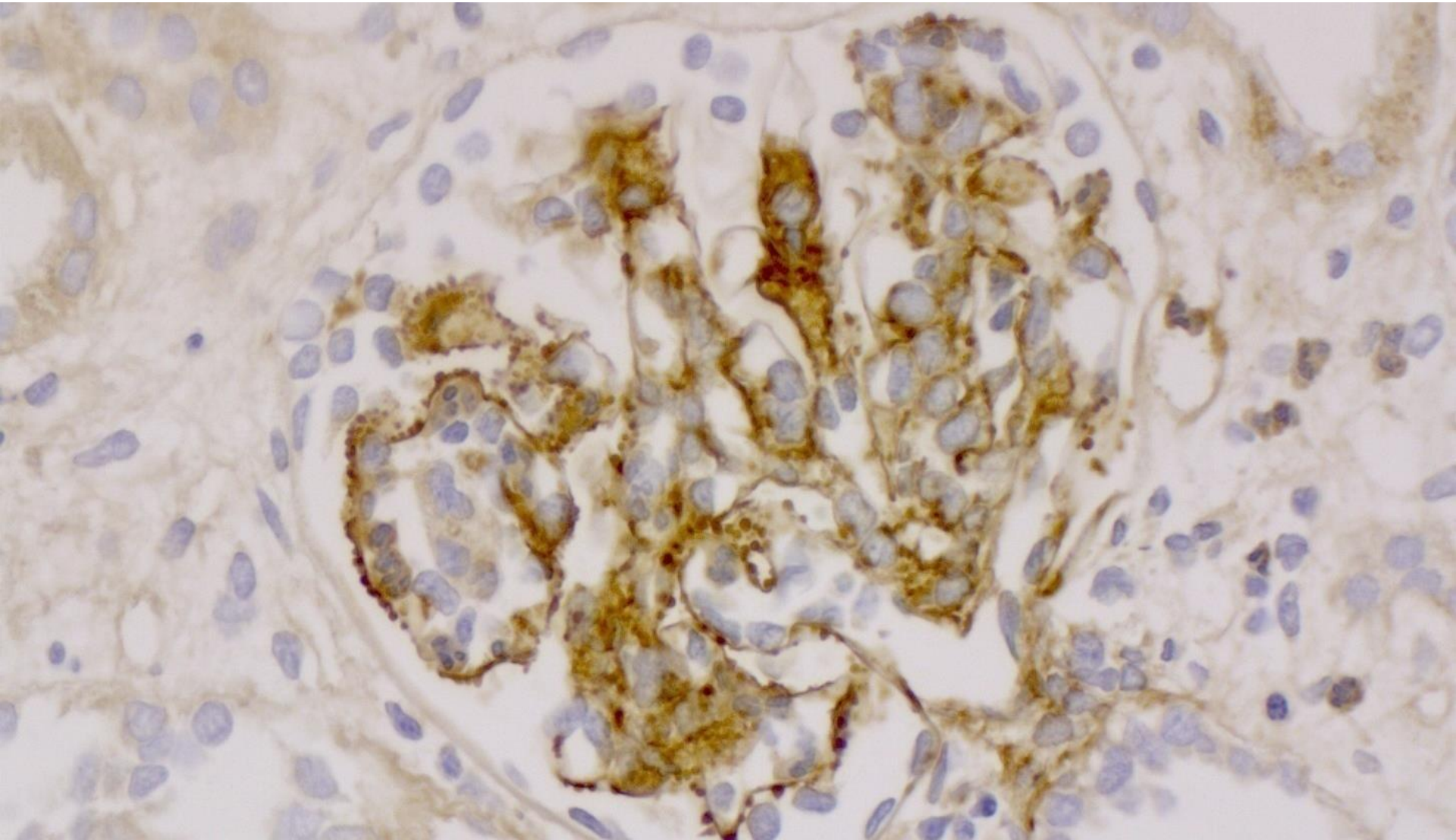
- Differential diagnosis?

- PIGN
- LN
- IgAN (HSP)

IgG



C3



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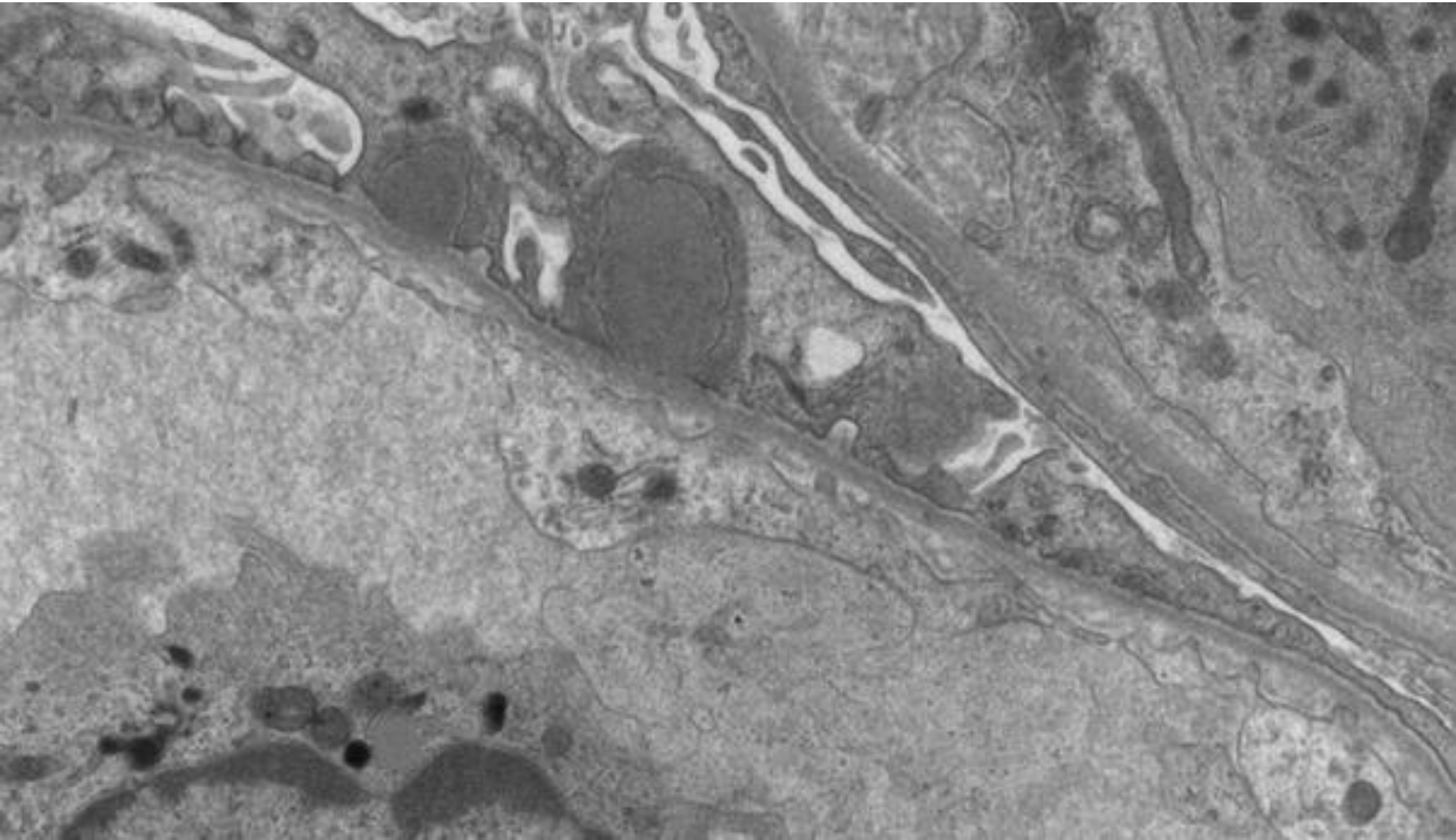

Postinfectious glomerulonephritis

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Case 3

- 69 yr old female
- Baseline serum creatinine 90 now increased to 500
- Urine dipstick: protein 3+ and blood 1+
- Normal C3/C4
- ANA negative
- pANCA + cANCA negative
- HBV/HCV/HIV negative
- Bence Jones proteins positive

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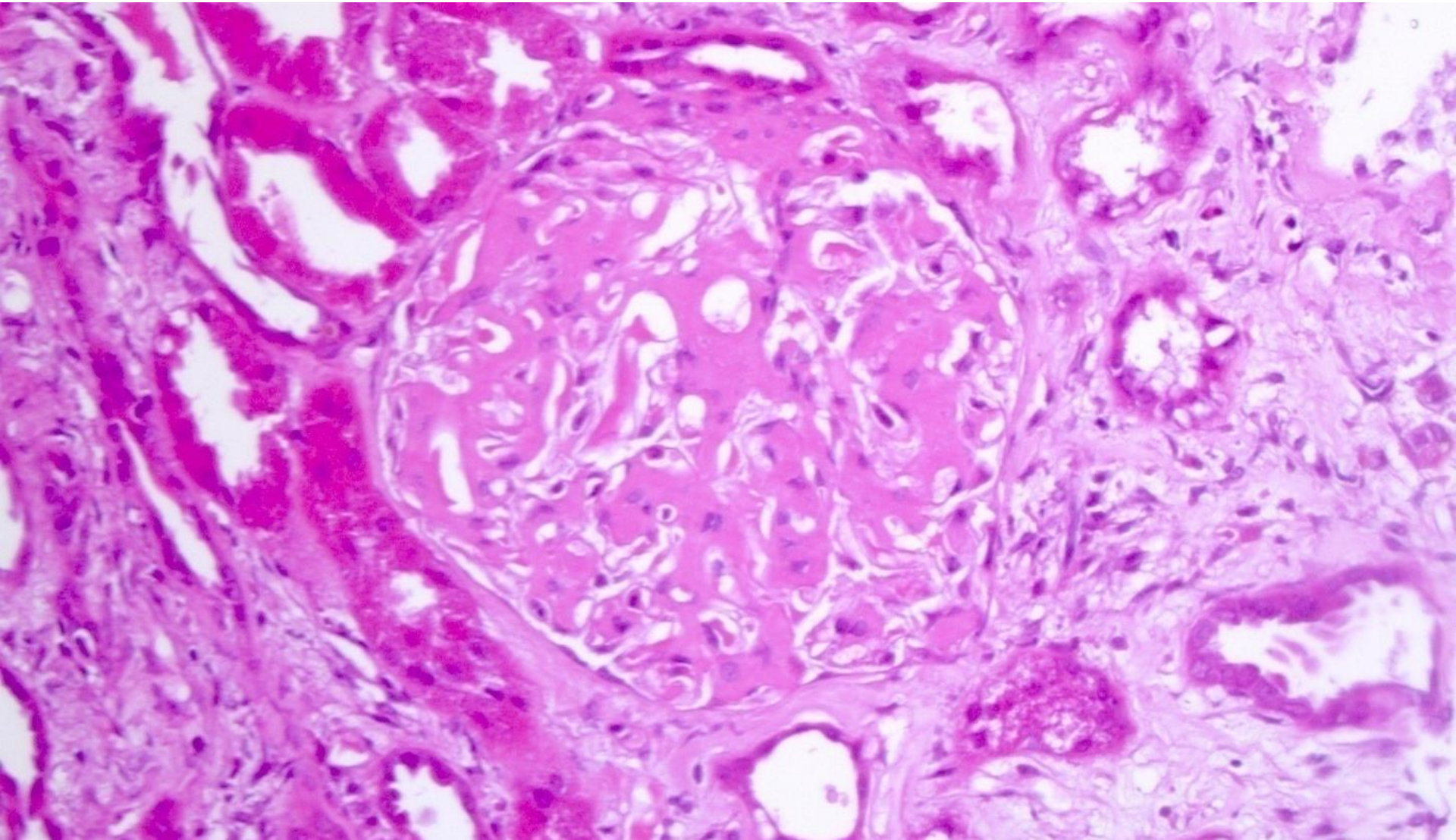
H&E

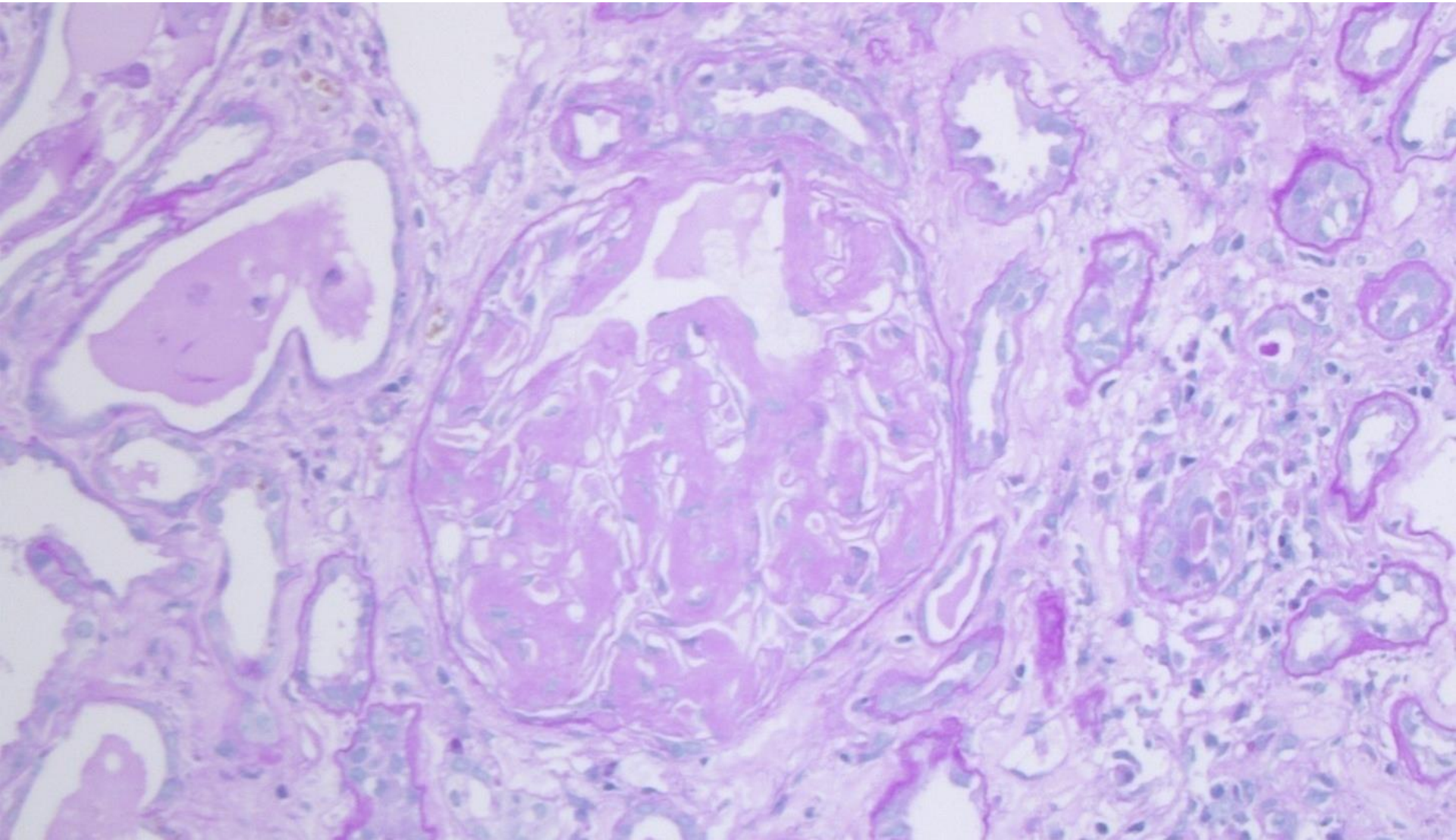


- Glomerular abnormality?

- Differential diagnosis?

- Diabetes
- Amyloid
- Monoclonal immunoglobulin deposition disease (MIDD)

PAS



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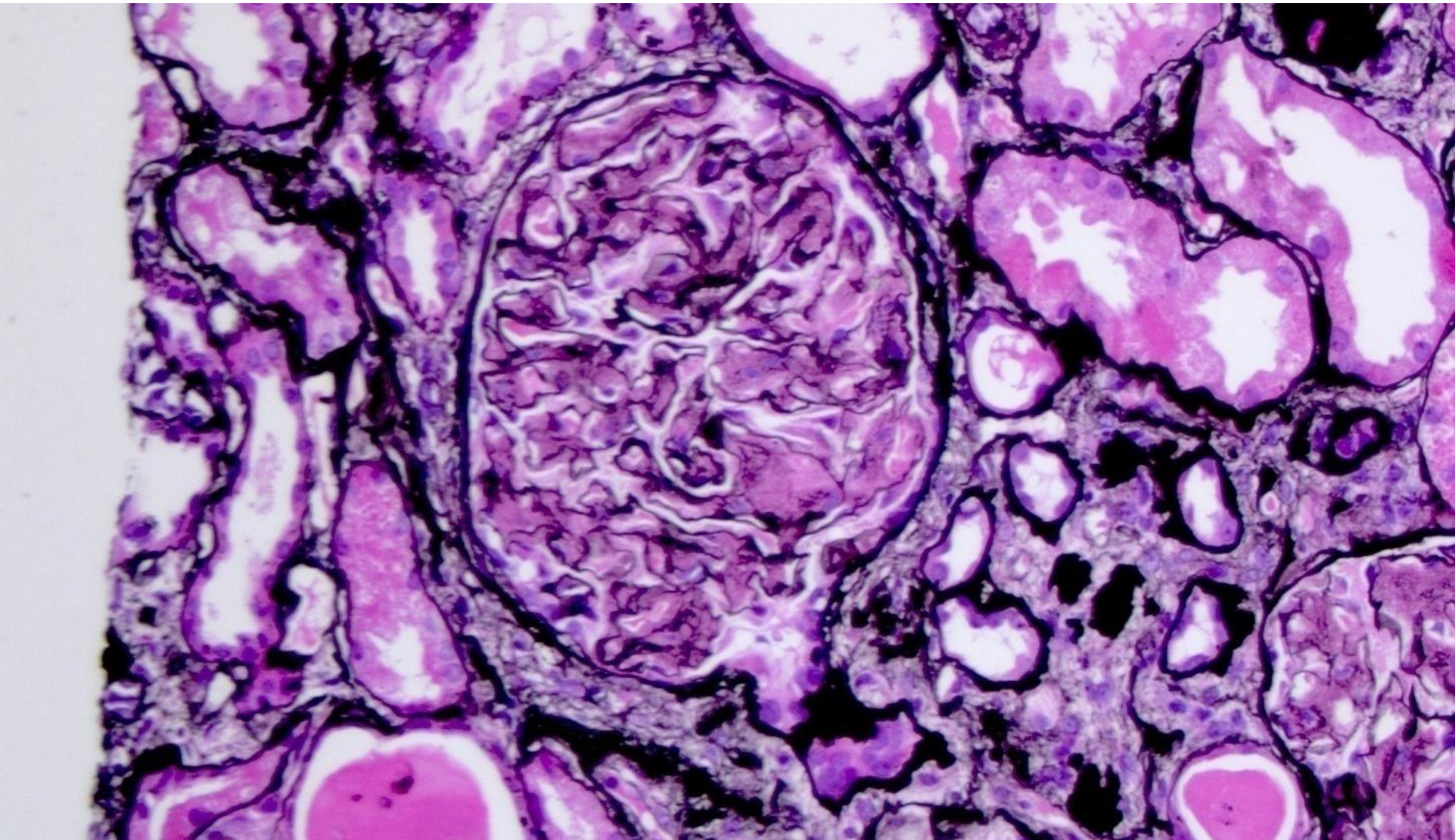

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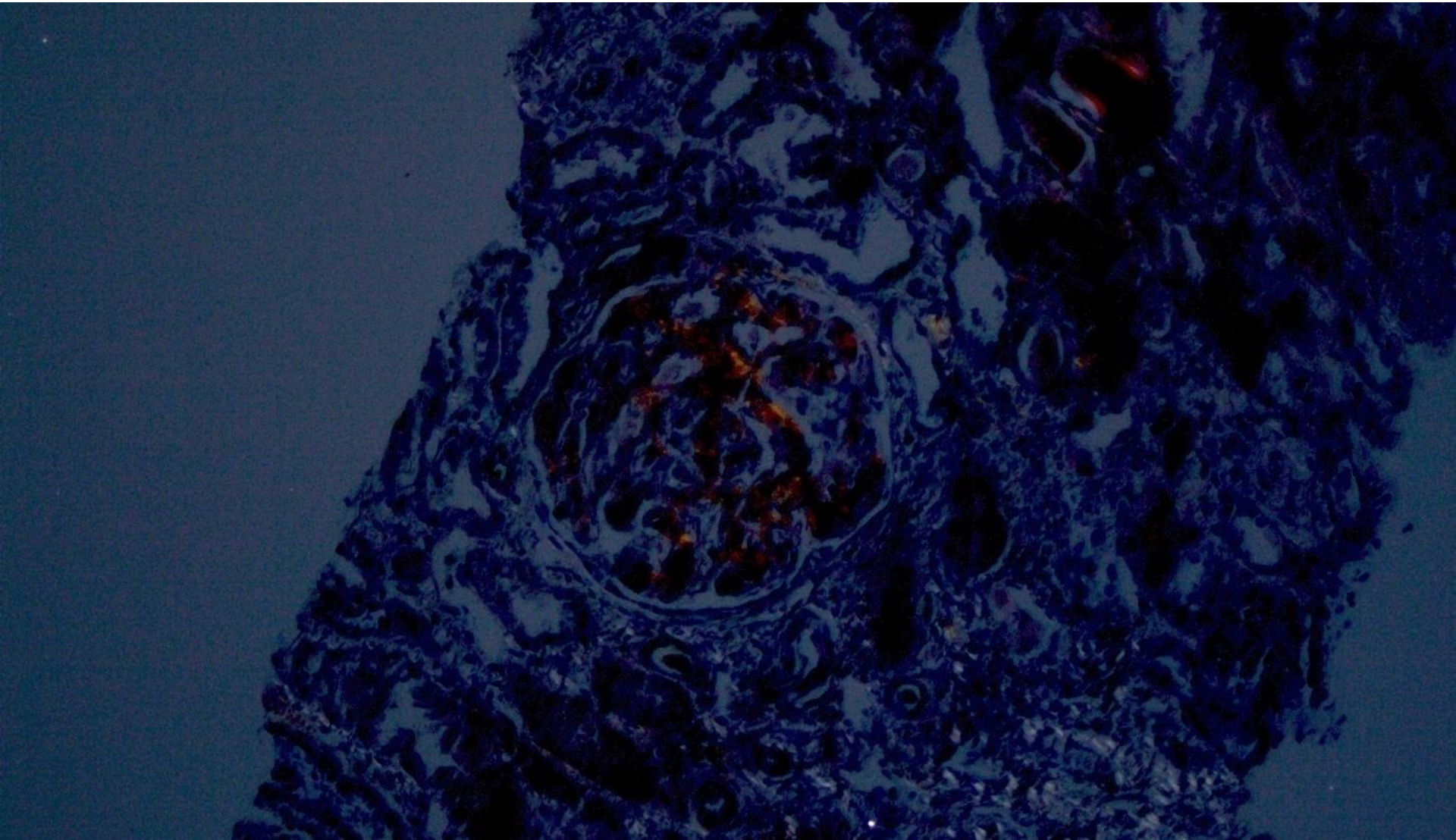
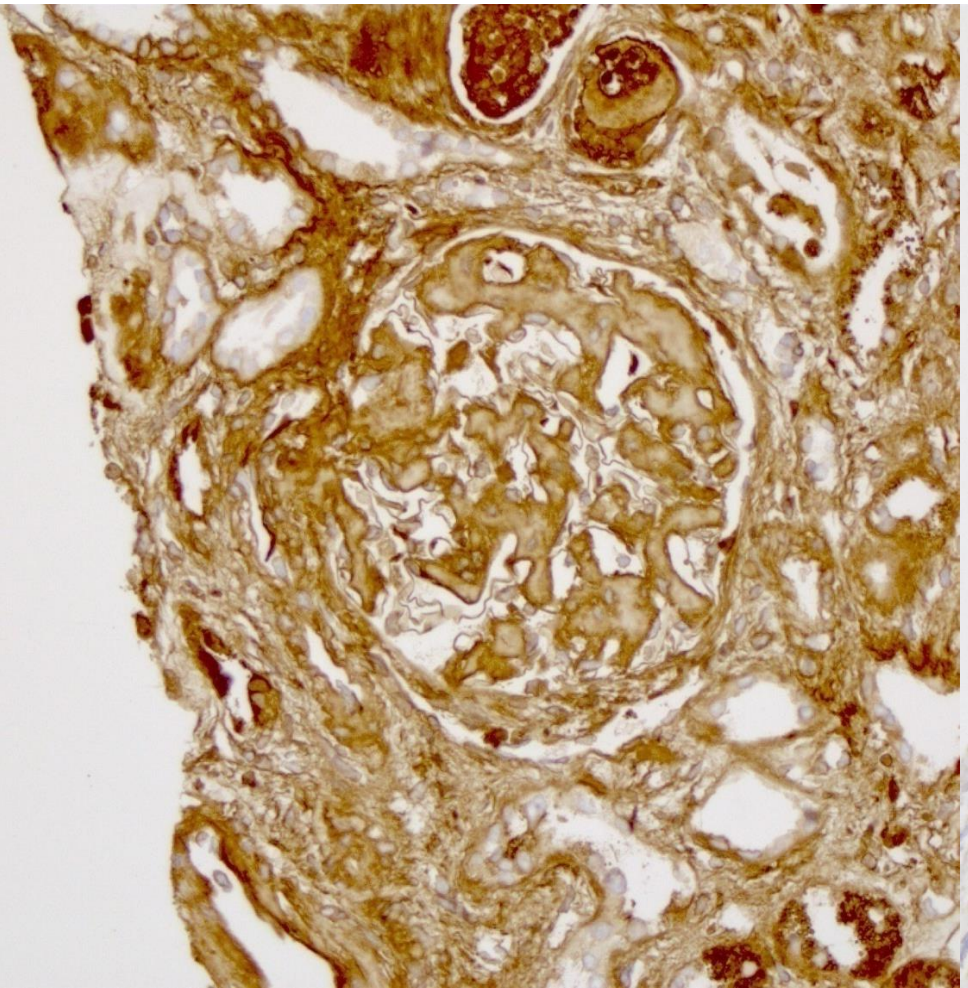


IHC

Kappa



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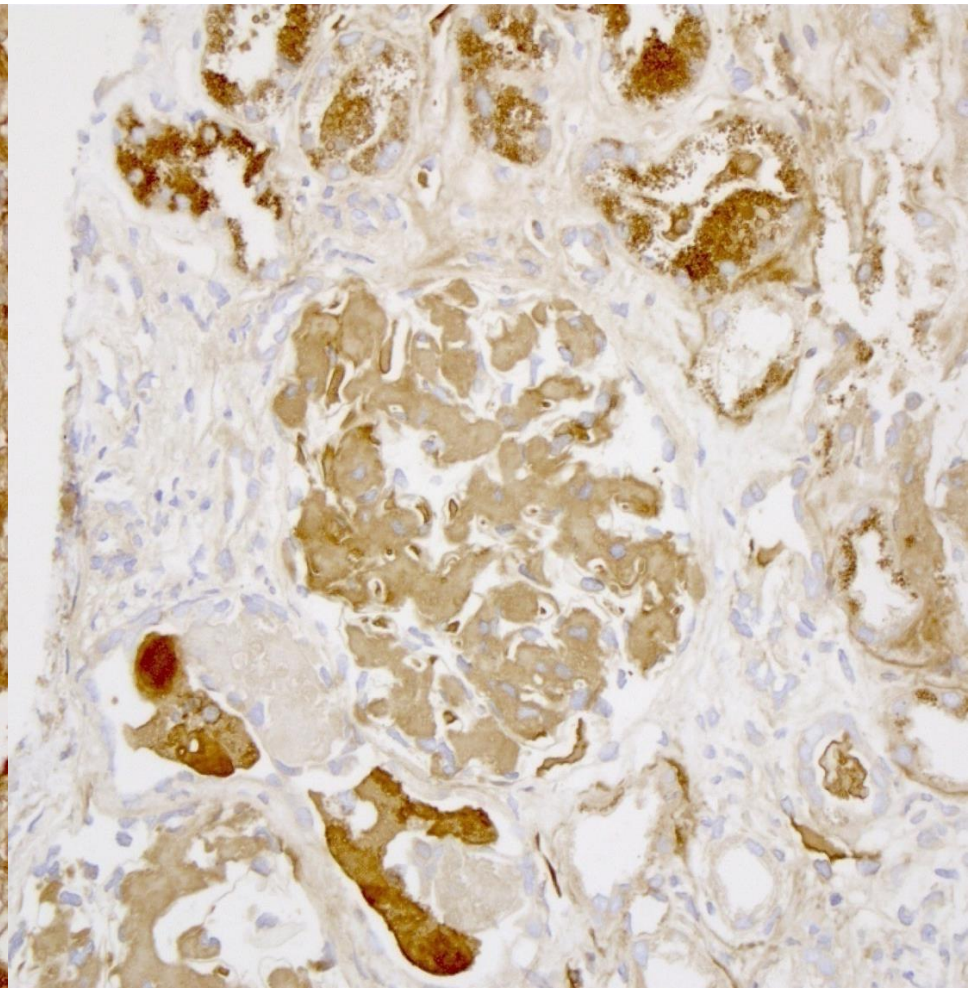
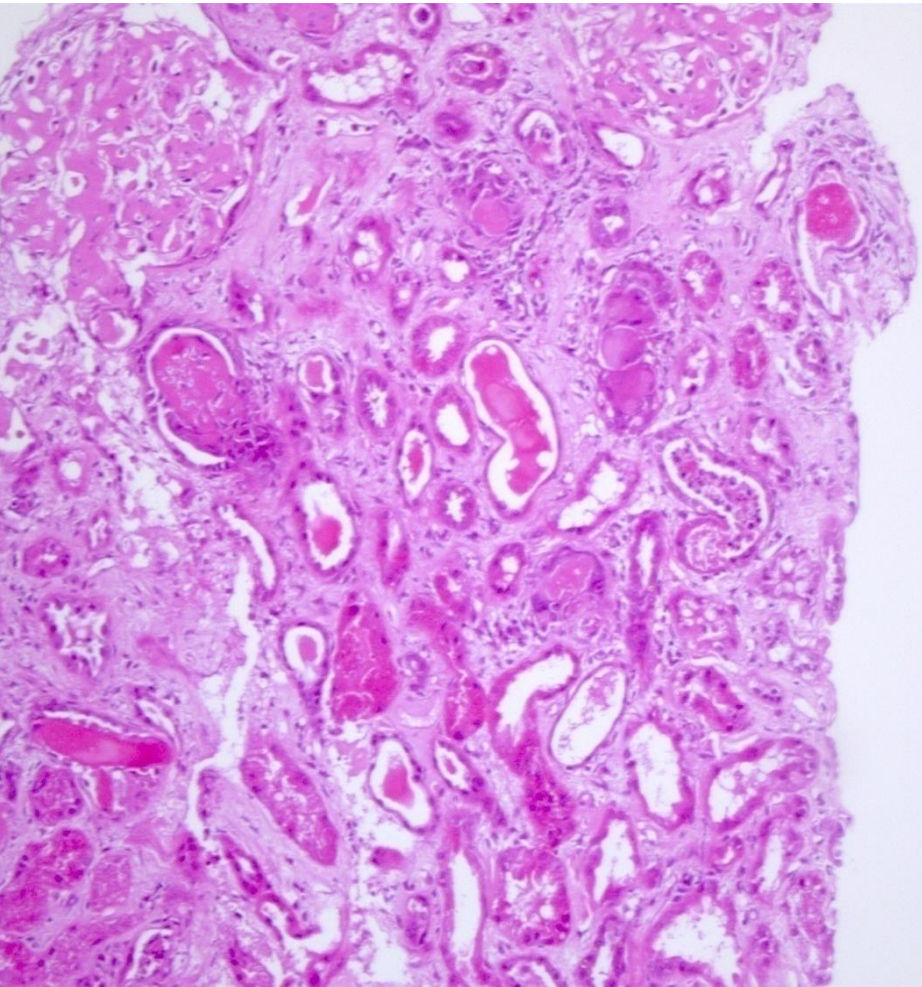


H&E



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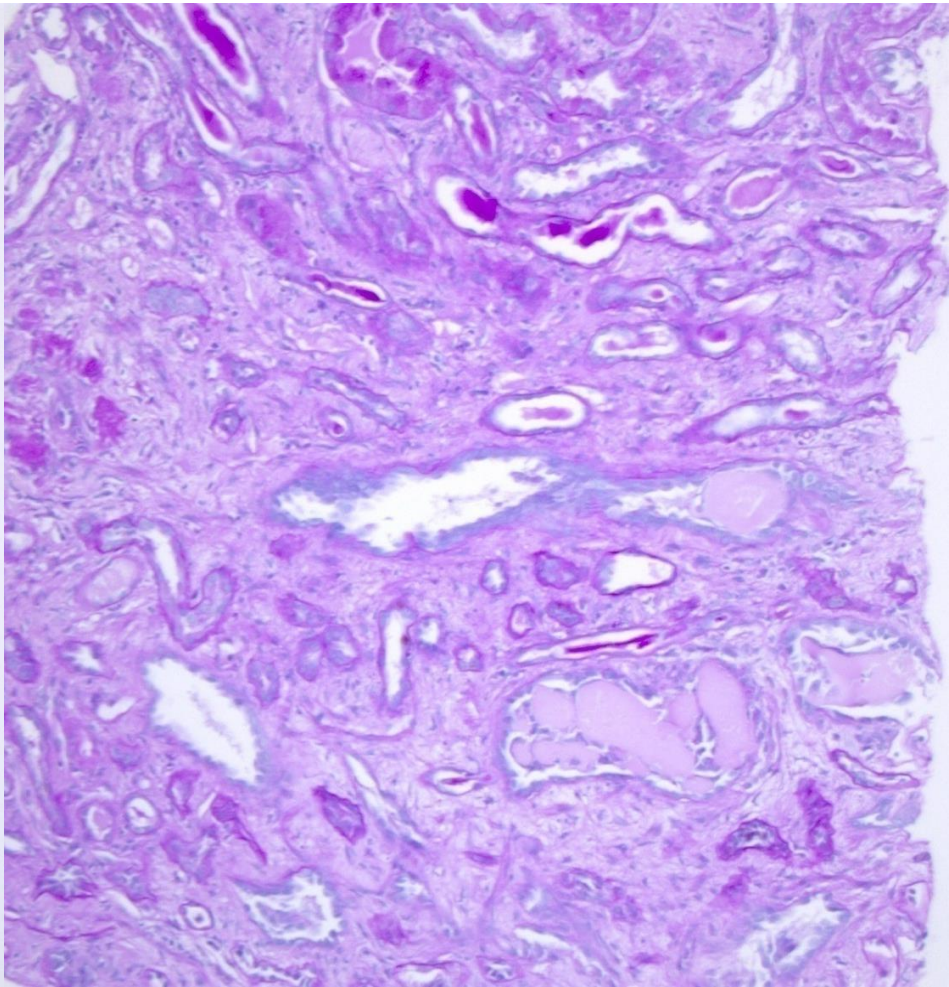

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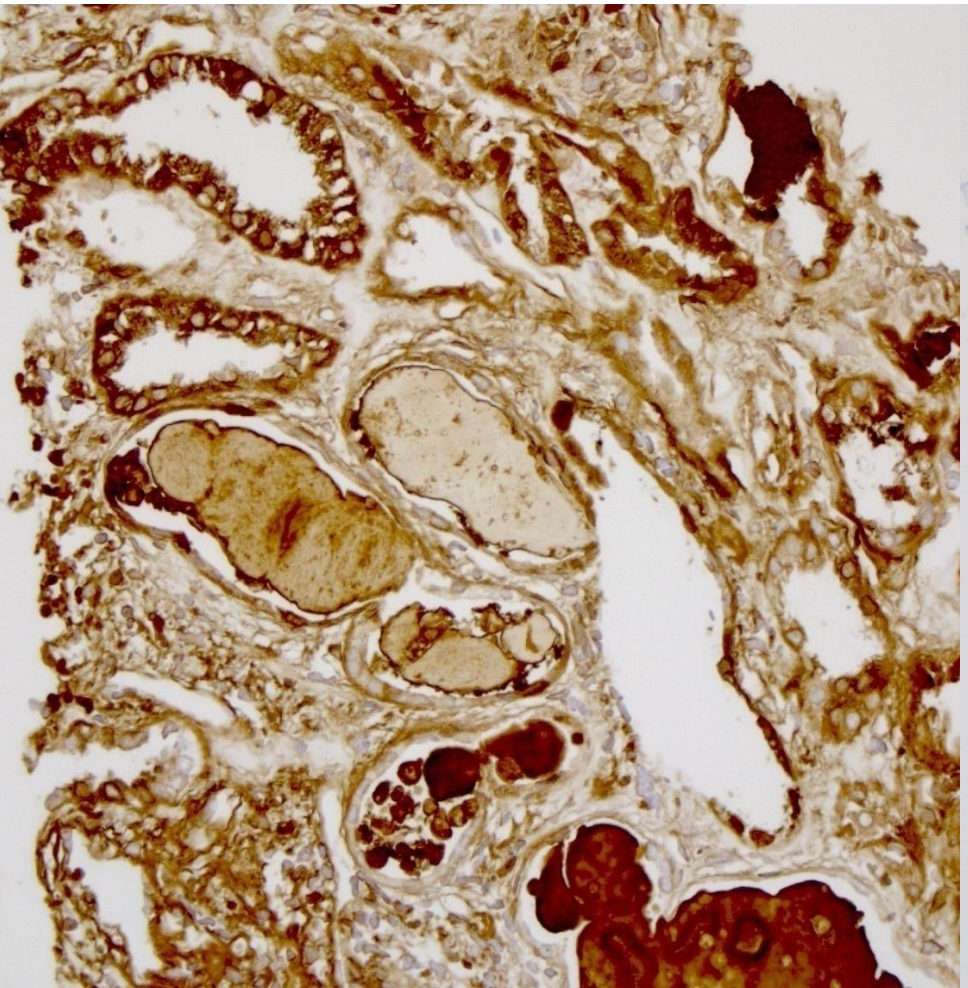

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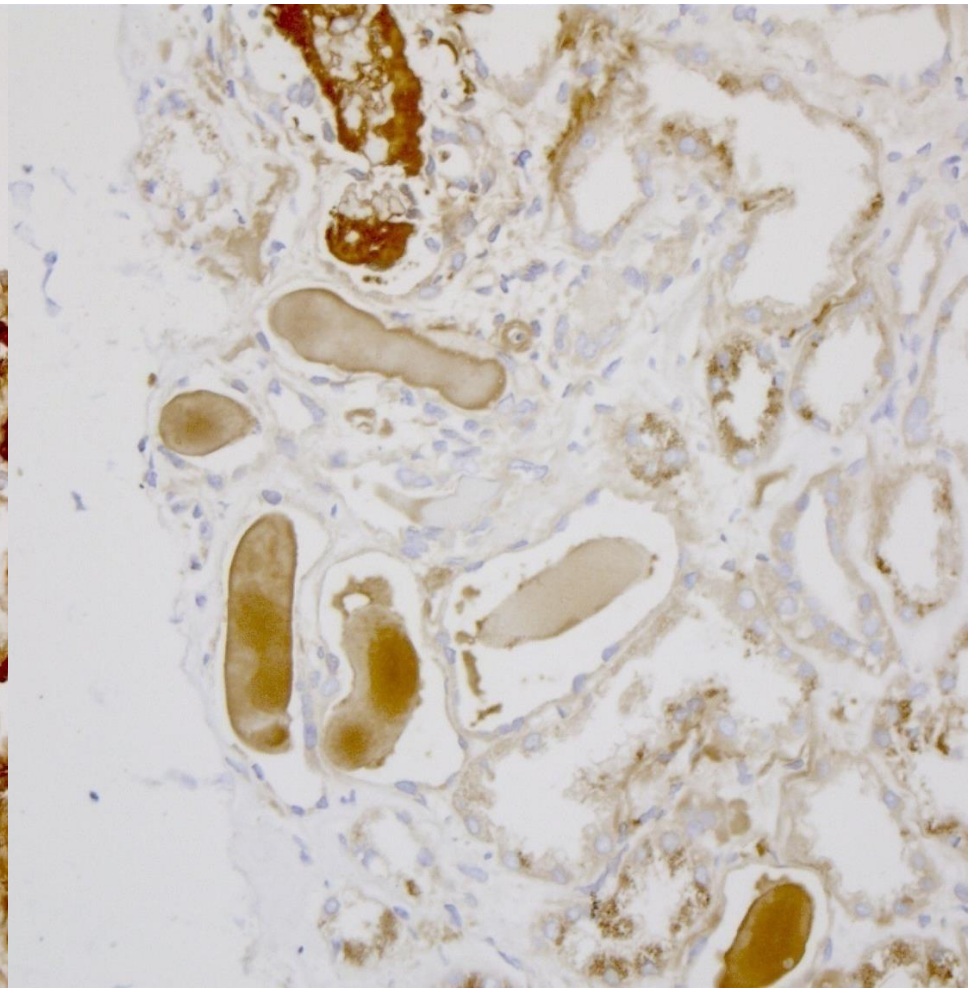

Amyloidosis AL and Cast nephropathy

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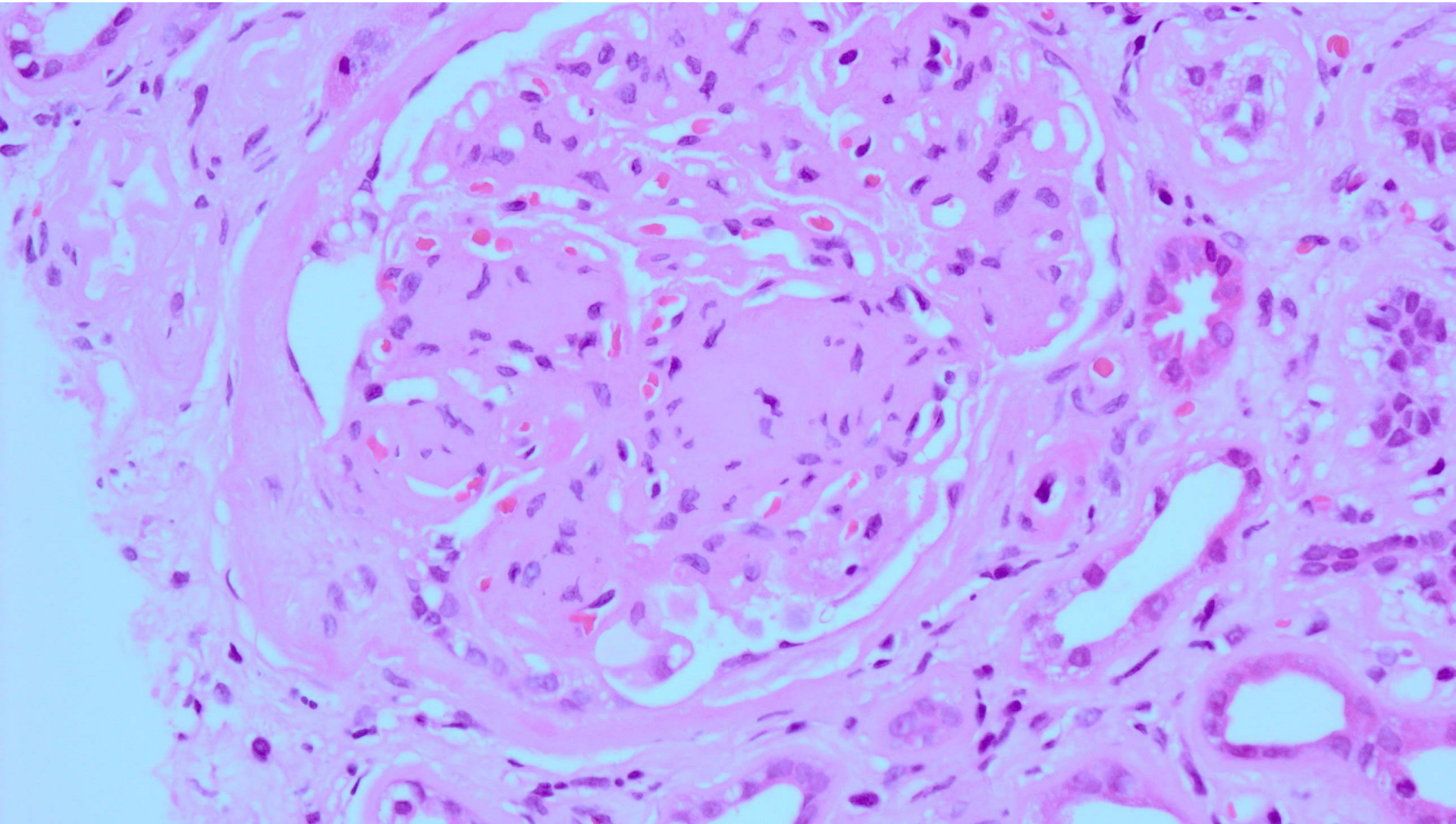
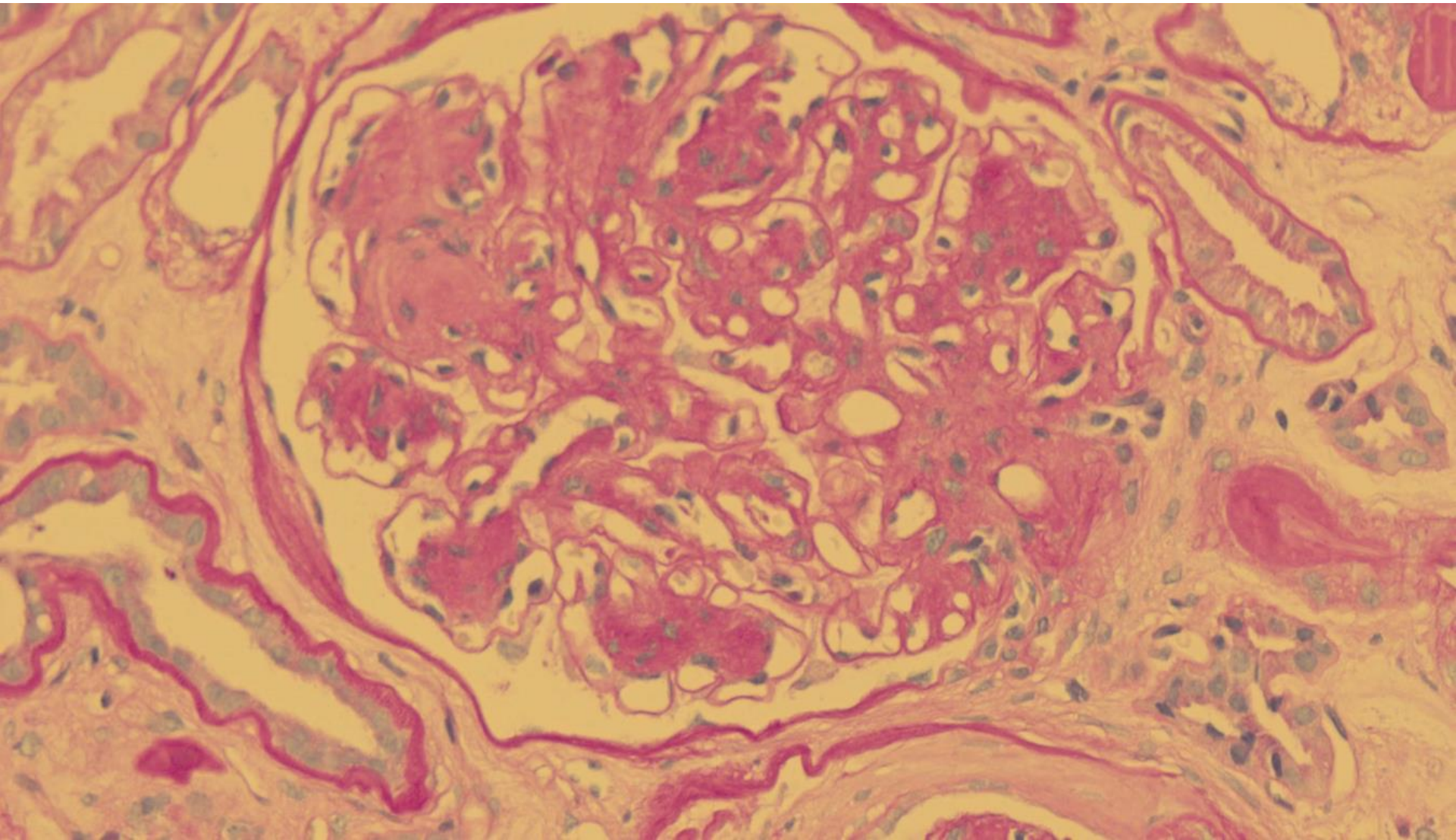
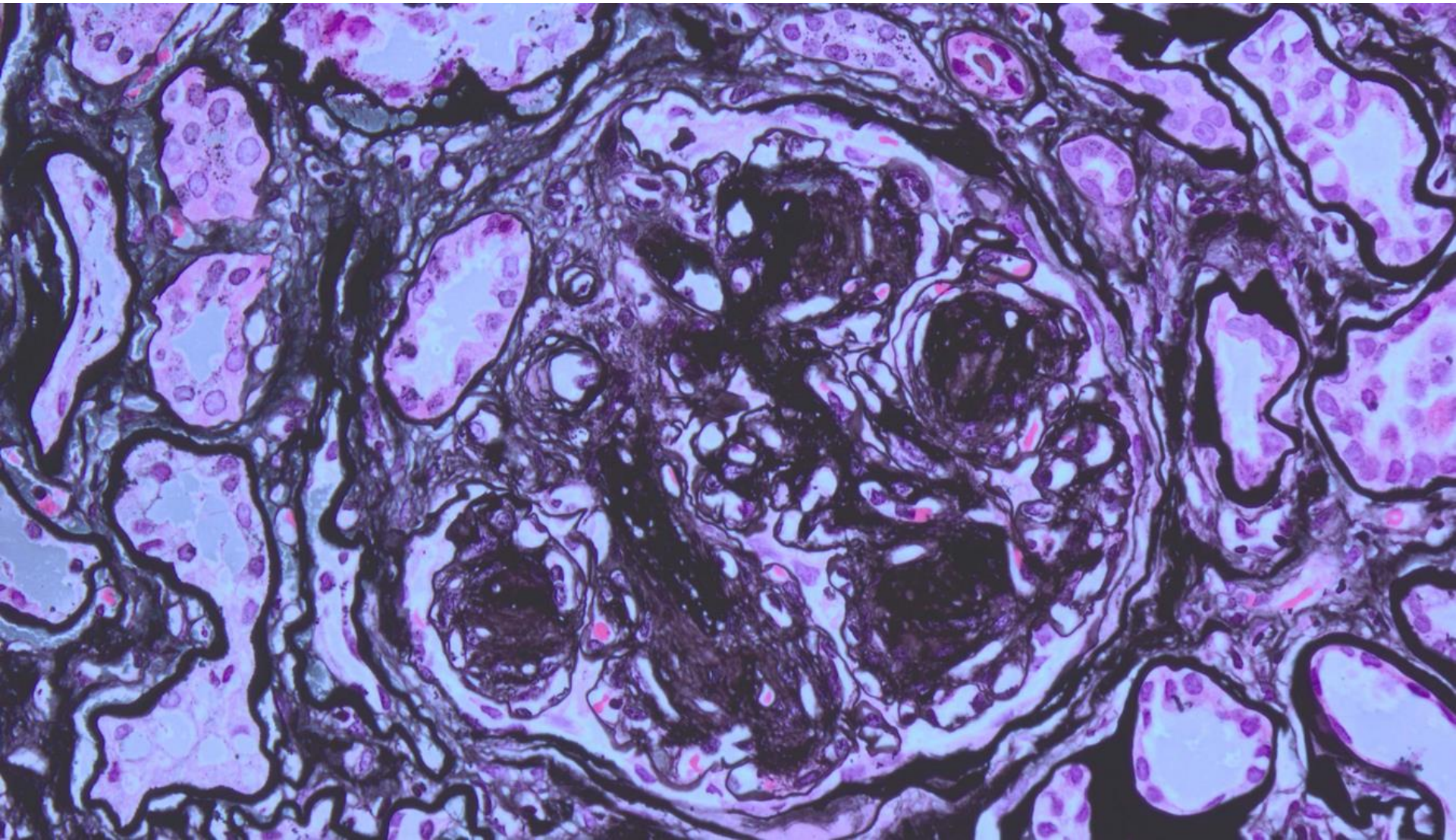
Diabetic Nephropathy - NGS



Diabetic Nephropathy - NGS



Diabetic Nephropathy - NGS



Case 4

- 38 yr old female
- Nephrotic syndrome
- Rash and arthralgia
- UPCR 1800
- Albumin 10
- Normal C3/C4
- ANA positive

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Histology associated with proteinuric syndromes

- Minimal change disease
- FSGS
- Membranous nephropathy
- Diabetes
- Amyloidosis

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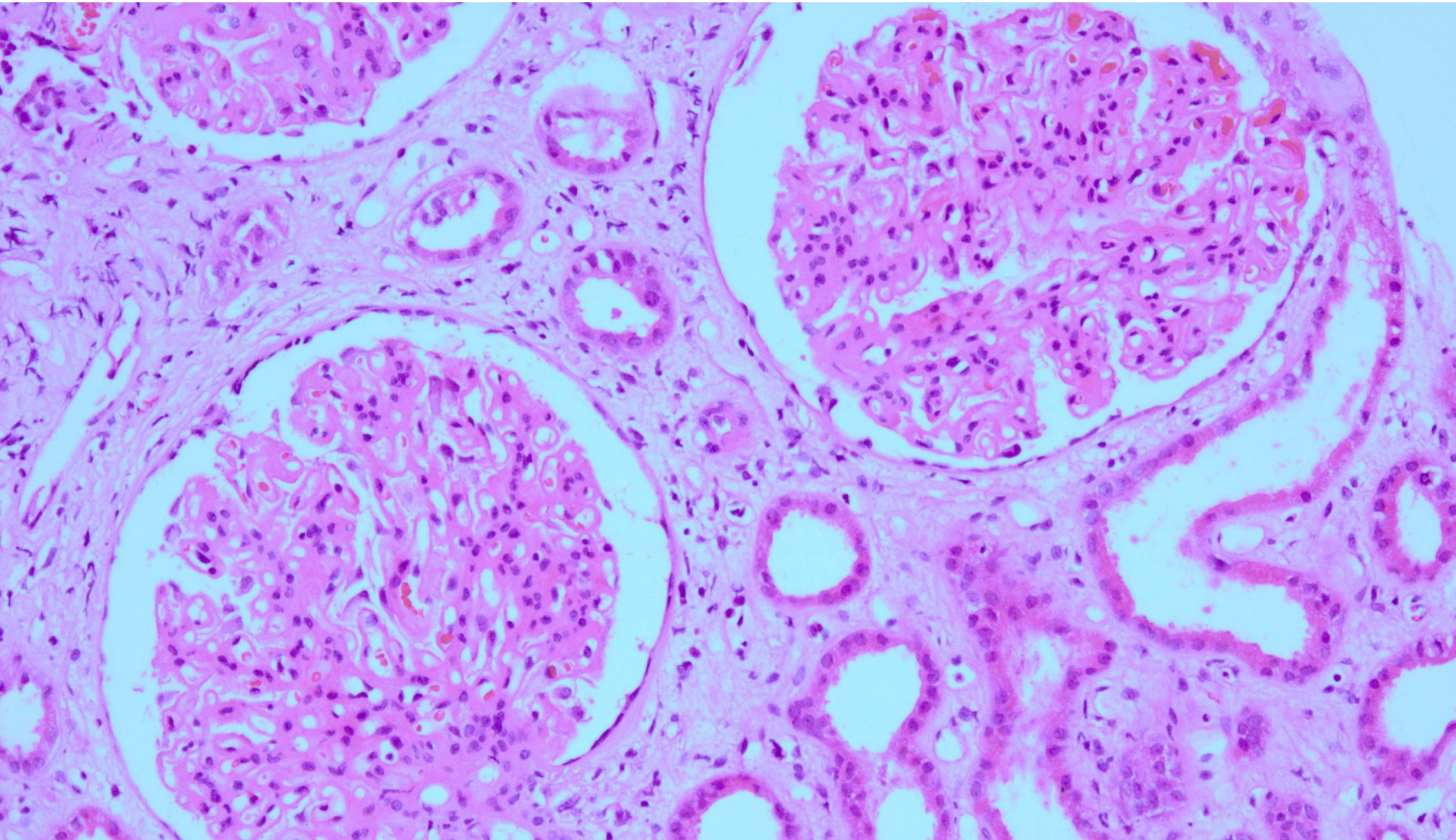
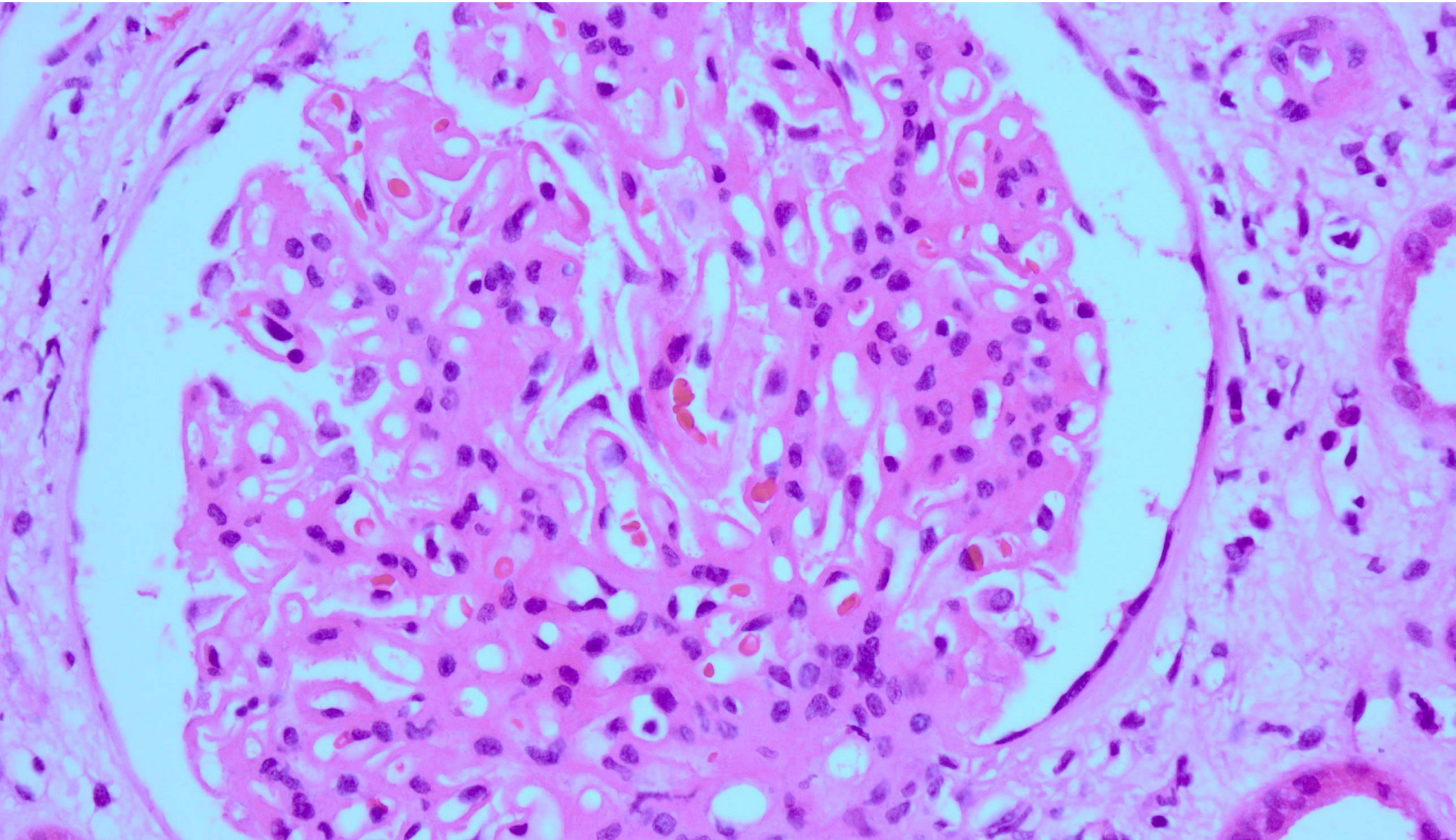
H&E



H&E



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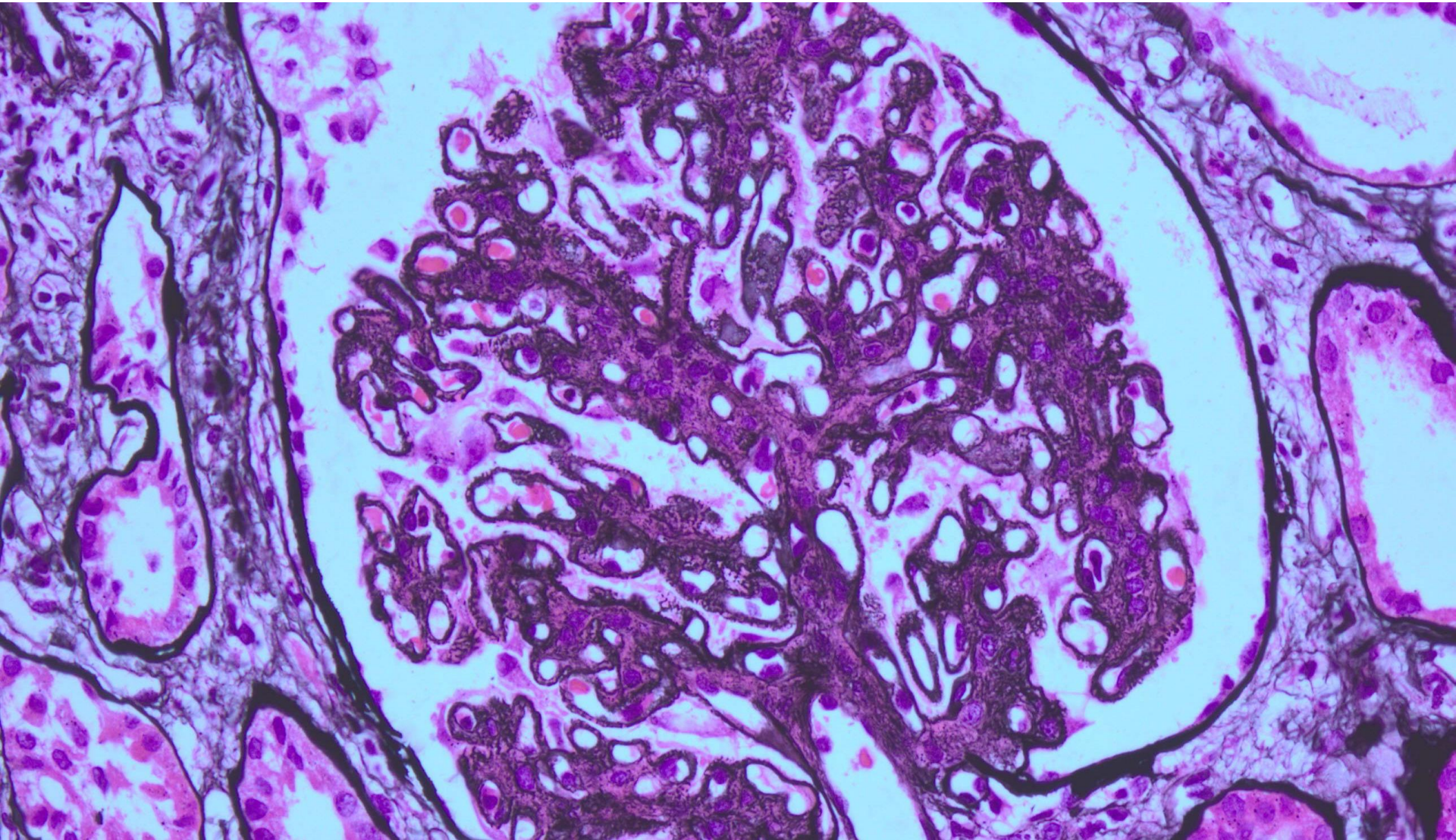

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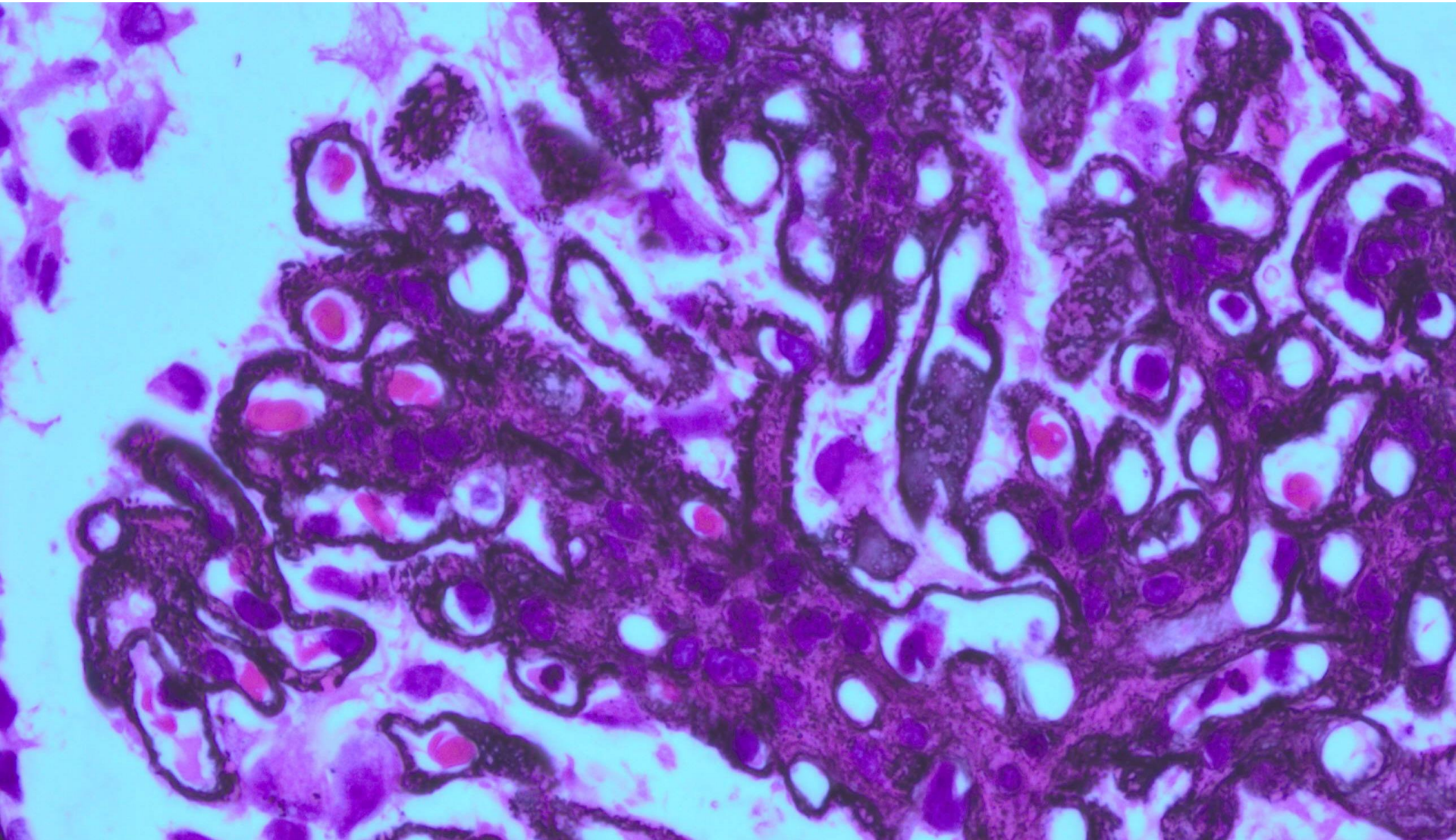

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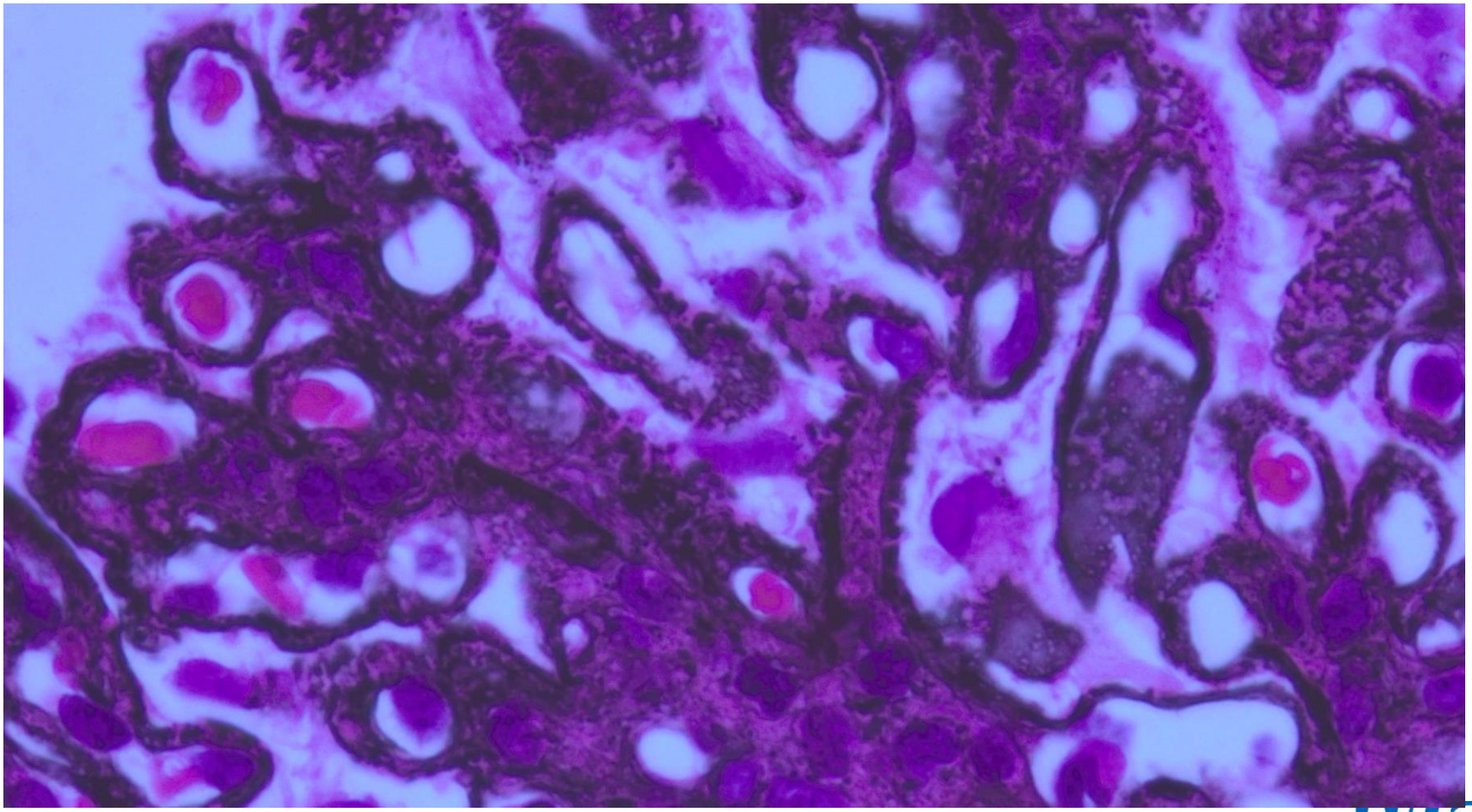

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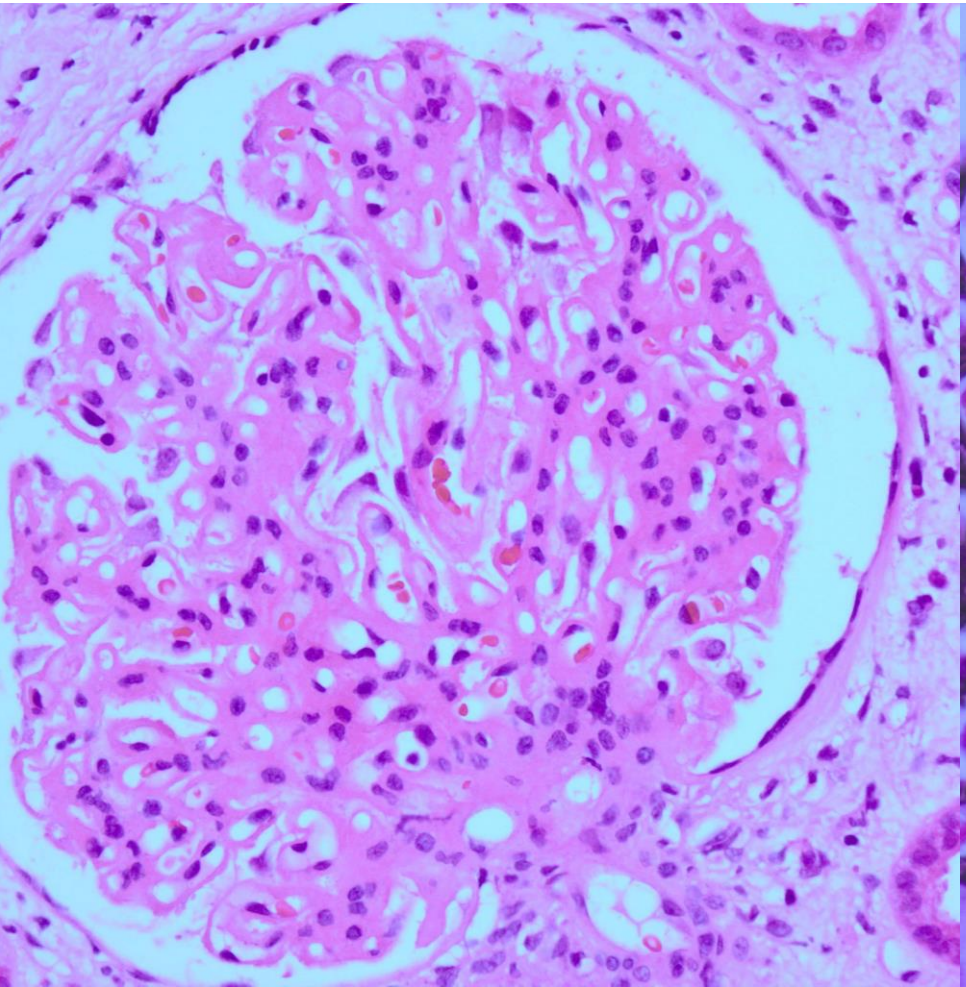
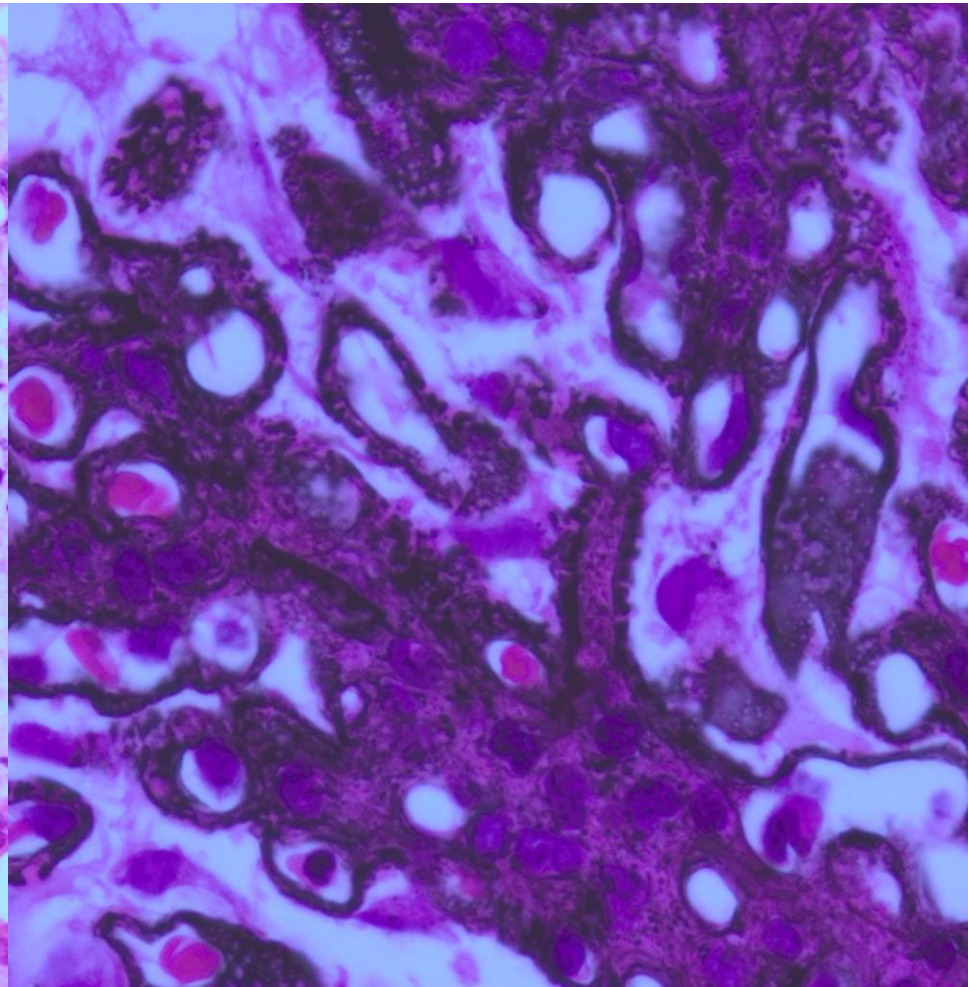
- Pattern of glomerular injury?

Mesangial proliferation and thick CBM



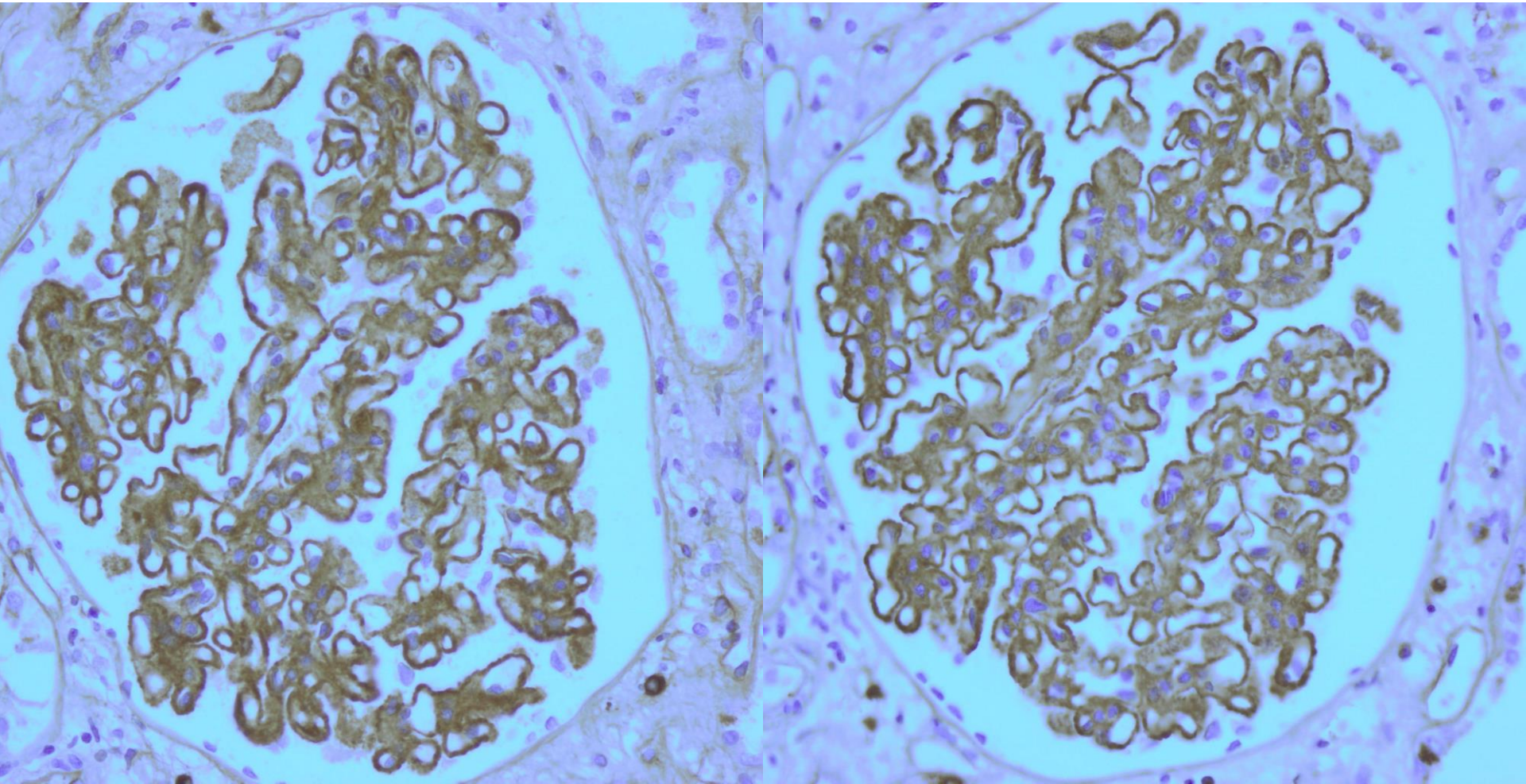
Epimembranous spikes



IHC

IgA

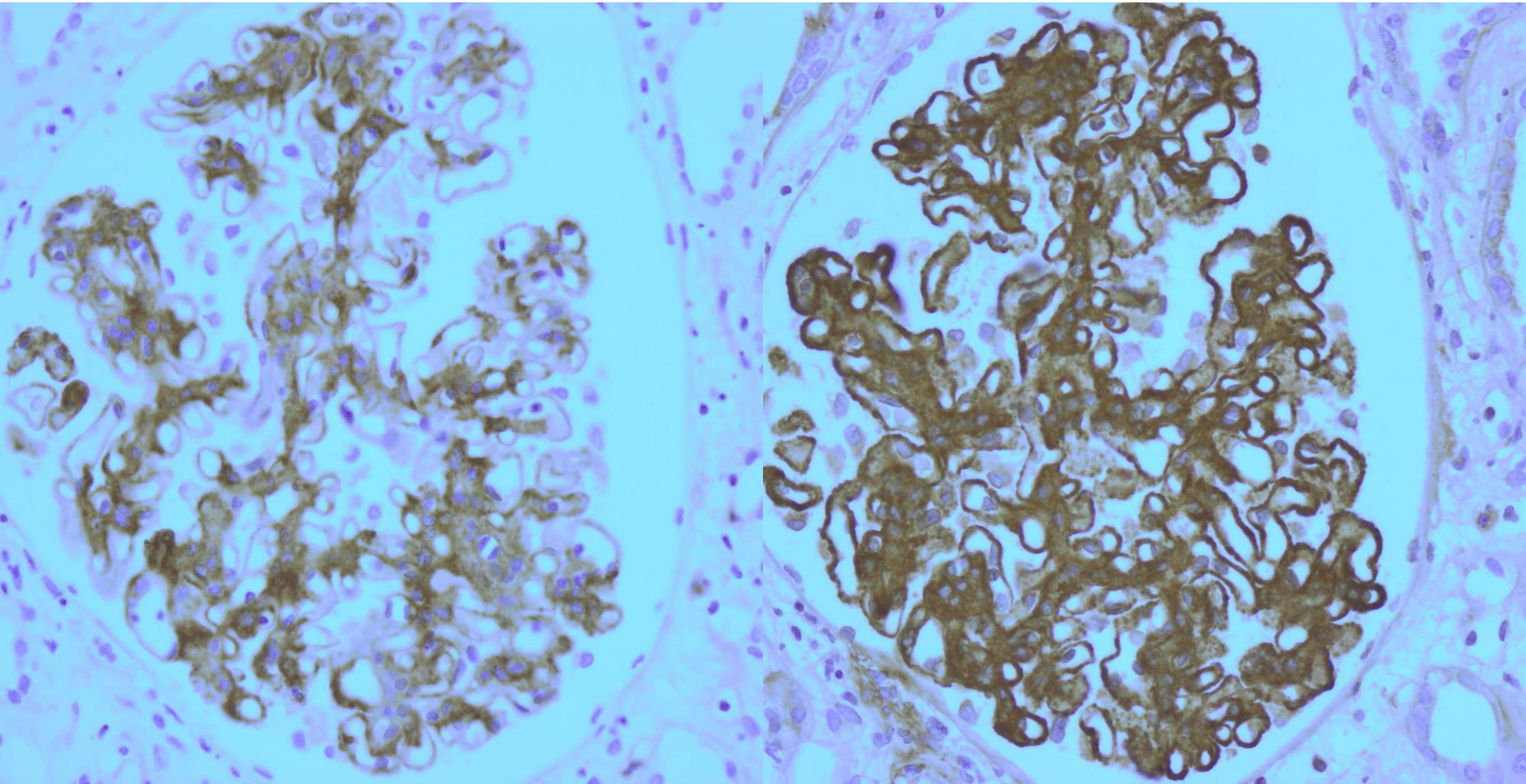
IgG



IHC

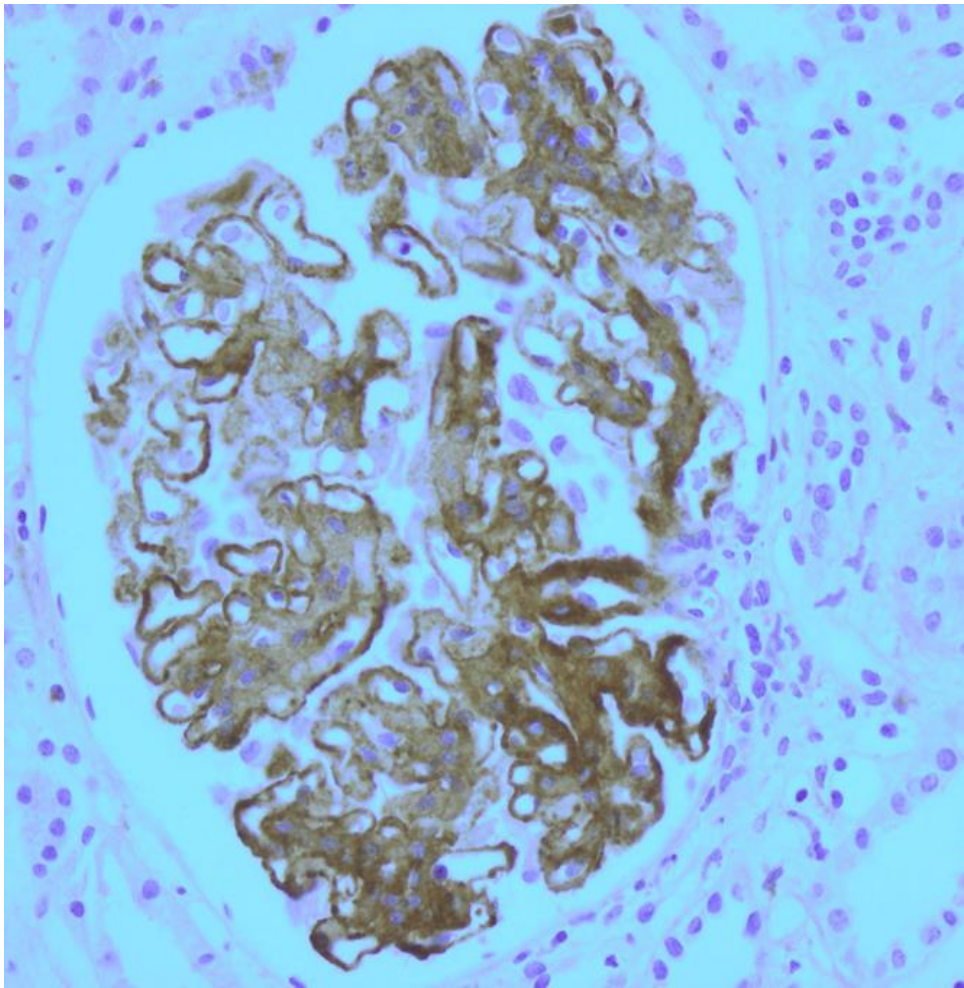
IgM

C3



IHC

C1q



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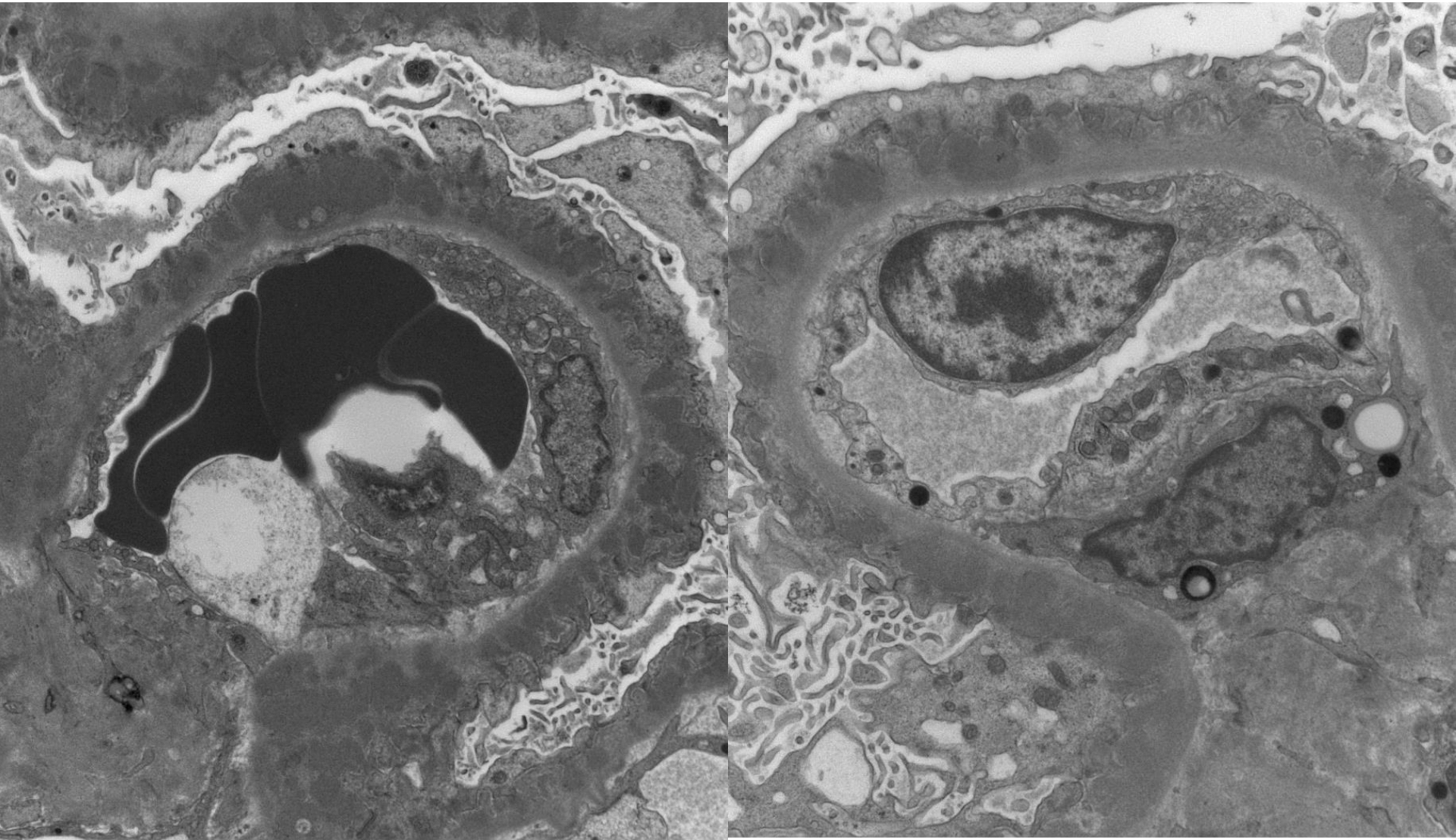

Secondary Membranous Nephropathy (Lupus nephritis, Class V)

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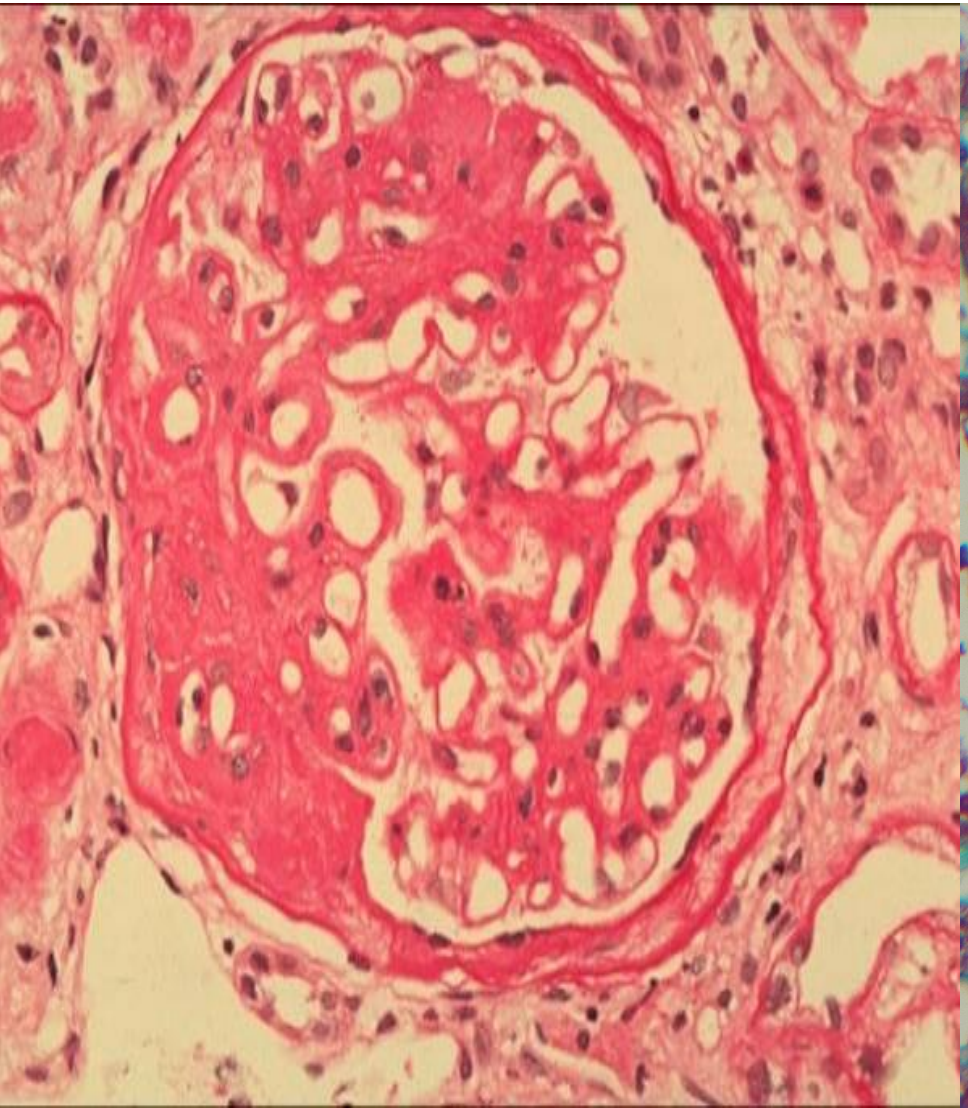
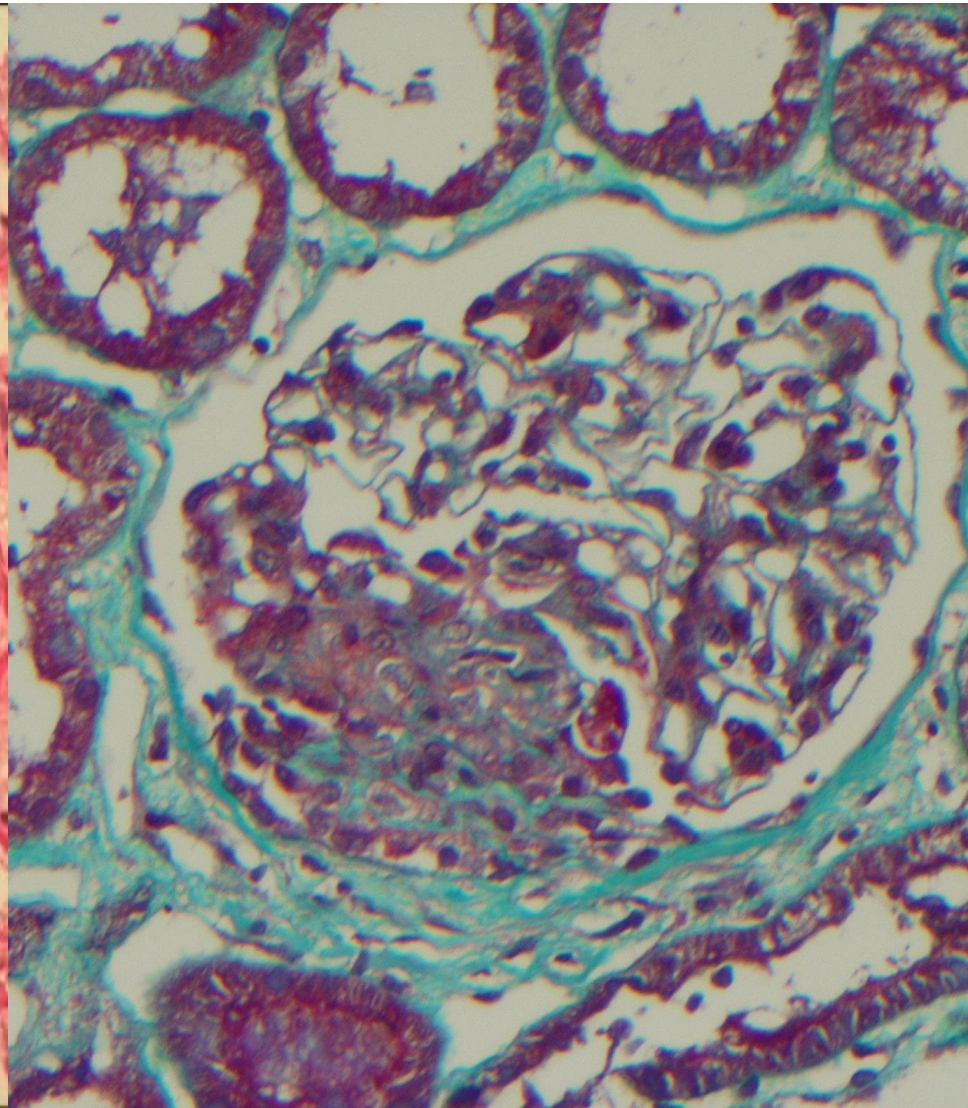
FSGS





Case 5

- 29 yr old male
- Haemoproteinuria and acute kidney injury
- History of hypertension
- Urine dipstick: protein 2+ and blood 3+
- CRP 48
- C3/C4 low levels of normal
- ANA negative
- pANCA positive with MPO titre 130
- Anti-GBM negative

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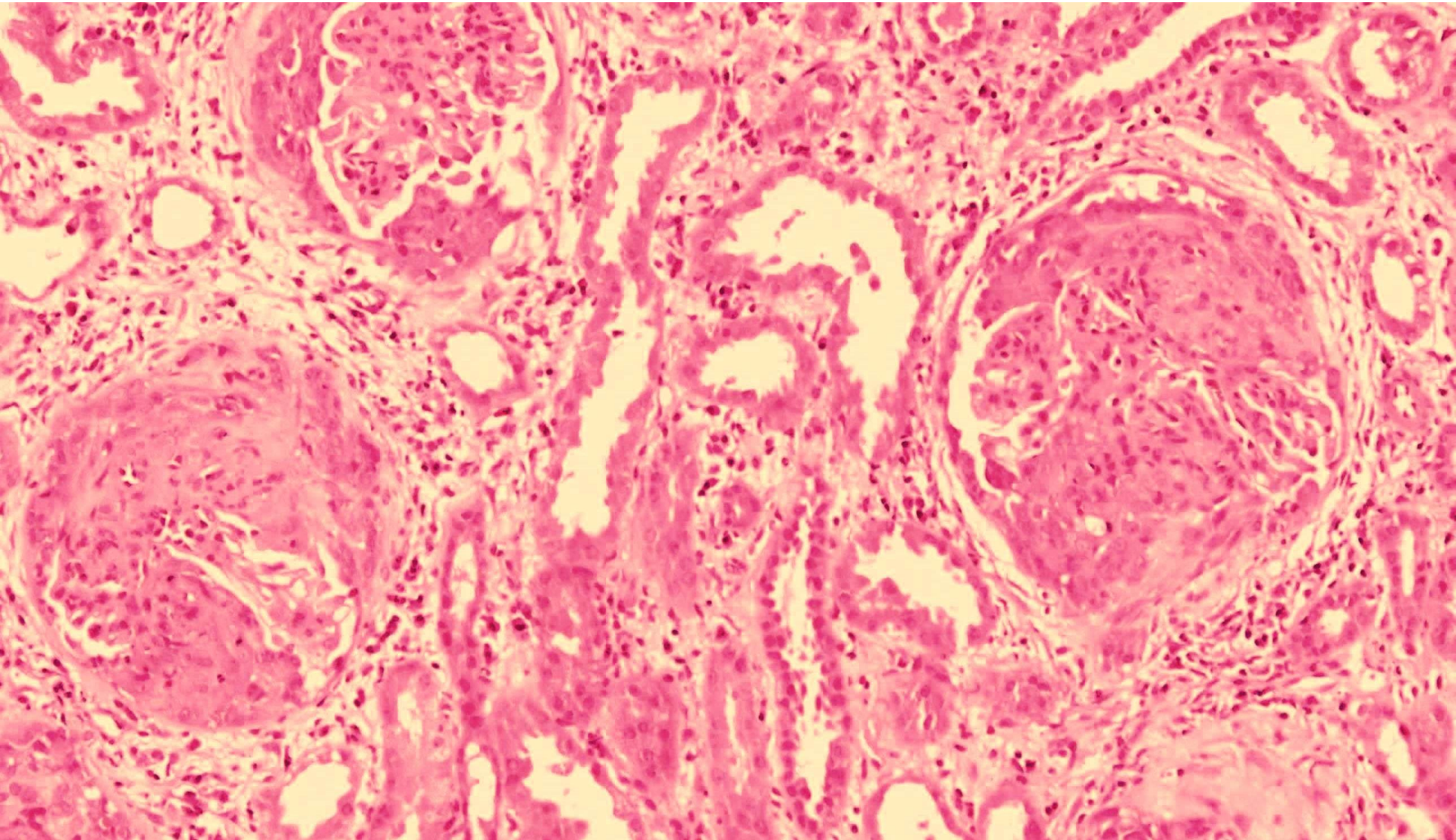
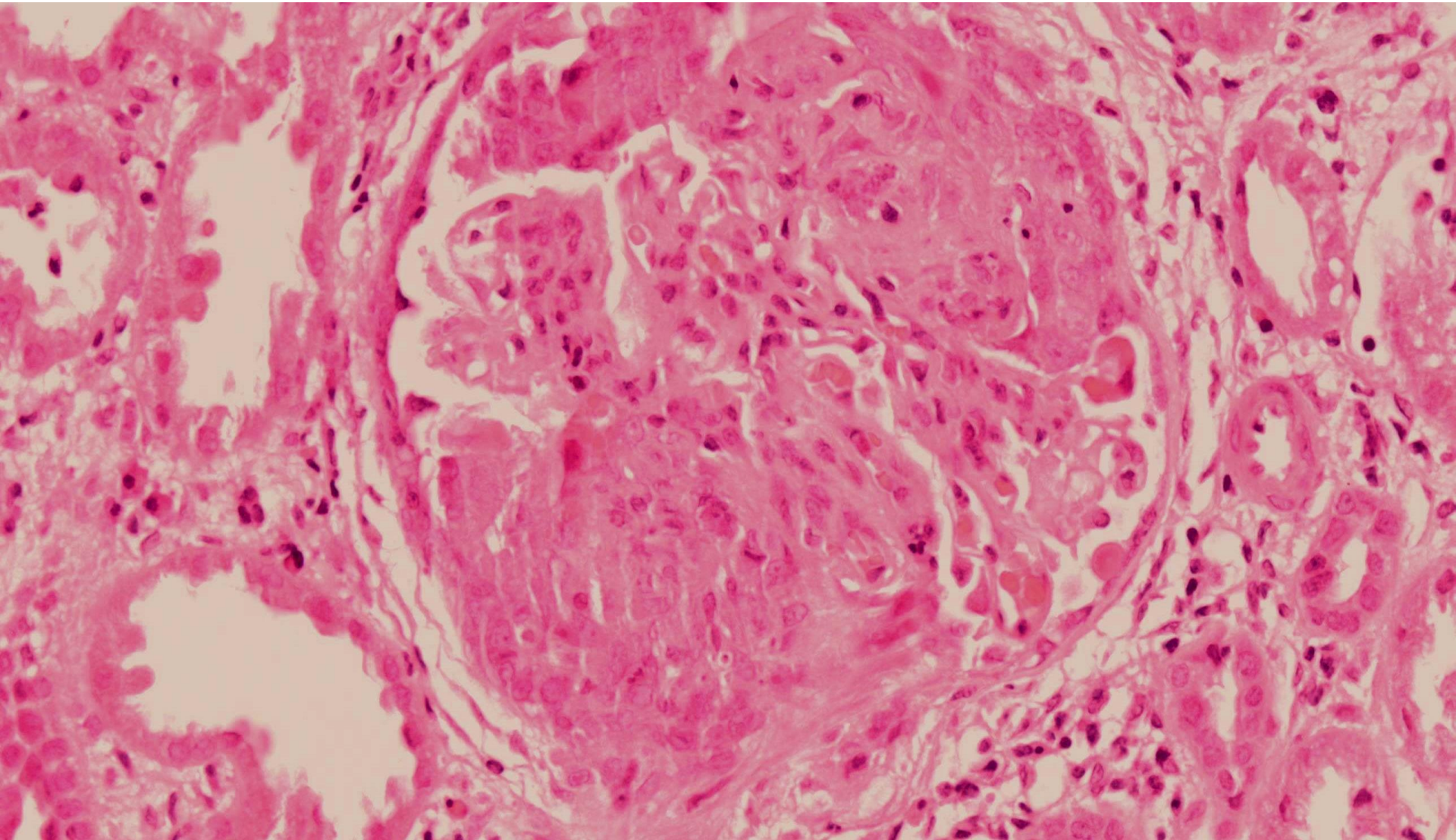
H&E



H&E



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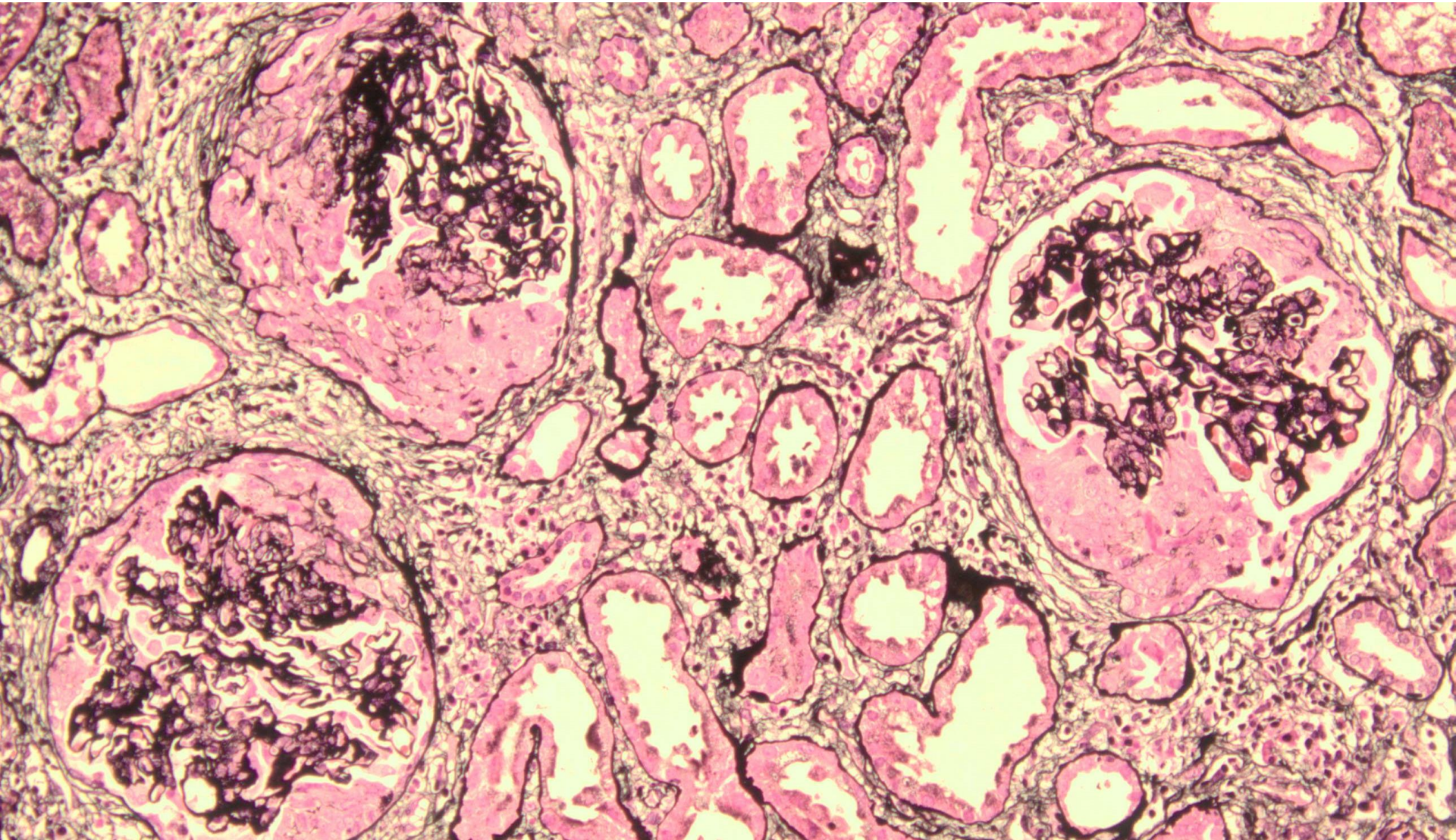

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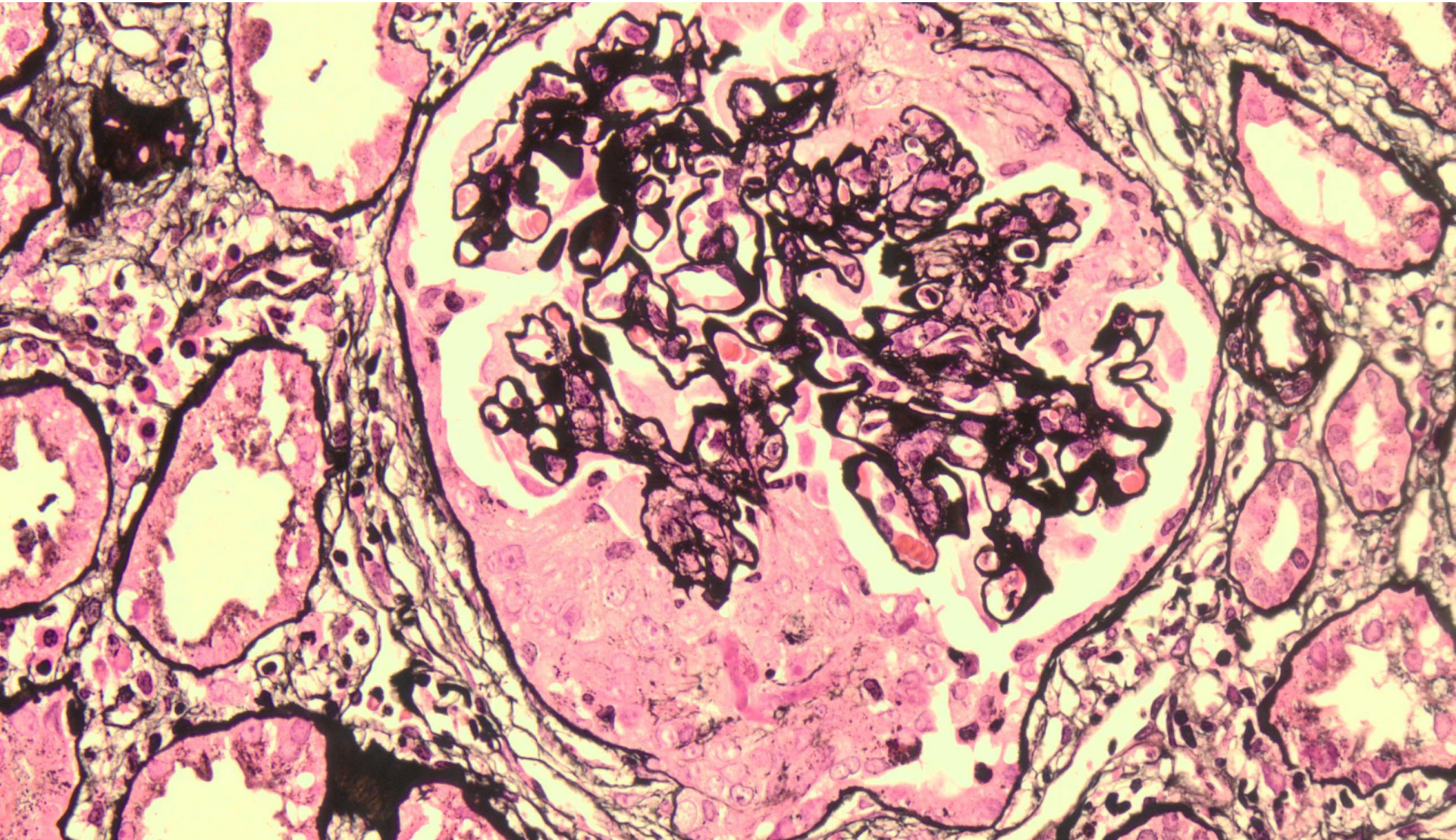
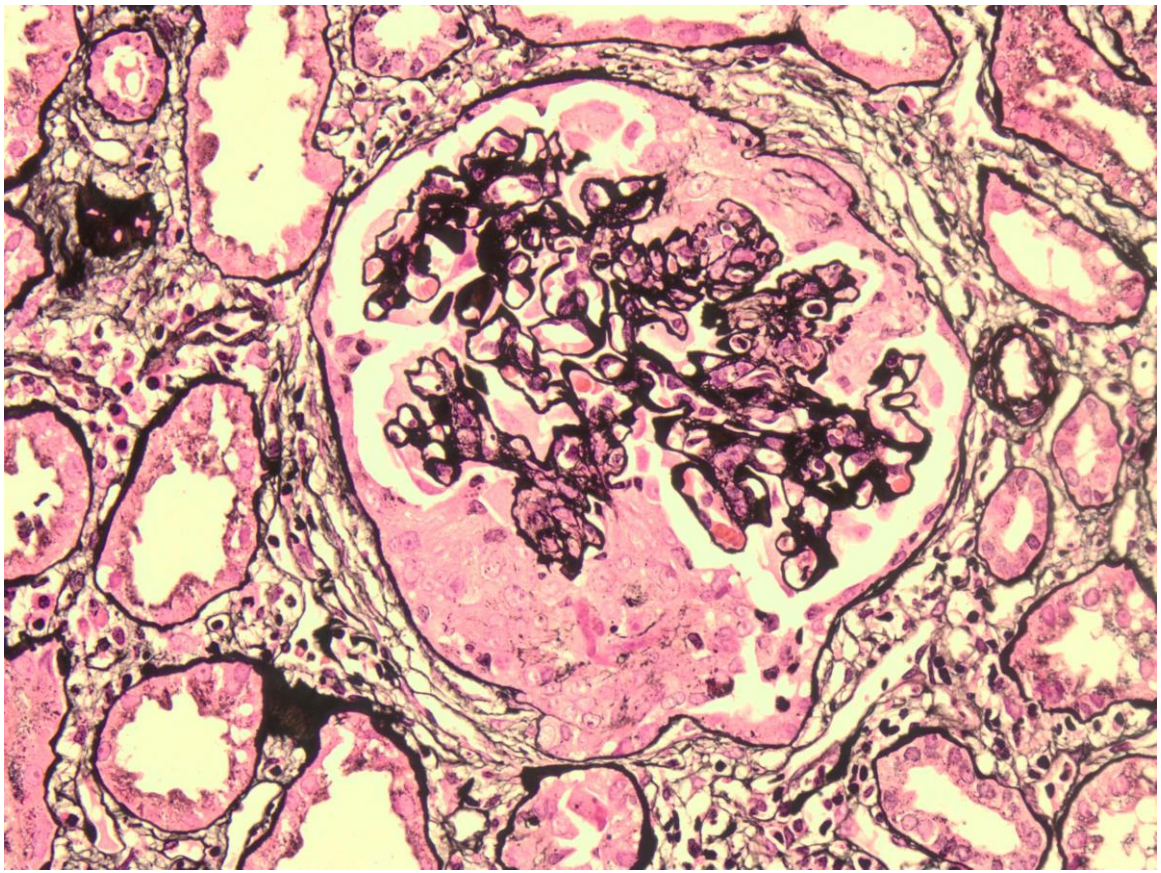


- Pattern of glomerular injury?



Crescentic glomerulonephritis
(>50% glomeruli with crescents)

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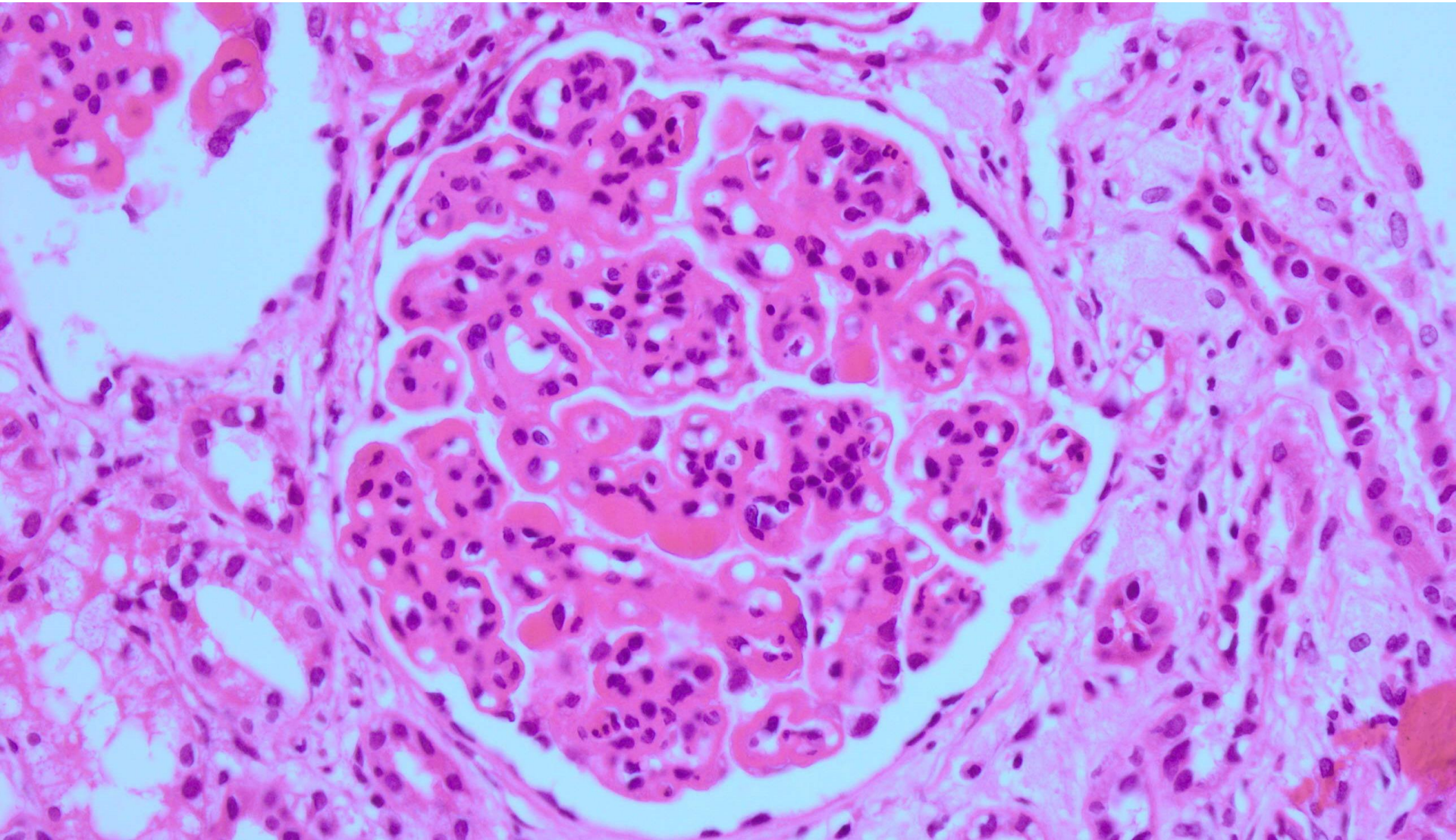
- Differential diagnosis?

- Immune-complex eg. LN, PIGN
- Pauci-immune eg. ANCA associated vasculitis
- Anti-GBM disease

Case 7

- 18 yr old female
- Haemoproteinuria
- Urine dipstick: protein 4+ and blood 4+
- UPCR of 9 grams per 24 hours
- Serum creatinine 78
- Low C3 and slightly low C4

H&E



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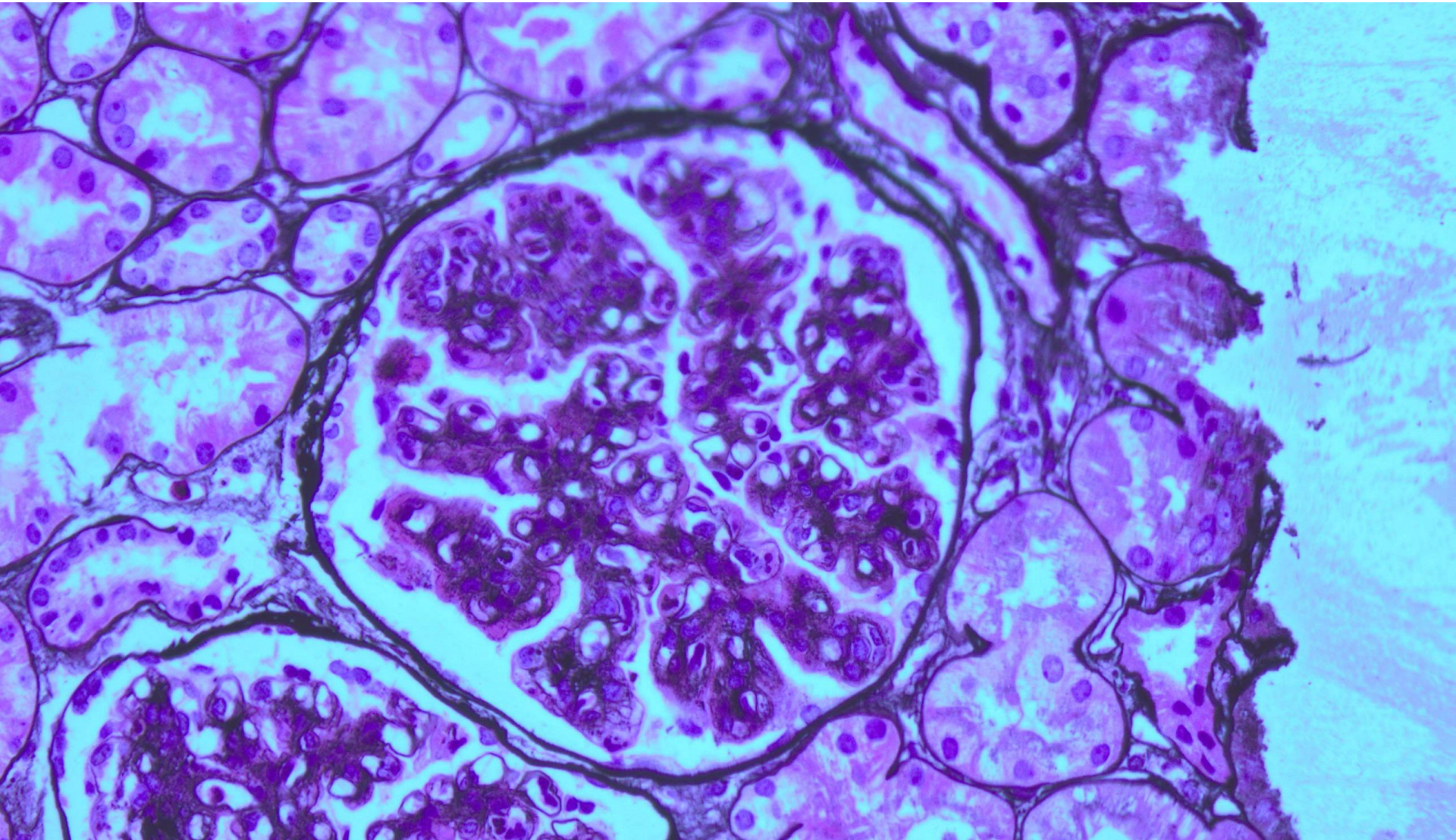

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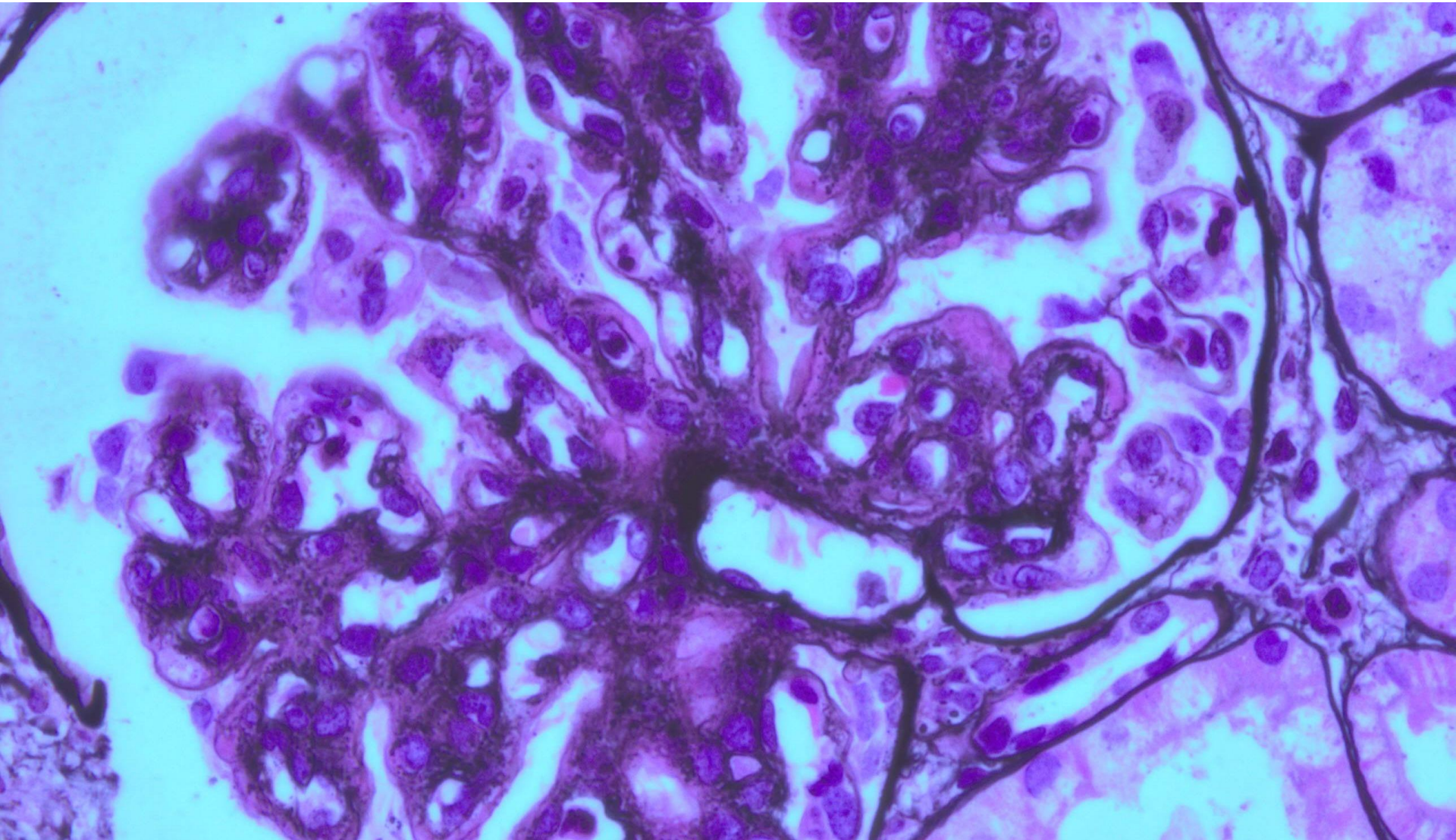
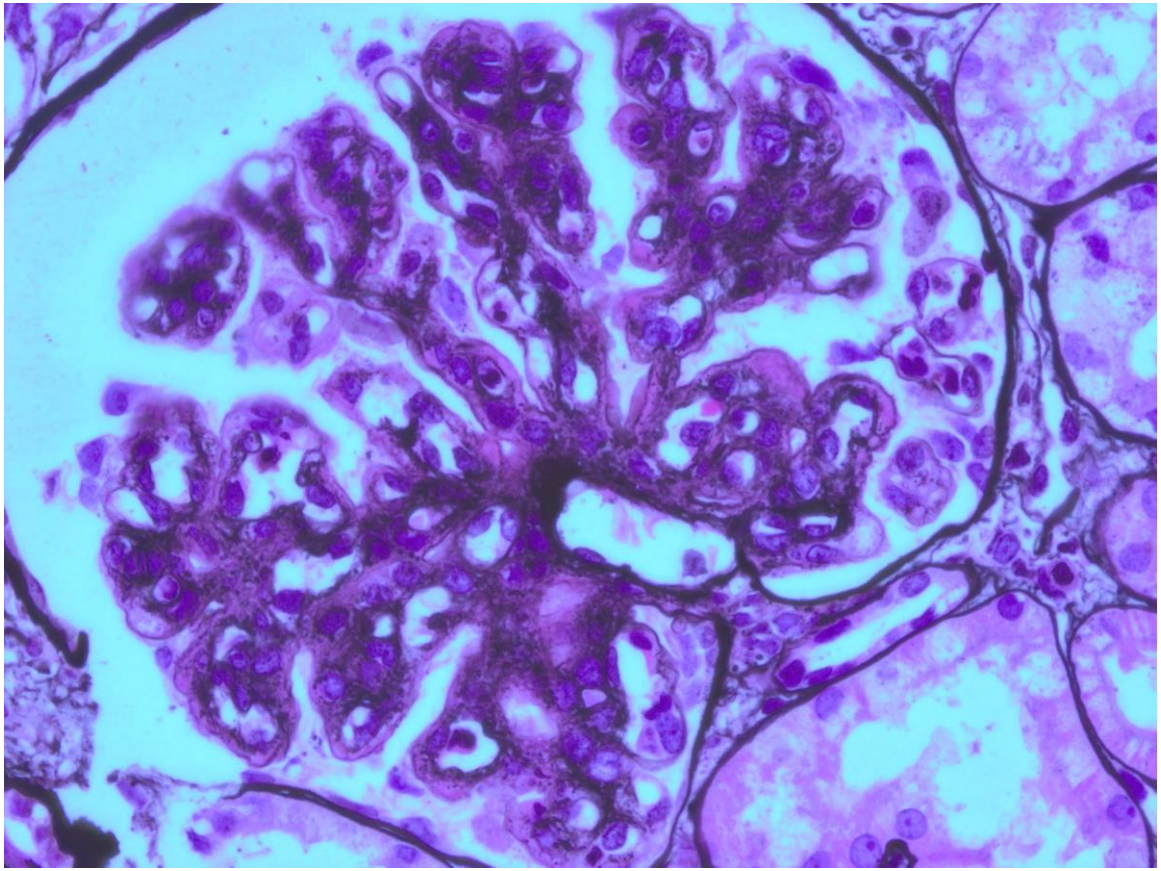


- Pattern of glomerular injury?



Membranoproliferative pattern (MPGN)

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Differential diagnosis?

- Primary
- Secondary:
- Immune

Infection

Autoimmune disease

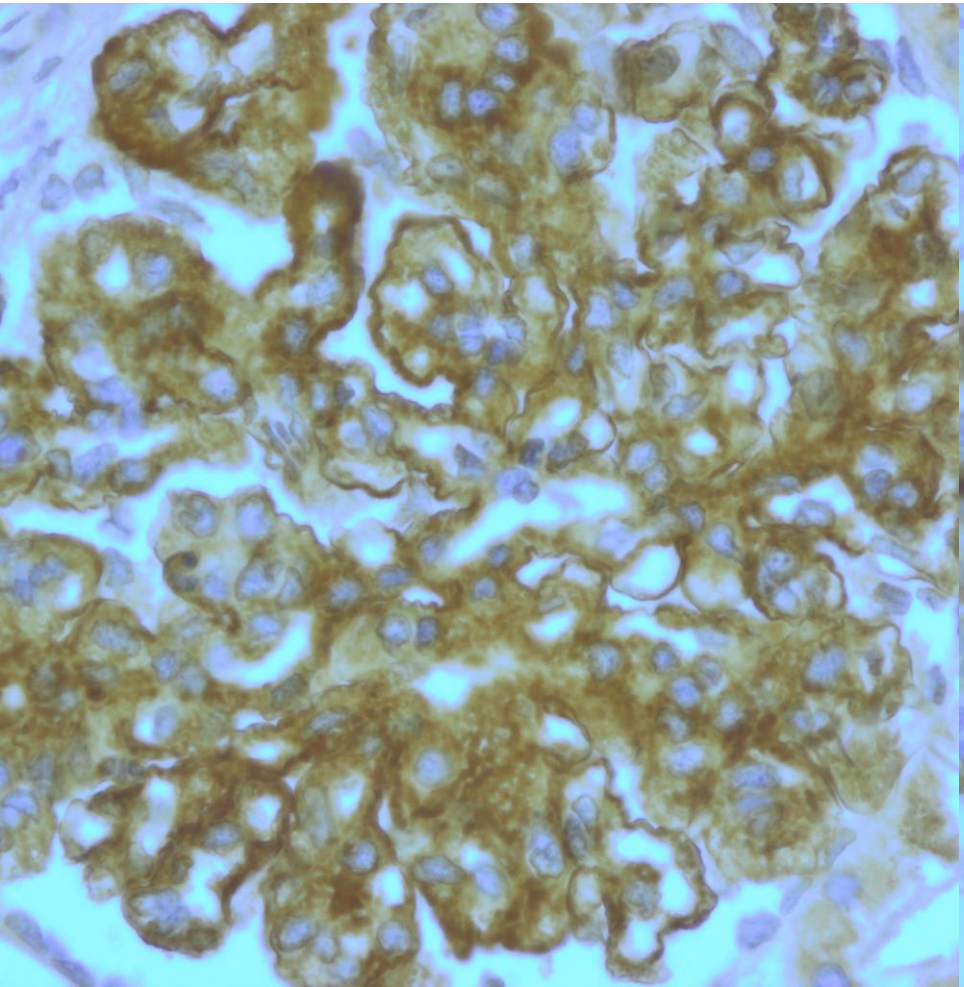
Cryoglobulins

- Non-Immune

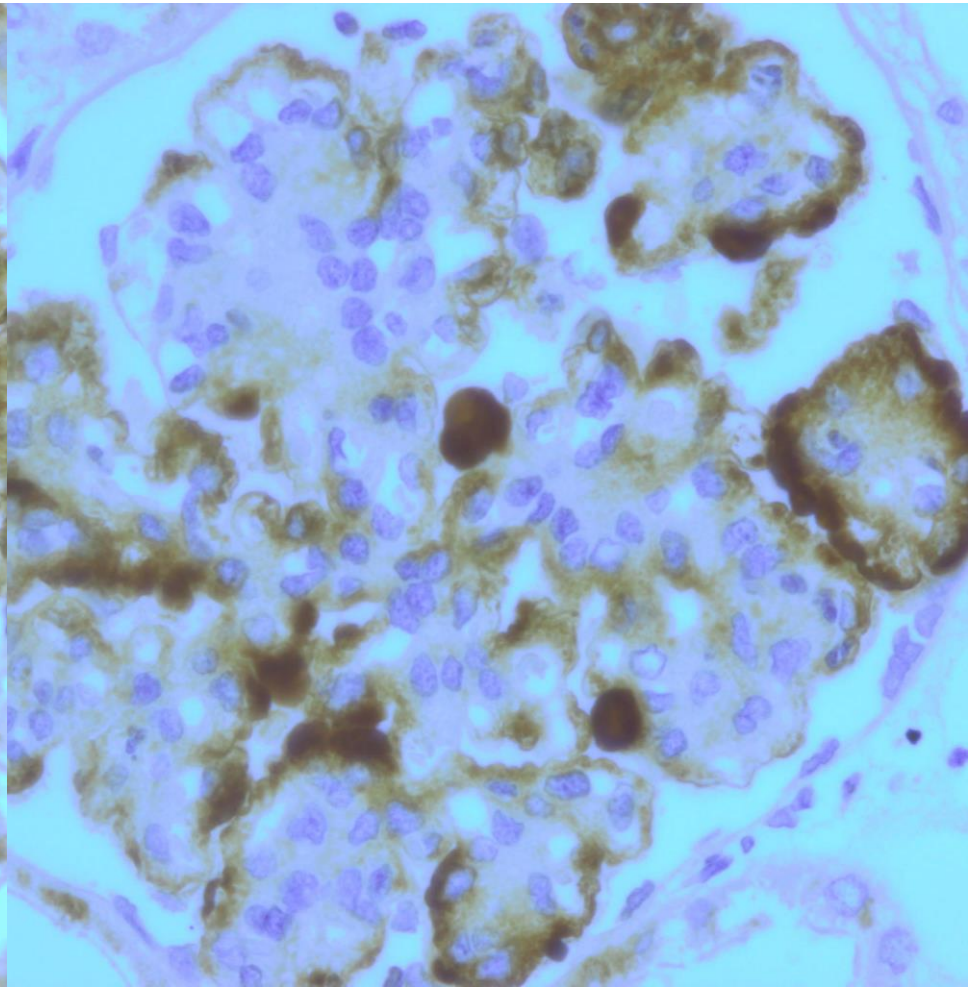
Chronic thrombotic microangiopathy (cTMA)

IHC – ‘Full House’

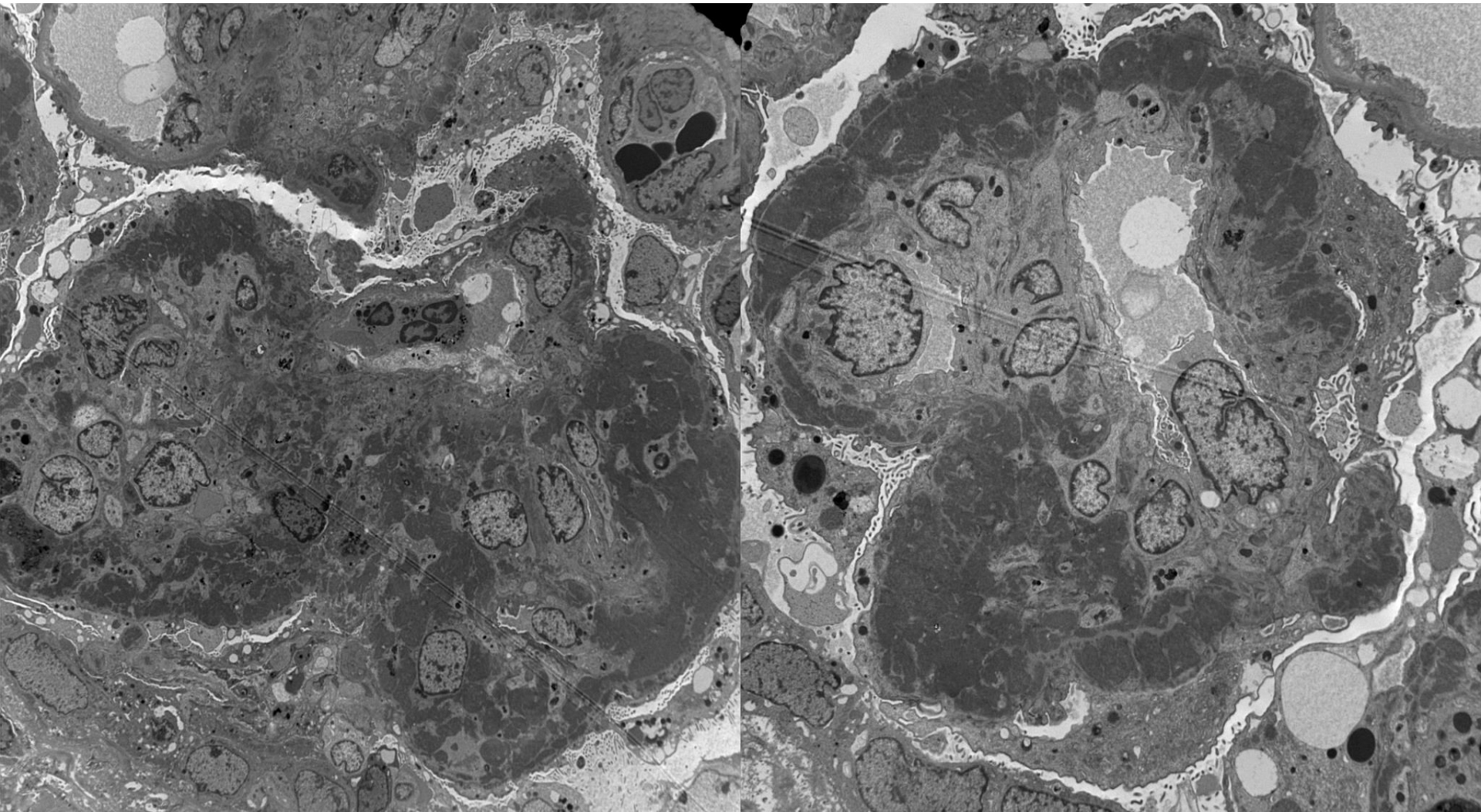
C3



C1q



EM



Lupus Nephritis, Class IV

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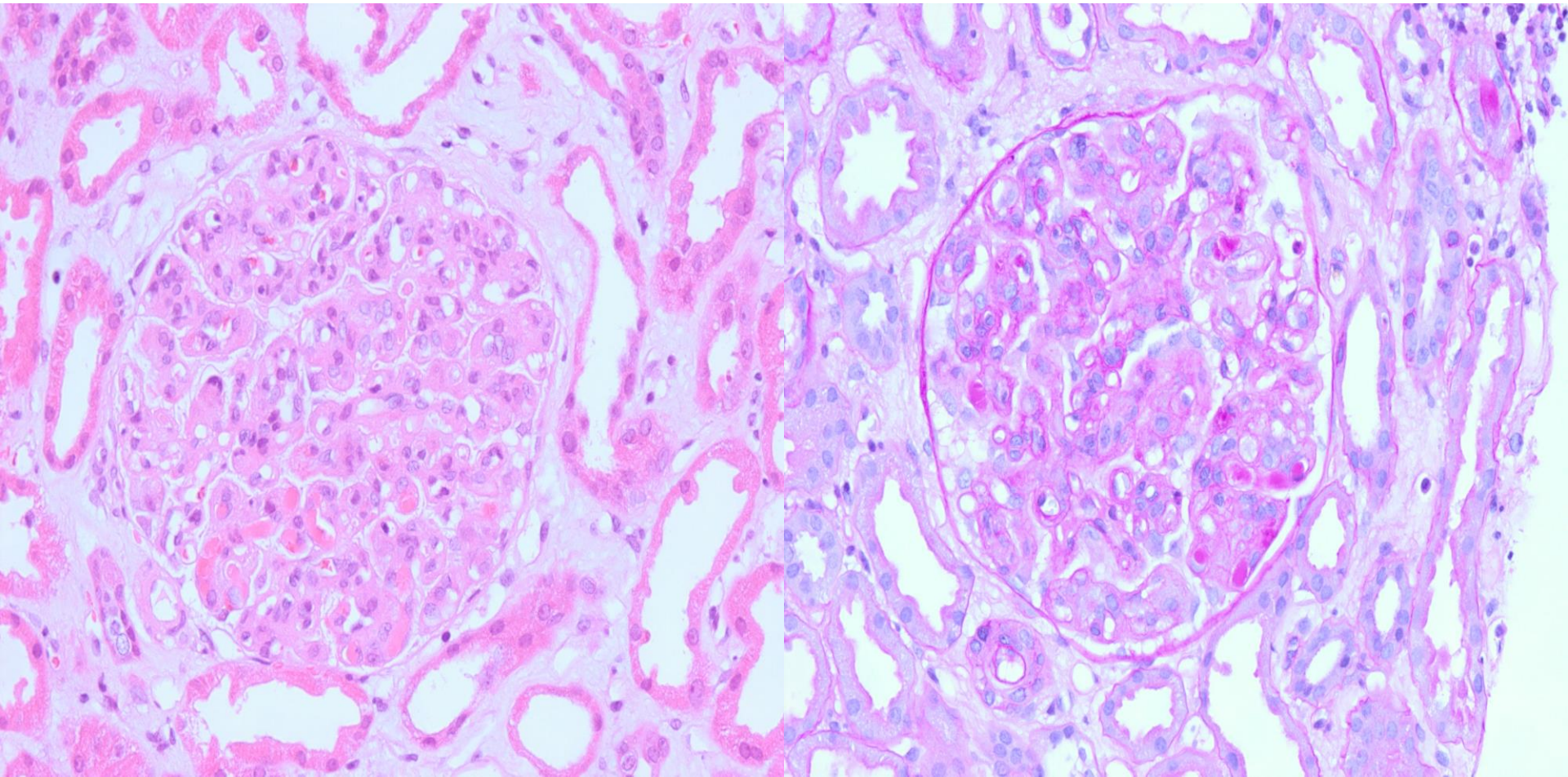
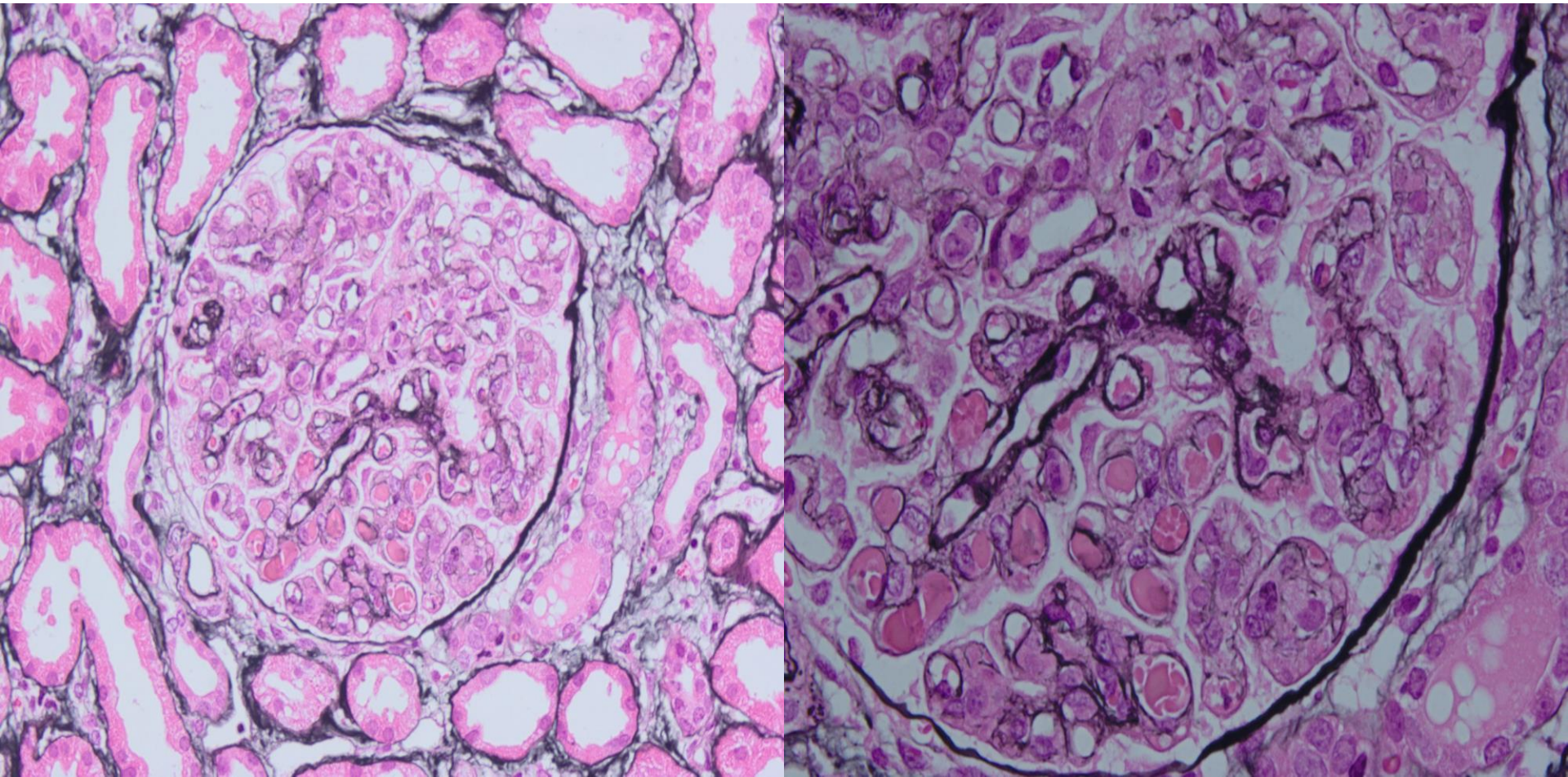
Cryoglobulin GN

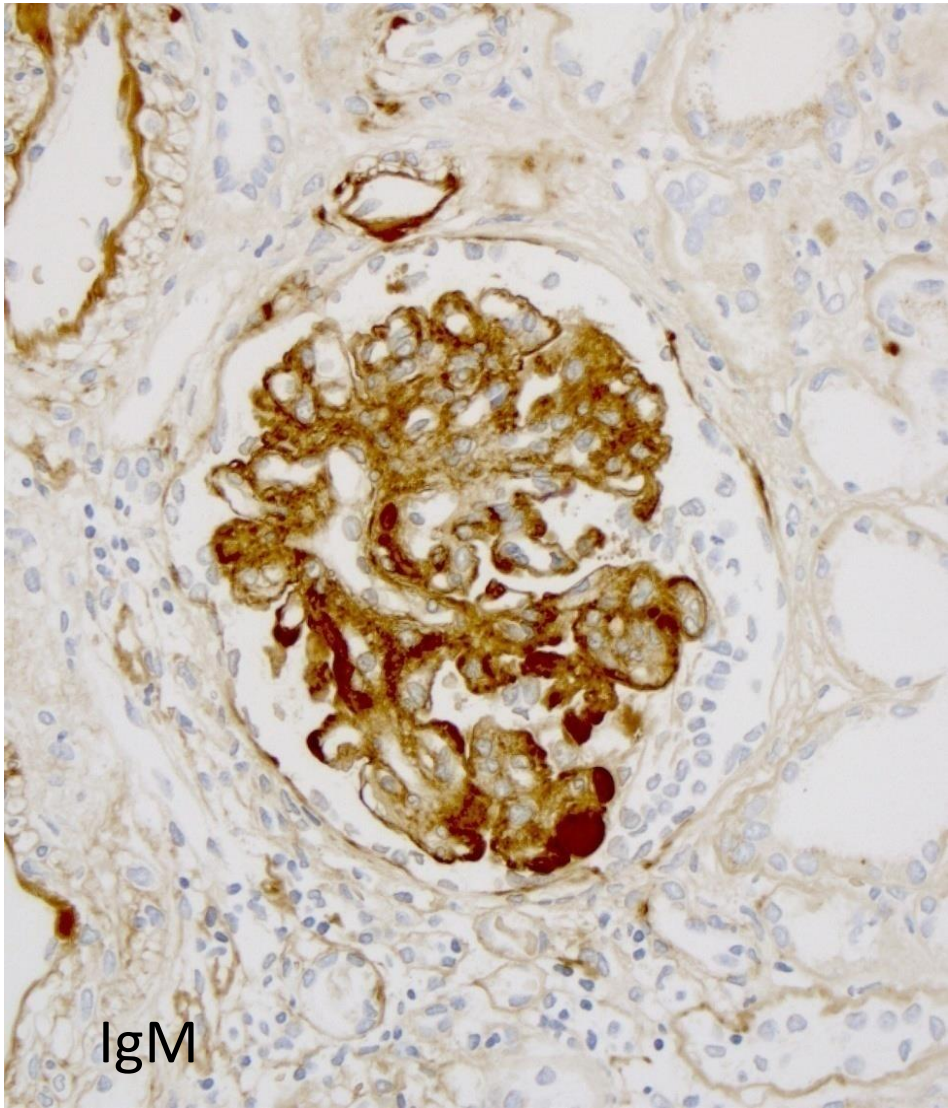


Cryoglobulin GN



Cryoglobulin GN

- MPGN pattern of injury
- PAS positive glomerular intracapillary deposits
- IF - IgM usually dominant
- EM – Deposits with fibrillary substructure



Case 8

- 64 yr old female
- Deterioration renal function
- History of recurrent UTI
- Urine dipstick: protein 2+ and blood 1+
- CRP 60
- Normal C3/C4

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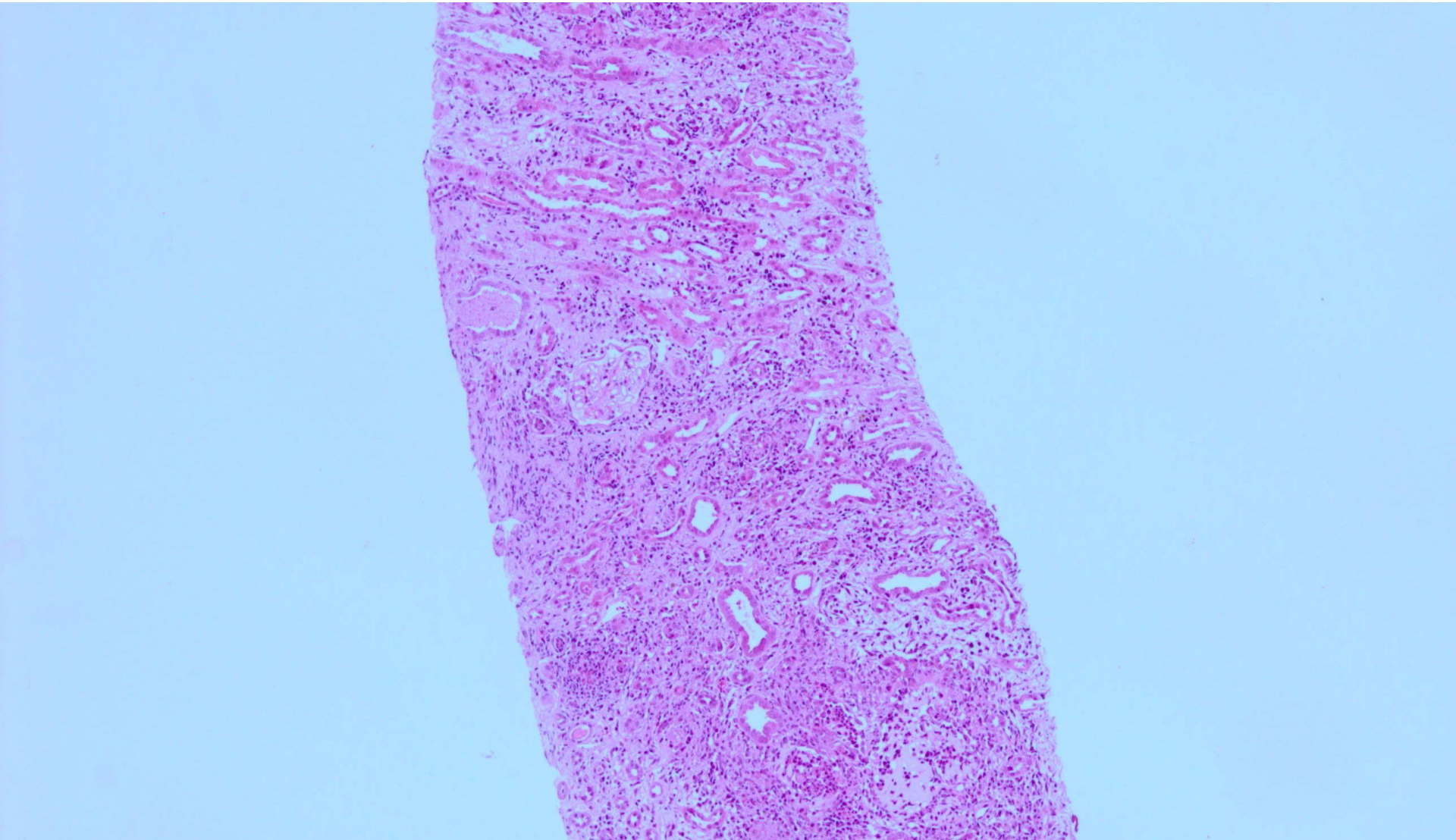
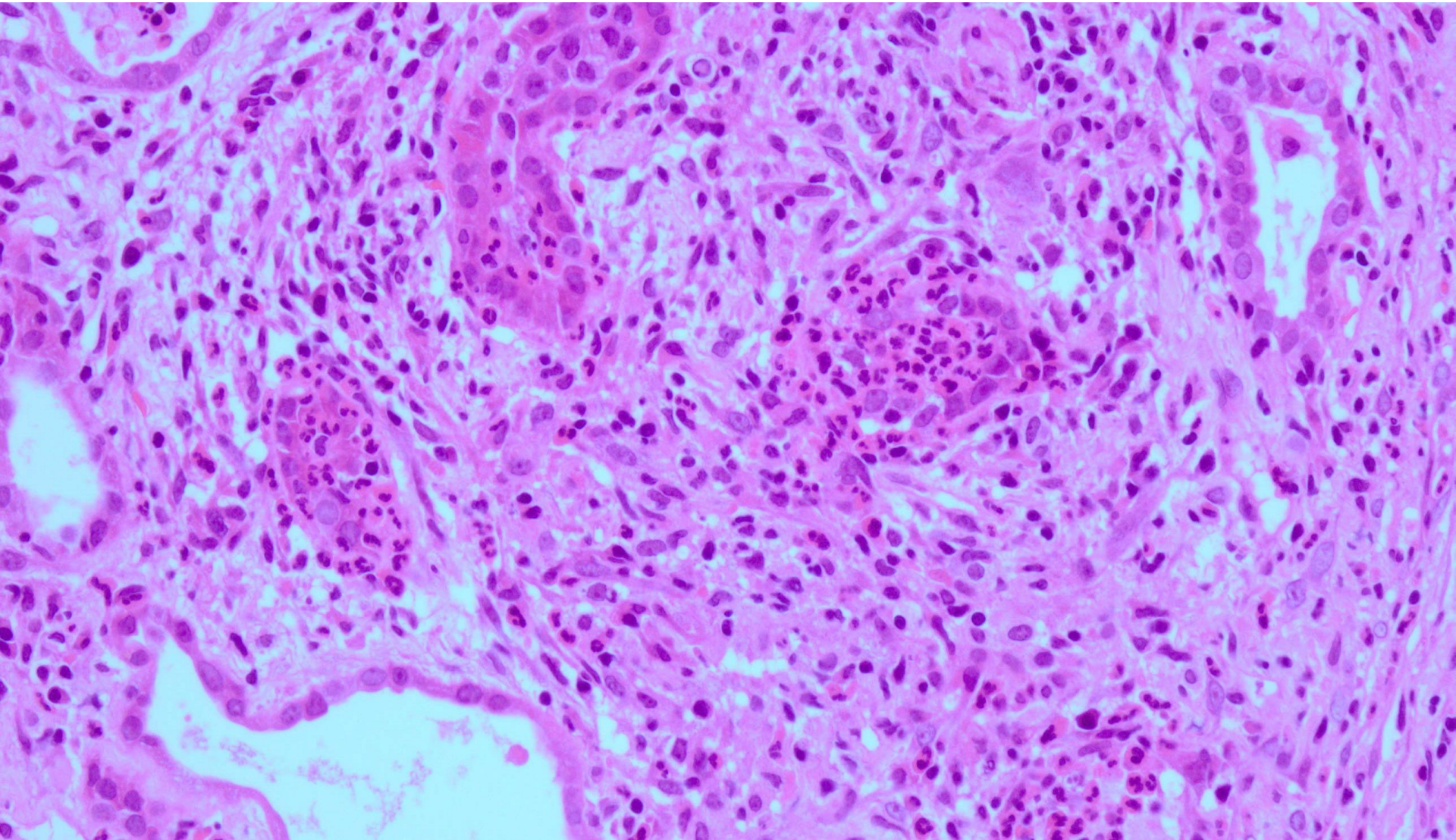
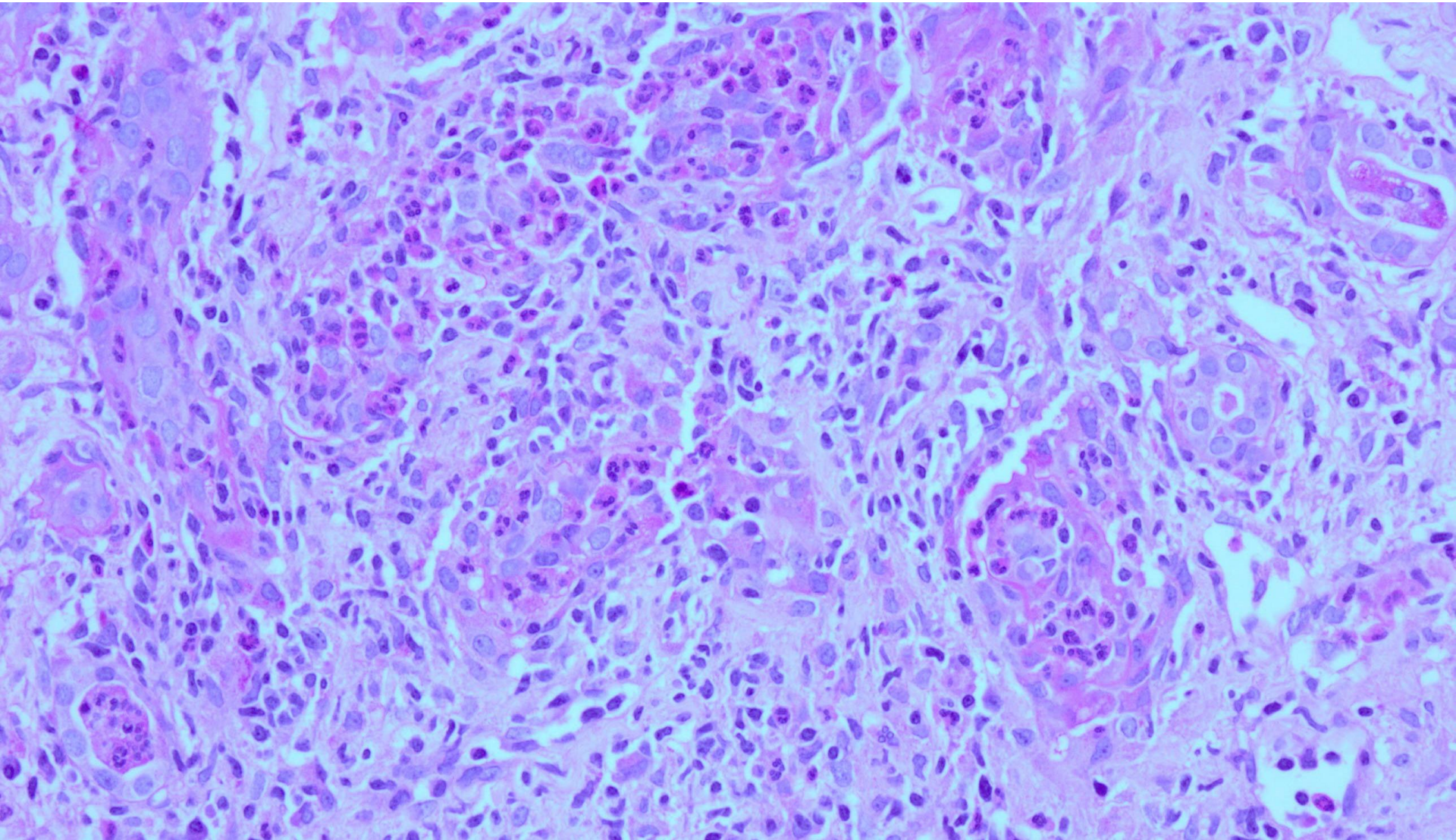
H&E



H&E



PAS



Acute tubulointerstitial nephritis (TIN) consistent with ascending infection

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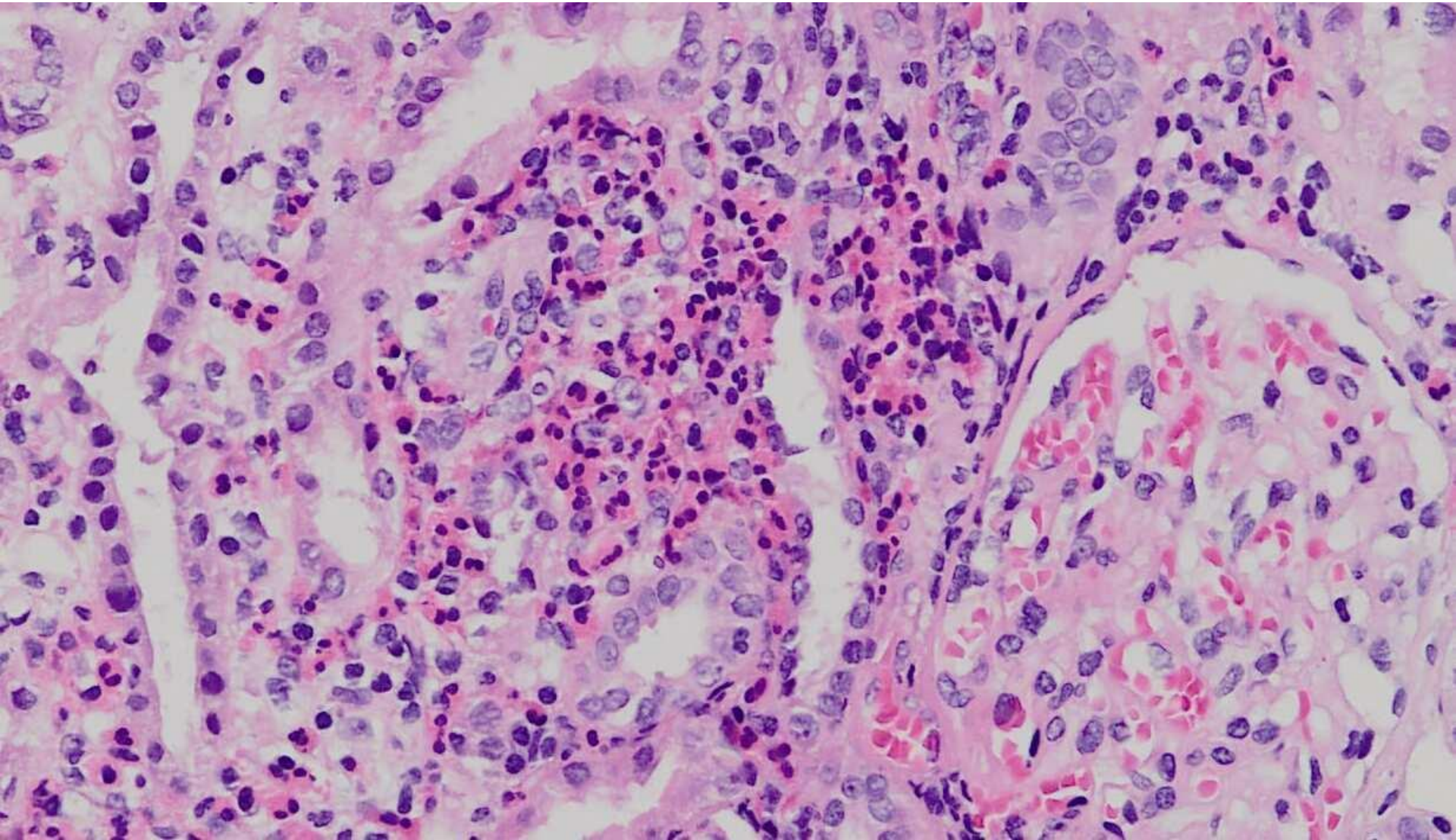
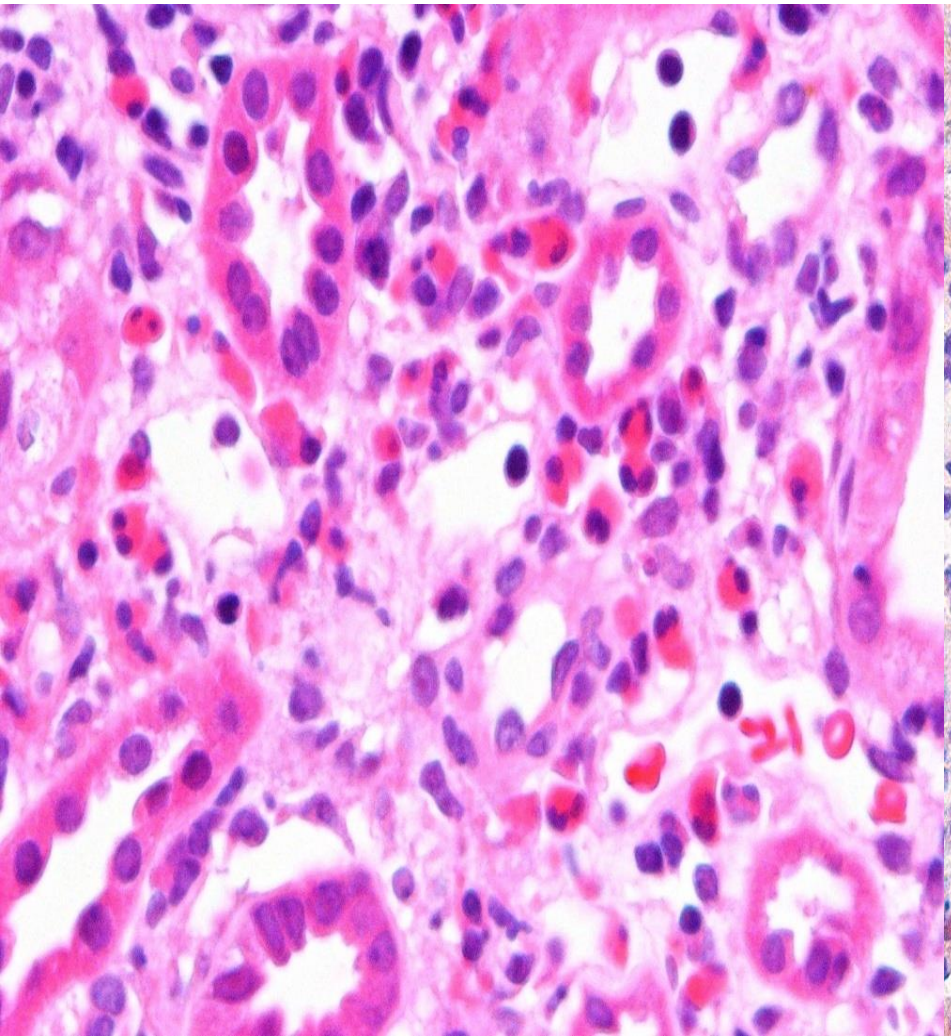
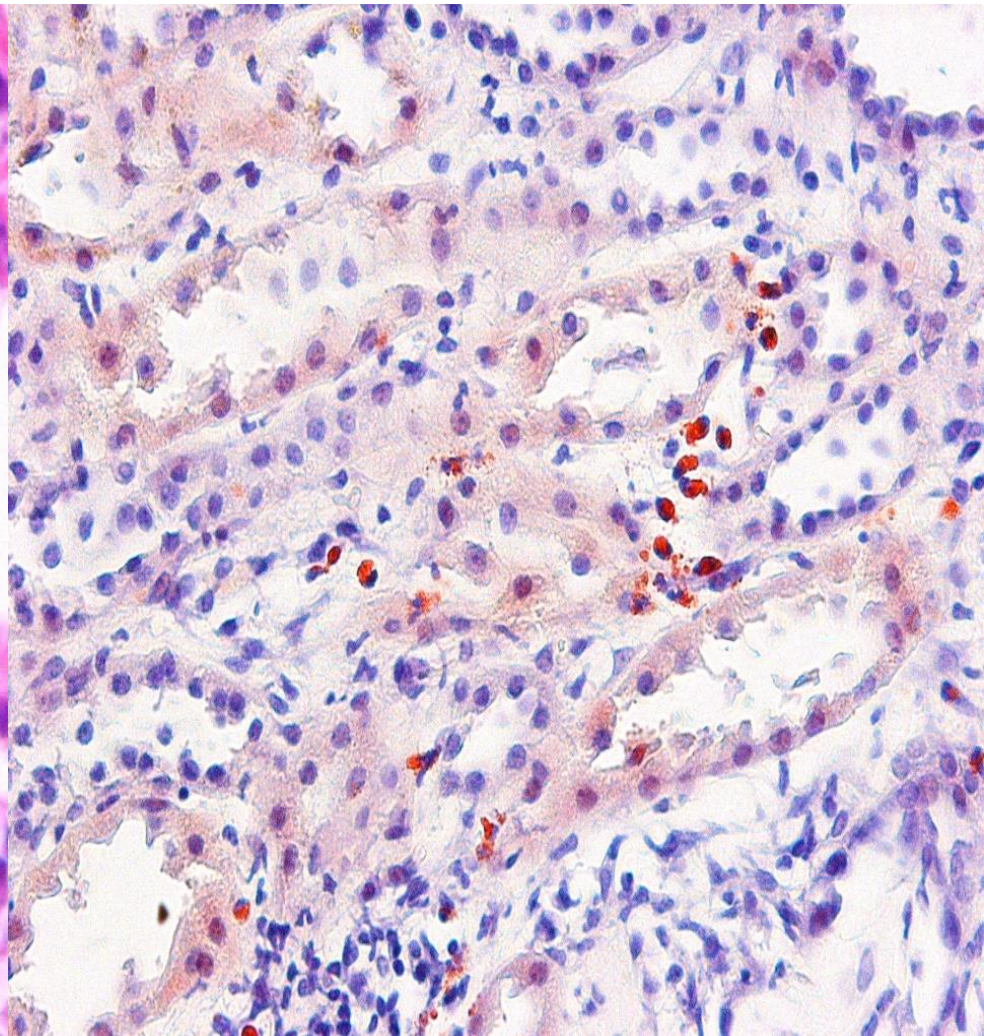
TIN with Eosinophils



TIN with Eosinophils





Approach to a renal biopsy

- Clinical history
- Other clinical investigations eg. Serology
- Morphological pattern
- IF/IP
  (IgG, IgA, IgM) and complements (C3, C1q)
- EM
- Diagnosis is made in the clinical context!

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FRCPath Part 2 – Renal Case

- Common pathology
- May have dual pathology
- Established diagnostic features
- IF and EM Images
- Expected to write a complete renal biopsy report
- Indicate Renal MDT discussion

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GOOD LUCK!

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